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*Technical Specification*

**Universal Mobile Telecommunications System (UMTS);  
User Equipment (UE) conformance specification;  
Part 1: Protocol conformance specification  
(3GPP TS 34.123-1 version 5.1.1 Release 5)**



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## Foreword

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14.2.4a	Conversational / speech / UL:(12.2 7.95 5.9 4.75) DL:(12.2 7.95 5.9 4.75) kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2004
14.2.5	Conversational / speech / UL:10.2 DL:10.2 kbps / CS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH.	2006
14.2.5a	Conversational / speech / UL:(10.2, 6.7, 5.9, 4.75) DL:(10.2, 6.7, 5.9, 4.75) kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH. ....	2007
14.2.6	Conversational / speech / UL:7.95 DL:7.95 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH..	2009
14.2.7	Conversational / speech / UL:7.4 DL:7.4 kbps / CS RAB+ UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2011
14.2.7a	Conversational / speech / UL:(7.4, 6.7, 5.9, 4.75) DL:(7.4, 6.7, 5.9, 4.75) kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2012
14.2.8	Conversational / speech / UL:6.7 DL:6.7 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2014
14.2.9	Conversational / speech / UL:5.9 DL:5.9 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2016
14.2.10	Conversational / speech / UL:5.15 DL:5.15 kbps / CS RAB + UL:1.7 DL:1.7 kbps SRBs for DCCH..	2017
14.2.11	Conversational / speech / UL:4.75 DL:4.75 kbps / CS RAB + UL:1.7 DL:1.7 kbps SRBs for DCCH..	2019
14.2.12	Conversational / unknown / UL:28.8 DL:28.8 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH .....	2020
14.2.13	Conversational / unknown / UL:64 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH....	2022
14.2.13.1	Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI .....	2022
14.2.13.2	Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI .....	2024
14.2.14	Conversational / unknown / UL:32 DL:32 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH....	2026
14.2.14.1	Conversational / unknown / UL:32 DL:32 kbps / CS RAB / 20 ms TTI .....	2026
14.2.14.2	Conversational / unknown / UL:32 DL:32 kbps / CS RAB / 40 ms TTI .....	2027
14.2.15	Streaming / unknown / UL:14.4/DL:14.4 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH .....	2029
14.2.16	Streaming / unknown / UL:28.8/DL:28.8 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH .....	2030
14.2.17	Streaming / unknown / UL:57.6/DL:57.6 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH .....	2032
14.2.18	Streaming / unknown / UL:0 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2034
14.2.19	Streaming / unknown / UL:64 DL:0 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH .....	2036
14.2.20	Void .....	2038
14.2.21	Void.....	2038
14.2.22	Void.....	2038
14.2.23	Interactive or background / UL:32 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2038
14.2.23.1	Interactive or background / UL:32 DL:8 kbps / PS RAB / (TC, 10 ms TTI).....	2038
14.2.23.2	Interactive or background / UL:32 DL:8 kbps / PS RAB / (TC, 20 ms TTI).....	2039
14.2.23.3	Interactive or background / UL:32 DL:8 kbps / PS RAB / (CC, 10 ms TTI).....	2041
14.2.23.4	Interactive or background / UL:32 DL:8 kbps / PS RAB / (CC, 20 ms TTI).....	2041

14.2.23a	Interactive or background / UL:8 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH. ....	2041
14.2.23b	Interactive or background / UL:16 DL:16 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH. ....	2042
14.2.23c	Interactive or background / UL:32 DL:32 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH. ....	2044
14.2.23d	Interactive or background / UL:32 DL:32 kbps / PS RAB (20 ms TTI) + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2046
14.2.24	Interactive or background / UL:64 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2046
14.2.24.1	Interactive or background / UL:64 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / TC .....	2046
14.2.24.2	Interactive or background / UL:64 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / CC .....	2047
14.2.25	Interactive or background / UL:32 DL: 64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH ....	2048
14.2.25.1	Interactive or background / UL:32 DL: 64 kbps / PS RAB / (TC, 10 ms TTI).....	2048
14.2.25.2	Interactive or background / UL:32 DL: 64 kbps / PS RAB / (TC, 20 ms TTI).....	2049
14.2.25.3	Interactive or background / UL:32 DL:64 kbps / PS RAB / (CC, 10 ms TTI).....	2051
14.2.25.4	Interactive or background / UL:32 DL:64 kbps / PS RAB / (CC, 20 ms TTI).....	2051
14.2.26	Interactive or background / UL:64 DL: 64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH ....	2051
14.2.27	Interactive or background / UL:64 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH ...	2053
14.2.28	Interactive or background / UL:128 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH .	2055
14.2.29	Interactive or background / UL:64 DL:144 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH ..	2057
14.2.30	Interactive or background / UL:144 DL:144 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH	2059
14.2.31	Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH ..	2061
14.2.31.1	Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH/ 10 ms TTI.....	2061
14.2.31.2	Interactive or background / UL:64 DL:256 kbps / PS RAB / 20 ms TTI.....	2063
14.2.32	Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH ..	2065
14.2.32.1	Interactive or background / UL:64 DL:384 kbps / PS RAB / 10 ms TTI.....	2065
14.2.32.2	Interactive or background / UL:64 DL:384 kbps / PS RAB / 20 ms TTI.....	2067
14.2.33	Interactive or background / UL:128 DL:384 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH	2070
14.2.33.1	Interactive or background / UL:128 DL:384 kbps / PS RAB / 10 ms TTI.....	2070
14.2.33.2	Interactive or background / UL:128 DL:384 kbps / PS RAB / 20 ms TTI.....	2072
14.2.34	Interactive or background / UL:384 DL:384 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH .	2075
14.2.34.1	Interactive or background / UL:384 DL:384 kbps / PS RAB / 10 ms TTI.....	2075
14.2.34.2	Interactive or background / UL:384 DL:384 kbps / PS RAB / 20 ms TTI.....	2077
14.2.35	Interactive or background / UL:64 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH .	2080
14.2.35.1	Interactive or background / UL:64 DL:2048 kbps / PS RAB / 10 ms TTI.....	2080
14.2.35.2	Interactive or background / UL:64 DL:2048 kbps / PS RAB / 20 ms TTI.....	2083
14.2.36	Interactive or background / UL:128 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH .....	2086
14.2.36.1	Interactive or background / UL:128 DL:2048 kbps / PS RAB / 10 ms TTI.....	2086
14.2.36.2	Interactive or background / UL:128 DL:2048 kbps / PS RAB / 20 ms TTI.....	2089
14.2.37	Interactive or background / UL:384 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH .....	2092
14.2.37.1	Interactive or background / UL:384 DL:2048 kbps / PS RAB / 10 ms TTI.....	2092
14.2.37.2	Interactive or background / UL:384 DL:2048 kbps / PS RAB / 20 ms TTI.....	2096
14.2.38	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2100
14.2.38.1	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:8 kbps / PS RAB / (TC, 20 ms TTI) .....	2100
14.2.38.2	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:8 kbps / PS RAB / (TC, 10 ms TTI) .....	2103
14.2.38.3	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:8 kbps / PS RAB / (CC, 20 ms TTI) .....	2105
14.2.38.4	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:8 kbps / PS RAB / (CC, 10 ms TTI) .....	2105
14.2.38a	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:0 DL:0 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH. ....	2105
14.2.38b	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:8 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH. ....	2107
14.2.38c	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:32 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2109

14.2.38d	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:64 kbps / PS RAB + Interactive or background / UL:64 DL:64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH. ....	2114
14.2.38e	Conversational / speech / UL:(12.2 7.95 5.9 4.75) DL:(12.2 7.95 5.9 4.75) kbps / CS RAB + Interactive or background / UL:0 DL:0 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH. ....	2119
14.2.38f	Conversational / speech / UL:(12.2 7.95 5.9 4.75) DL:(12.2 7.95 5.9 4.75) kbps / CS RAB + Interactive or background / UL:8 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH. ....	2121
14.2.38g	Conversational / speech / UL:(12.2 7.95 5.9 4.75) DL:(12.2 7.95 5.9 4.75) kbps / CS RAB + Interactive or background / UL:16 DL:16 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH. ....	2125
14.2.38h	Conversational / speech / UL:(12.2 7.95 5.9 4.75) DL:(12.2 7.95 5.9 4.75) kbps / CS RAB + Interactive or background / UL:32 DL:32 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH. ....	2130
14.2.38i	Conversational / speech / UL:(12.2 7.95 5.9 4.75) DL:(12.2 7.95 5.9 4.75) kbps / CS RAB + Interactive or background / UL:64 DL:64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH. ....	2136
14.2.38j	Conversational / speech / UL:(12.2 7.95 5.9 4.75) DL:(12.2 7.95 5.9 4.75) kbps / CS RAB + Interactive or background / UL:64 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH. ...	2144
14.2.39	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:64 kbps / PS RAB+ UL:3.4 DL: 3.4 kbps SRBs for DCCH.....	2152
14.2.39.1	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:64 kbps / PS RAB / (TC, 10 ms TTI) .....	2152
14.2.39.2	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:64 kbps / PS RAB / (TC, 20 ms TTI) .....	2156
14.2.39.3	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:64 kbps / PS RAB / (CC, 10 ms TTI) .....	2161
14.2.39.4	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:64 kbps / PS RAB / (CC, 20 ms TTI) .....	2161
14.2.40	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:64 kbps / PS RAB+ UL:3.4 DL: 3.4 kbps SRBs for DCCH.....	2161
14.2.41	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2166
14.2.42	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2171
14.2.42.1	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB / 10 ms TTI .....	2171
14.2.42.2	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB / 20 ms TTI .....	2176
14.2.43	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2182
14.2.43.1	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB / 10 ms TTI .....	2182
14.2.43.2	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB / 20 ms TTI .....	2188
14.2.44	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:128 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2195
14.2.44.1	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:128 DL:2048 kbps / PS RAB / 10 ms TTI.....	2195
14.2.44.2	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:128 DL:2048 kbps / PS RAB / 20 ms TTI.....	2203
14.2.45	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Streaming / unknown / UL:57.6 DL:57.6 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH .....	2216
14.2.46	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Streaming / unknown / UL:0 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH .....	2221
14.2.47	Void .....	2225
14.2.48	Void .....	2225
14.2.49	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH .....	2225
14.2.49.1	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI.....	2225
14.2.49.2	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI .....	2228
14.2.49a	Conversational / speech / UL:(12.2 7.95 5.9 4.75) DL:(12.2 7.95 5.9 4.75) kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB+ UL:3.4 DL: 3.4 kbps SRBs for DCCH.....	2230

14.2.50	Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH .....	2233
14.2.50.1	Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 20 ms TTI.....	2233
14.2.50.2	Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 40 ms TTI.....	2236
14.2.51	Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Interactive or background / UL:64 DL:64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2238
14.2.51.1	Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI + Interactive or background / UL:64 DL:64 kbps / PS RAB .....	2238
14.2.51.2	Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI + Interactive or background / UL:64 DL:64 kbps / PS RAB .....	2241
14.2.51a	Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Interactive or Background / UL:8 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2245
14.2.51a.1	Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI + Interactive or background / UL:8 DL:8 kbps / PS RAB.....	2245
14.2.51a.2	Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI + Interactive or background / UL:8 DL:8 kbps / PS RAB.....	2247
14.2.51b	Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Interactive or Background / UL:16 DL:64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2249
14.2.51b.1	Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI + Interactive or background / UL:16 DL:64 kbps / PS RAB .....	2249
14.2.51b.2	Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI + Interactive or background / UL:16 DL:64 kbps / PS RAB .....	2252
14.2.52	Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Interactive or background / UL:64 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2255
14.2.52.1	Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI + Interactive or background / UL:64 DL:128 kbps / PS RAB .....	2255
14.2.52.2	Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI + Interactive or background / UL:64 DL:128 kbps / PS RAB .....	2259
14.2.53	Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Interactive or background / UL:128 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2263
14.2.53.1	Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI + Interactive or background / UL:128 DL:128 kbps / PS RAB .....	2263
14.2.53.2	Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI + Interactive or background / UL:128 DL:128 kbps / PS RAB .....	2267
14.2.54	Interactive or background / UL:64 DL:128 kbps / PS RAB + Streaming / unknown / UL:0 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH .....	2271
14.2.55	Void .....	2277
14.2.56	Interactive or background / UL:8 DL:8 kbps / PS RAB + Interactive or background / UL:8 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2277
14.2.57	Interactive or background / UL:64 DL:64 kbps / PS RAB + Interactive or background / UL:64 DL:64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2278
14.2.58	Streaming / unknown / UL:16 DL:64 kbps / PS RAB + Interactive or background / UL:8 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH. ....	2280
14.3	Combinations on PDSCH and DPCH .....	2283
14.3.1	Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH ..	2283
14.3.1.1	Interactive or background / UL:64 DL:256 kbps / PS RAB / 10 ms TTI.....	2283
14.3.1.2	Interactive or background / UL:64 DL:256 kbps / PS RAB / 20 ms TTI.....	2285
14.3.2	Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH ..	2288
14.3.2.1	Interactive or background / UL:64 DL:384 kbps / PS RAB / 10 ms TTI.....	2288
14.3.2.2	Interactive or background / UL:64 DL:384 kbps / PS RAB / 20 ms TTI.....	2290
14.3.3	Interactive or background / UL:64 DL:2048 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH	2292
14.3.3.1	Interactive or background / UL:64 DL:2048 kbps / PS RAB / 10 ms TTI.....	2292
14.3.3.2	Interactive or background / UL:64 DL:2048 kbps / PS RAB / 20 ms TTI.....	2295
14.3.4	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2300
14.3.4.1	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 10 ms TTI.....	2300
14.3.4.2	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 20 ms TTI.....	2300

14.3.5	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2300
14.3.5.1	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 10 ms TTI.....	2300
14.3.5.2	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 20 ms TTI.....	2300
14.3.6	Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.....	2300
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## Foreword

This Technical Specification (TS) has been produced by the 3<sup>rd</sup> Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

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## Introduction

The present document is the first part of a multi-part conformance specification valid for 3GPP Release 1999, 3GPP Release 4 and 3GPP Release 5. 3GPP TS 34.123-2 [11] contains a pro-forma for the Implementation Conformance Statement (ICS) and an applicability table, indicating the release from which each test case is applicable. 3GPP TS 34.123-3 [12] contains a detailed and executable description of the test cases written in a standard testing language, TTCN, as defined in ISO/IEC 9646.

For at least a minimum set of services, the prose descriptions of test cases will have a matching detailed test case implemented in TTCN [12].

For Release 1999, the minimum set of services are defined as:

- voice calls;
- emergency calls;
- SMS (both Point-to-point and Cell broadcast);
- Circuit Switched data at up to 64 k bits/second;
- fax;

including the underlying layers to support these services.

Release 1999 will also include the areas:

- auto-calling restrictions.

The present document may contain descriptions of tests for additional services, but these tests may not have matching TTCN test cases.

The present document will not contain any tests on the USIM, or the interface between the UE and the USIM. These tests are documented elsewhere.

---

# 1 Scope

The present document specifies the protocol conformance testing for the 3<sup>rd</sup> Generation User Equipment (UE).

This is the first part of a multi-part test specification. The following information can be found in this part:

- the overall test structure;
- the test configurations;
- the conformance requirement and reference to the core specifications;
- the test purposes; and
- a brief description of the test procedure, the specific test requirements and short message exchange table.

The following information relevant to testing can be found in accompanying specifications:

- the default setting of the test parameters [9];
- the applicability of each test case [11].

A detailed description of the expected sequence of messages can be found in the 3<sup>rd</sup> part of this test specification.

The Implementation Conformance Statement (ICS) pro-forma can be found in the 2<sup>nd</sup> part of the present document.

The present document is valid for UE implemented according to 3GPP Release 1999, 3GPP Release 4 or 3GPP Release 5.

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# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document in the same Release as the present document.
  - For a Release 1999 UE, references to 3GPP documents are to version 3.x.y, when available.
  - For a Release 4 UE, references to 3GPP documents are to version 4.x.y, when available.
  - For a Release 5 UE, references to 3GPP documents are to version 5.x.y, when available.

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 23.003: "Numbering, Addressing and Identification".
- [3] 3GPP TS 23.122: "Non-Access-Stratum functions related to Mobile Station (MS) in idle mode".
- [4] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols; Stage 3".
- [5] 3GPP TS 25.214: "Physical layer procedures (FDD)".
- [6] 3GPP TS 25.321: "MAC protocol specification".

- [7] 3GPP TS 25.322: "RLC protocol specification".
- [8] 3GPP TS 25.331: "RRC Protocol Specification".
- [9] 3GPP TS 34.108: "Common Test Environments for User Equipment (UE) Conformance Testing".
- [10] 3GPP TS 34.109: "Terminal logical test interface; Special conformance testing functions".
- [11] 3GPP TS 34.123-2: "User Equipment (UE) conformance specification; Part 2: Implementation Conformance Statement (ICS) proforma specification".
- [12] 3GPP TS 34.123-3: "User Equipment (UE) conformance specification; Part 3: Abstract Test Suites (ATS)".
- [13] 3GPP TS 51.010-1: "Mobile Station (MS) conformance specification; Part 1: Conformance specification".
- [14] ISO/IEC 9646 (all parts): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework".
- [15] 3GPP TS 25.304: "UE Procedures in Idle Mode and Procedures for Cell Reselection in Connected Mode".
- [16] 3GPP TS 34.121: "Terminal Conformance Specification; Radio Transmission and Reception (FDD)".
- [17] 3GPP TS 34.122: "Terminal Conformance Specification; Radio Transmission and Reception (TDD)".
- [18] 3GPP TS 31.102: "Characteristics of the USIM Application".
- [19] 3GPP TS 25.224: "Physical Layer Procedures (TDD)".
- [20] 3GPP TS 25.215: "Physical layer - Measurements (FDD)".
- [21] 3GPP TS 25.101: "UE Radio Transmission and Reception (FDD)".
- [22] 3GPP TS 25.123: "Requirements for support of radio resource management (TDD)".
- [23] 3GPP TS 25.133: "Requirements for Support of Radio Resource Management (FDD)".
- [24] 3GPP TS 03.22: "Functions related to Mobile Station (MS) in idle mode and group receive mode".
- [25] 3GPP TS 04.18: "Mobile radio interface layer 3 specification; Radio Resource Control Protocol".
- [26] 3GPP TS 05.08: "Radio Subsystem Link Control".
- [27] 3GPP TS 22.001: "Principles of circuit telecommunication services supported by a Public Land Mobile Network (PLMN)".
- [28] 3GPP TS 24.007: "Mobile radio interface signalling layer 3; General aspects".
- [29] 3GPP TS 25.211: "Physical channels and mapping of transport channels onto physical channels (FDD)".
- [30] 3GPP TS 25.323: "Packet Data Convergence Protocol (PDCP) Specification".
- [31] 3GPP TS 33.102: "3G Security; Security Architecture".
- [32] 3GPP TS 23.060: "General Packet Radio Service (GPRS) Service description; Stage 2".
- [33] Void.
- [34] 3GPP TS 23.040: "Technical realization of the Short Message Service (SMS)".
- [35] 3GPP TS 23.038: "Alphabets and language-specific information".

- [36] 3GPP TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".
- [37] 3GPP TS 25.324: "Broadcast/Multicast Control BMC".
- [38] 3GPP TS 23.041: "Technical realization of Cell Broadcast Service (CBS)".
- [39] RFC 2507: "IP Header Compression".

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## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 apply, unless specified below:

**example:** text used to clarify abstract rules by applying them literally

**Floor:** Floor(x) is the largest integer smaller than or equal to x.

**Ceil:** Ceil (x) is the smallest integer larger than or equal to x.

### 3.2 Abbreviations

For the purposes of the present document, the abbreviations specified in TR 21.905 apply, with any additional abbreviations specified below:

SS	System Simulator
----	------------------

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## 4 Overview

### 4.1 Test Methodology

#### 4.1.1 Testing of optional functions and procedures

Any function or procedure which is optional, as indicated in the present document , may be subject to a conformance test if it is implemented in the UE.

A declaration by the apparatus supplier (ICS) is used to determine whether an optional function/procedure has been implemented.

#### 4.1.2 Test interfaces and facilities

Detailed descriptions of the UE test interfaces and special facilities for testing are provided in [10].

### 4.2 Implicit Testing

For some 3GPP signalling and protocol features conformance is not verified explicitly in the present document. This does not imply that correct functioning of these features is not essential, but that these are implicitly tested to a sufficient degree in other tests.

---

## 5 Reference Conditions

The reference environments used by all signalling and protocol tests are specified in TS 34.108. Where a test requires an environment that is different, this will be specified in the test itself.

### 5.1 Generic setup procedures

A set of basic generic procedures for radio resource signalling, and generic setup procedures for layer 3 NAS signalling are described in TS 34.108 clause 7. These procedures are used in numerous test cases throughout the present document.

---

## 6 Idle mode operations

In the following paragraphs some explanatory text is given concerning the nature of the tests in this clause and the general behaviour of the SS is described.

Since the conformance requirements of most of the tests in this clause cannot be tested explicitly, testing is done implicitly by testing the UE behaviour from its responses to the SS.

In some cases, a test is performed in multiple stages in order that the requirements can be tested within the above constraints.

For any UE all the carriers are in its supported band(s) of operation.

Unless otherwise stated in the method of test, in all of the tests of this clause:

- the default values of the system information data fields given in TS 34.108 are used;
- the UE is equipped with a USIM containing default values. The USIM is in the idle updated state in the default location area with a TMSI assigned at the beginning of each test;
- the cells shall be configured such that  $Squal > 0$  (FDD only) and  $Srxlev > 0$  while applying  $Qqualmin$  (FDD only) and  $Qrxlevmin$  in table 6.1. In addition, for an FDD cell, the measured primary CPICH RSCP value shall be greater than or equal to -95 dBm (definition of High Quality cell, see TS 25.304, clause 5.1.2.2). In addition, for a TDD cell, the measured P-CCPCH RSCP shall be greater than or equal to -84 dBm (definition of High Quality cell, see TS 25.304, clause 5.1.2.2).

Three different methods A, B and C are applied in the tests:

Method A:

- the SS is continuously paging the UE on all cells at the start of the test and does not respond to RACH requests from the UE (which causes a cell reselection). Where a test specifies that the UE is not paged on a particular cell, only idle paging is transmitted. This method is similar to the one used in TS 51.010-1, clause 20.

Method B:

- the SS is continuously paging the UE on all cells at the start of the test and responds to RACH requests from the UE with an IMMEDIATE ASSIGNMENT REJECT (GERAN cell) or RRC CONNECTION REJECT (UTRAN cell) message which causes the UE to return to Idle mode. Where a test specifies that the UE is not paged in a particular cell, only idle paging is transmitted.

Method C:

- no continuously paging as in method A or B. Normal response to RACH requests so Location Updating and Calls can be done.

In case a test specifies that UE shall read System Information on BCCH while camped on a UTRAN cell, SS shall notify UE on the BCCH modification by sending a PAGING TYPE 1 message to UE. This message shall contain IE BCCH Modification Info with the following settings:

Information Element	Value/remark
BCCH modification info MIB Value Tag	Set to the same value as the value tag of the MIB after the BCCH modification
BCCH Modification time	Not present

**Table 6.1: Default values of the system information fields**

Parameter	Setting
IMSI attach/detach	Method A, B: Not allowed Method C: Allowed
Intra-frequency cell re-selection indicator	Allowed
Cell_selection_and_reselection_quality_measure	CPICH RSCP (FDD)
Qqualmin (FDD only)	-24 dB
Qrxlevmin (FDD)	-115 dBm
Qrxlevmin (TDD)	-103 dBm
DRX cycle length	1,28 s

CPICH\_Ec/Io and SCH\_Ec/Io shall fulfil requirements in TS 25.133, clause 8.1.2.2.1: The UE is able to identify a new detectable cell belonging to the monitored set within  $T_{\text{identify intra}}$  when CPICH Ec/Io  $\geq$  -20 dB and SCH\_Ec/Io  $\geq$  -20 dB.

It is a UE option whether to indicate access technologies to the user (TS 23.122, clause 4.4.3.1.2). Therefore, for combined UTRAN/GSM tests, it is indicated in parentheses which access technology shall be indicated to the user if the UE has this capability.

If a parameter is indicated with a \*, it means that the parameter is calculated internally in the UE and is only shown for clarification of the test procedure.

The PLMN numbers indicated in table 6.2 are used in test cases to associate a cell with an MCC and MNC for that cell. If no PLMN is explicitly specified, the default value is PLMN 1.

**Table 6.2: Location Area Information (LAI) in System Information type 3 messages broadcast on the BCCH (GSM) or System Information Block Type 1 broadcast on the BCH (UMTS)**

PLMN	MCC1	MCC2	MCC3	MNC1	MNC2	MNC3	LAC
1	0	0	1	0	1	Not present	x
2	0	0	2	1	1	Not present	x
3	0	0	4	2	1	Not present	x
4	0	0	5	3	1	Not present	x
5	0	0	6	4	1	Not present	x
6	0	0	7	5	1	Not present	x
7	0	0	8	6	1	Not present	x
8	0	0	9	7	1	Not present	x
9	0	1	0	0	2	Not present	x
10	0	1	1	1	2	Not present	x
11	0	1	2	2	2	Not present	x
12	0	1	3	3	2	Not present	x

NOTE: 'x' denotes any value.

References: TS 23.122, annex A and TS 23.003, clause 2.

The test channel numbers indicated in tables 6.3, 6.4 and 6.5 are used in test cases to associate a cell with a frequency for that cell. The frequencies for GSM and DCS cells in table 6.5 are identical to those used in TS 51.010-1, clause 26.3.1. The RF signal levels for GSM cells are given in table 6.5 for UTRAN FDD cells in TS 34.108, table 6.1.1 and for UTRAN TDD cells in TS 34.108, table 6.1.5. If no channel is explicitly specified, the default value is Test Channel 1.

Table 6.3: UTRA (FDD) test frequencies

Test Channel	ITU region 1		ITU region 2		ITU region 3	
	CPICH_Ec dBm / 3.84 MHz	Uplink UARFCN	CPICH_Ec dBm / 3.84 MHz	Uplink UARFCN	CPICH_Ec dBm / 3.84 MHz	Uplink UARFCN
1	-72	9 613	-72	9 263	-72	8 563
2	-75	9 663	-75	9 313	-75	8 613
3	-78	9 713	-78	9 363	-78	8 663
4	-81	9 763	-81	9 413	-81	8 713
5	-84	9 813	-84	9 463	-84	8 763
6	-87	9 863	-87	9 513	-87	8 813

References: TS 34.108, clause 5.1.1 and TS 34.121, clause 4.

Table 6.4: UTRA TDD test frequencies

Test Channel	ITU region 2			
	P-CCPCH_ RSCP [dBm]	UARFCN	P-CCPCH_ RSCP [dBm]	UARFCN
1	-61	9 513	-61	9 263
2	-64	9 550	-64	9 537
3	-67	9 587	-67	9 663
4	-70	10 063	-70	9 937
5	-73	10 087	-73	9 563
6	-76	10 112	-76	9 637

References: TS 34.108, clause 5.1.2 and TS 34.122, clause 4.

Table 6.5: GSM/DCS test frequencies and levels

Test Channel	GSM 900		DCS 1 800	
	level dB $\mu$ Vemf( ) / dBm	BCCH ARFCN	level dB $\mu$ Vemf( ) / dBm	BCCH ARFCN
1	+65 / -48	1	+65 / -48	520
2	+63 / -50	7	+63 / -50	580
3	+61 / -52	39	+61 / -52	610
4	+55 / -58	65	+55 / -58	702
5	+59 / -54	66	+59 / -54	703
6	+57 / -56	85	+57 / -56	830
7	+55 / -58	97	+55 / -58	885
8	+53 / -60	124		

Test Channel	GSM 450		DCS 480	
	level dB $\mu$ Vemf( ) / dBm	BCCH ARFCN	level dB $\mu$ Vemf( ) / dBm	BCCH ARFCN
1	+65 / -48	259	+65 / -48	306
2	+63 / -50	261	+63 / -50	308
3	+61 / -52	267	+61 / -52	314
4	+55 / -58	268	+55 / -58	315
5	+59 / -54	281	+59 / -54	328
6	+57 / -56	288	+57 / -56	335
7	+55 / -58	291	+55 / -58	338
8	+53 / -60	293	+53 / -60	340

Test Channel	Multiband 900/1800		PCS 1900	
	level dB $\mu$ Vemf( ) / dBm	BCCH ARFCN	level dBmVemf( ) / dBm	BCCH ARFCN
1	+65 / -48	520	+65 / -48	512
2	+63 / -50	7	+63 / -50	520
3	+61 / -52	39	+61 / -52	580
4	+55 / -58	702	+55 / -58	610
5	+59 / -54	66	+59 / -54	702
6	+57 / -56	85	+57 / -56	703
7	+55 / -58	885	+55 / -58	800
8	+53 / -60	124		

Test Channel	Multiband 450/900		Multiband 480/900	
	level dB $\mu$ Vemf( ) / dBm	BCCH ARFCN	level dB $\mu$ Vemf( ) / dBm	BCCH ARFCN
1	+65 / -48	1	+65 / -48	1
2	+63 / -50	261	+63 / -50	308
3	+61 / -52	267	+61 / -52	314
4	+55 / -58	65	+55 / -58	65
5	+59 / -54	281	+59 / -54	328
6	+57 / -56	288	+57 / -56	335
7	+55 / -58	124	+55 / -58	124
8	+53 / -60	293	+53 / -60	340

Test Channel	Multiband 450/1800		Multiband 480/1800	
	level dB $\mu$ Vemf( ) / dBm	BCCH ARFCN	level dB $\mu$ Vemf( ) / dBm	BCCH ARFCN
1	+65 / -48	520	+65 / -48	520
2	+63 / -50	261	+63 / -50	308
3	+61 / -52	267	+61 / -52	314
4	+55 / -58	702	+55 / -58	702
5	+59 / -54	281	+59 / -54	328
6	+57 / -56	288	+57 / -56	335
7	+55 / -58	885	+55 / -58	885
8	+53 / -60	293	+53 / -60	340

For testing an E-GSM Mobile station, the BCCH ARFCN of GSM Test Channel 7 at GSM 900 column shall be 985 (instead of 97). For testing an R-GSM Mobile station, the BCCH ARFCN of GSM Test Channel 7 at GSM 900 column shall be 965 (instead of 97).

## 6.1 In a pure 3GPP environment

### 6.1.1 PLMN selection and reselection

#### 6.1.1.1 PLMN selection of RPLMN, HPLMN, UPLMN and OPLMN; Manual mode

##### 6.1.1.1.1 Definition

Test to verify that the UE can present the available PLMNs in priority order to the user when asked to do so in manual mode and that the displayed PLMNs can be selected / reselected by the user. Forbidden PLMNs shall also be displayed in the list. If available, the RPLMN shall be selected at switch-on, otherwise the displayed list shall include in priority order HPLMN, User-PLMN and Operator-PLMN. The last priority in the list is "Other PLMN/access technology combinations" which is not included in this test.

Only UTRAN cells and a UE equipped with a USIM with Radio Access Technology fields set to UTRAN are considered.

#### 6.1.1.1.2 Conformance requirement

1. At switch on, or following recovery from lack of coverage, the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see TS 23.122, clause 4.5.2) attempts to perform a Location Registration.

If successful registration is achieved, the MS indicates the selected PLMN.

If there is no registered PLMN, or if registration is not possible due to the PLMN being unavailable or registration failure, the MS follows either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

2. Manual Network Selection Mode Procedure:

The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes PLMNs in the "forbidden PLMNs" list and PLMNs which only offer services not supported by the MS.

If displayed, PLMNs meeting the criteria above are presented in the following order:

2.1 HPLMN;

2.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

2.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

2.4 Other PLMN/access technology combinations with received high quality signal in random order;

2.5 Other PLMN/access technology combinations in order of decreasing signal quality.

The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the "forbidden LAs for roaming", "forbidden LAs for regional provision of service", "forbidden PLMNs for GPRS service" and "forbidden PLMNs" lists.

If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell and enter the limited service state.

3. If a "PLMN not allowed" message is received by an MS in response to an LR request from a VPLMN, that VPLMN is added to a list of "forbidden PLMNs" in the SIM and thereafter that VPLMN will not be accessed by the MS when in automatic mode. A PLMN is removed from the "forbidden PLMNs" list if, after a subsequent manual selection of that PLMN, there is a successful LR. This list is retained when the MS is switched off or the SIM is removed. The HPLMN shall not be stored on the list of "forbidden PLMNs".

#### References

1. TS 23.122, clause 4.4.3.1;
2. TS 23.122, clause 4.4.3.1.2;
3. TS 23.122, clause 3.1.

NOTE: TS 31.102 defines the USIM fields.

#### 6.1.1.1.3 Test purpose

1. To verify that if available, the RPLMN is selected at switch-on.
2. To verify that in Manual Network Selection Mode Procedure, the UE presents the HPLMN, UPLMN and OPLMN in a prioritized order.

3. To verify that forbidden PLMNs are also displayed in the list.

#### 6.1.1.1.4 Method of test

##### Initial conditions

The UE is in manual PLMN selection mode.

Cell levels are from table 6.3. (FDD).

All Radio Access Technology USIM fields and cells are UTRAN.

Cell	CPICH_ Ec [dBm/3.84 MHz] (FDD)	P-CCPCH_ RSCP [dBm] (TDD)	Test Channel	PLMN
Cell 1	-60	-50	1	PLMN 1
Cell 2	-65	-55	2	PLMN 2
Cell 3	-70	-60	3	PLMN 3
Cell 4	-75	-65	4	PLMN 4
Cell 5	-80	-70	5	PLMN 5
Cell 6	-85	-75	6	PLMN 6

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN
EF <sub>LOCI</sub>		PLMN 1
EF <sub>HPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 2
EF <sub>PLMNwAcT</sub>	1 <sup>st</sup>	PLMN 3
	2 <sup>nd</sup>	PLMN 4
EF <sub>OPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 5
	2 <sup>nd</sup>	PLMN 6
EF <sub>FPLMN</sub>	PLMN 3	

##### Test procedure

Method B is applied.

- a) The SS activates cells 1-6 and monitors the cells for random access requests from the UE.
- b) The UE is switched on.
- c) The SS waits for random access requests from the UE.
- d) Cell 1 is switched off.
- e) PLMN 4 shall be selected when the PLMN list is presented.
- f) The SS waits for random access requests from the UE.
- g) Cell 4 is switched off.
- h) PLMN 3 shall be selected when the PLMN list is presented. The SS shall reject the Registration Request from the UE.
- i) PLMN 5 shall be selected (the list is already available).
- j) The SS waits for random access requests from the UE.
- k) Cell 5 is switched off.
- l) PLMN 2 shall be selected when the PLMN list is presented.
- m) The SS waits for random access requests from the UE.
- n) Cell 2 is switched off.

- o) PLMN 6 shall be selected when the PLMN list is presented.
- p) The SS waits for random access requests from the UE.
- q) Cell 6 is switched off.

#### 6.1.1.1.5 Test Requirements

- 1) In step c), the response from the UE shall be on Cell 1. The displayed PLMN shall be PLMN 1.
- 2) In step e), the list shall be presented. The priority shall be as follows: PLMN 2, PLMN 3, PLMN 4, PLMN 5, PLMN 6.
- 3) In step f), the response from the UE shall be on Cell 4. The displayed PLMN shall be PLMN 4.
- 4) In step h), the list shall be presented. The priority shall be as follows: PLMN 2, PLMN 3, PLMN 5, PLMN 6. After PLMN 3 has been selected, the list shall appear again as the UE cannot perform registration.
- 6) In step j), the response from the UE shall be on Cell 5. The displayed PLMN shall be PLMN 5.
- 7) In step l), the list shall be presented. The priority shall be as follows: PLMN 2, PLMN 3, PLMN 6.
- 8) In step m), the response from the UE shall be on Cell 2. The displayed PLMN shall be PLMN 2.
- 9) In step o), the list shall be presented. The priority shall be as follows: PLMN 3, PLMN 6.
- 10) In step p), the response from the UE shall be on Cell 6. The displayed PLMN shall be PLMN 6.
- 11) After step q), the UE shall inform that only limited service is possible.

#### 6.1.1.2 PLMN selection of "Other PLMN / access technology combinations"; Manual mode

##### 6.1.1.2.1 Definition

Test to verify that the UE can present the available PLMNs in priority order to the user when asked to do so in manual mode and that the displayed PLMNs can be selected / reselected by the user. Forbidden PLMNs shall also be displayed in the list. In this test are only considered "Other PLMN/access technology combinations" in the priority list.

Only UTRAN cells and a UE equipped with a USIM with Radio Access Technology fields set to UTRAN are considered.

##### 6.1.1.2.2 Conformance requirement

1. At switch on, or following recovery from lack of coverage, the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see TS 23.122, clause 4.5.2) attempts to perform a Location Registration.

If successful registration is achieved, the MS indicates the selected PLMN.

If there is no registered PLMN, or if registration is not possible due to the PLMN being unavailable or registration failure, the MS follows either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

2. Manual Network Selection Mode Procedure:

The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes PLMNs in the "forbidden PLMNs" list and PLMNs which only offer services not supported by the MS.

If displayed, PLMNs meeting the criteria above are presented in the following order:

- 2.1 HPLMN;

- 2.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 2.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 2.4 Other PLMN/access technology combinations with received high quality signal in random order;
- 2.5 Other PLMN/access technology combinations in order of decreasing signal quality.

In 2.5, the MS shall order the PLMN/access technology combinations in order of decreasing signal quality within each access technology. The order between PLMN/access technology combinations with different access technologies is an MS implementation issue.

The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the "forbidden LAs for roaming", "forbidden LAs for regional provision of service", "forbidden PLMNs for GPRS service" and "forbidden PLMNs" lists.

If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell and enter the limited service state.

3. If a "PLMN not allowed" message is received by an MS in response to an LR request from a VPLMN, that VPLMN is added to a list of "forbidden PLMNs" in the SIM and thereafter that VPLMN will not be accessed by the MS when in automatic mode. A PLMN is removed from the "forbidden PLMNs" list if, after a subsequent manual selection of that PLMN, there is a successful LR. This list is retained when the MS is switched off or the SIM is removed. The HPLMN shall not be stored on the list of "forbidden PLMNs".
4. The UE shall scan all RF channels in the UTRA band according to its capabilities to find available PLMNs. On each carrier, the UE shall search for the strongest cell according to the cell search procedures (for FDD, see TS 25.214, and TDD, see TS 25.224) and read its system information, in order to find out which PLMN the cell belongs to. If the UE can read the PLMN identity, the found PLMN shall be reported to the NAS as a high quality PLMN (but without the RSCP value), provided that the following high quality criterion is fulfilled:
  - For an FDD cell, the measured primary CPICH RSCP value shall be greater than or equal to -95 dBm.
  - For a TDD cell, the measured P-CCPCH RSCP shall be greater than or equal to -84 dBm.

Found PLMNs that do not satisfy the high quality criterion, but for which the UE has been able to read the PLMN identities are reported to the NAS together with the CPICH RSCP value for UTRA FDD cells and P-CCPCH RSCP for UTRA TDD cells.

## References

1. TS 23.122, clause 4.4.3.1.
2. TS 23.122, clause 4.4.3.1.2.
3. TS 23.122, clause 3.1.
4. TS 25.304, clause 5.1.2.2.

NOTE: TS 31.102 defines the USIM fields.

### 6.1.1.2.3 Test purpose

1. To verify that in Manual Network Selection Mode Procedure, the UE presents "Other PLMN/access technology combinations" in a prioritized order according to conformance requirement 2.4 and 2.5.
2. To verify that forbidden PLMNs are also displayed in the list.

## 6.1.1.2.4 Method of test

## Initial conditions

The UE is in manual PLMN selection mode.

All Radio Access Technology USIM fields and cells are UTRAN.

Cell	CPICH_Ec [dBm/3.84 MHz] (FDD)	P-CCPCH_ RSCP [dBm] (TDD)	High Quality signal	Test Channel	PLMN
Cell 1	-85	-74	Yes	1	PLMN 6
Cell 2	-80	-69	Yes	2	PLMN 7
Cell 3	-80	-69	Yes	3	PLMN 8
Cell 4	-94	-83	No	4	PLMN 9
Cell 5	-99	-88	No	5	PLMN 10
Cell 6	-104	-93	No	6	PLMN 11

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN
EF <sub>LOCI</sub>		PLMN 1
EF <sub>HPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 2
EF <sub>PLMNwAcT</sub>	1 <sup>st</sup>	PLMN 3
	2 <sup>nd</sup>	PLMN 4
EF <sub>OPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 5
	2 <sup>nd</sup>	PLMN 6
EF <sub>FPLMN</sub>	PLMN 10	

## Test procedure

Method B is applied.

- a) The SS activates cells 1-6 and monitors the cells for random access requests from the UE.
- b) The UE is switched on.
- c) PLMN 9 shall be selected when the PLMN list is presented.
- d) The SS waits for random access requests from the UE.
- e) Cell 4 is switched off.
- f) PLMN 7 shall be selected when the PLMN list is presented.
- g) The SS waits for random access requests from the UE.
- h) Cell 2 is switched off.
- i) PLMN 6 shall be selected when the PLMN list is presented.
- j) The SS waits for random access requests from the UE.
- k) Cell 1 is switched off.
- l) PLMN 11 shall be selected when the PLMN list is presented.
- m) The SS waits for random access requests from the UE.
- n) Cell 6 is switched off.
- o) PLMN 10 shall be selected when the PLMN list is presented. The SS shall reject the Registration Request from the UE.

- p) Cell 5 is switched off.
- q) PLMN 8 shall be selected (the list is already available)
- r) The SS waits for random access requests from the UE.
- s) Cell 3 is switched off.

#### 6.1.1.2.5 Test Requirements

- 1) In step c), the list shall be presented. The priority shall be as follows: PLMN 6 followed by PLMN 7, PLMN 8 in random order, followed by PLMN 9, PLMN 10, PLMN 11.
- 2) In step d), the response from the UE shall be on Cell 4. The displayed PLMN shall be PLMN 9.
- 3) In step f), the list shall be presented. The priority shall be as follows: PLMN 6 followed by PLMN 7, PLMN 8 in random order, followed by PLMN 10, PLMN 11.
- 4) In step g), the response from the UE shall be on Cell 2. The displayed PLMN shall be PLMN 7.
- 5) In step i), the list shall be presented. The priority shall be as follows: PLMN 6, PLMN 8, PLMN 10, PLMN 11.
- 6) In step j), the response from the UE shall be on Cell 1. The displayed PLMN shall be PLMN 6.
- 7) In step l), the list shall be presented. The priority shall be as follows: PLMN 8, PLMN 10, PLMN 11.
- 8) In step m), the response from the UE shall be on Cell 6. The displayed PLMN shall be PLMN 11.
- 9) In step o), the list shall be presented. The priority shall be as follows: PLMN 8, PLMN 10. After PLMN 10 has been selected, the list shall appear again as the UE cannot perform registration.
- 10) In step q), the list shall be presented and shall only contain PLMN 8.
- 11) In step r), the UE shall respond on Cell 3. The displayed PLMN shall be PLMN 8.
- 12) After step s), the UE shall inform that no network is available.

#### 6.1.1.3 PLMN selection; independence of RF level and preferred PLMN; Manual mode

##### 6.1.1.3.1 Definition

Test to verify that in Manual Network Selection Mode, the UE is able to obtain normal service on a PLMN which is neither the better nor a preferred PLMN and that it tries to obtain service on a VPLMN if and only if the user selects it manually.

##### 6.1.1.3.2 Conformance requirement

1. At switch on, or following recovery from lack of coverage, the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see TS 23.122, clause 4.5.2) attempts to perform a Location Registration.

If successful registration is achieved, the MS indicates the selected PLMN.

If there is no registered PLMN, or if registration is not possible due to the PLMN being unavailable or registration failure, the MS follows either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

2. Manual Network Selection Mode Procedure:

The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes PLMNs in the "forbidden PLMNs" list and PLMNs which only offer services not supported by the MS.

If displayed, PLMNs meeting the criteria above are presented in the following order:

- 2.1 HPLMN;
- 2.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 2.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 2.4 Other PLMN/access technology combinations with received high quality signal in random order;
- 2.5 Other PLMN/access technology combinations in order of decreasing signal quality.

The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the "forbidden LAs for roaming", "forbidden LAs for regional provision of service", "forbidden PLMNs for GPRS service" and "forbidden PLMNs" lists.

If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell and enter the limited service state.

## References

1. TS 23.122, clause 4.4.3.1.
2. TS 23.122, clause 4.4.3.1.2

NOTE: TS 31.102 defines the USIM fields.

### 6.1.1.3.3 Test purpose

1. To verify that the selected PLMN at switch-on is the HPLMN.
2. To verify that in Manual Network Selection Mode Procedure the UE tries to obtain service on a VPLMN if and only if the user selects it manually.
3. To verify that the UE is able to obtain normal service on a PLMN which is neither the better nor a preferred PLMN.

### 6.1.1.3.4 Method of investigation

#### Initial conditions

The UE is in manual PLMN selection mode.

"IMSI attach" flag in the BCCH is set to allowed.

For FDD only:

Step a-d:

Parameter	Unit	Cell 1	Cell 2	Cell 3
Test Channel		1	2	3
CPICH_Ec	dBm/3.84 MHz	-60	-70	OFF
PLMN		1	2	3

Step e-f:

CPICH_Ec	dBm/3.84 MHz	-60 -> OFF	-70	OFF
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Step g-h:

CPICH_Ec	dBm/3.84 MHz	OFF	-70	OFF -> -60
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Step i-l:

CPICH_Ec	dBm/3.84 MHz	OFF	-70 -> OFF	-60
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For TDD only:

Step a-d:

Parameter	Unit	Cell 1	Cell 2	Cell 3
Test Channel		1	2	3
P-CCPCH RSCP	dBm	-69	-72	OFF
Qrxlevmin	dBm	-103	-103	-103
Srxlev*	dB	34	31	-
PLMN		1	2	3

Step e-f:

P-CCPCH RSCP		-69 -> OFF	-72	OFF
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Step g-h:

P-CCPCH RSCP		OFF	-72	OFF -> -69
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Step i-l:

P-CCPCH RSCP		OFF	-72 -> OFF	-69
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The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN
EF <sub>LOCI</sub>		
EF <sub>HPLMNwACT</sub>	1 <sup>st</sup>	PLMN 1
EF <sub>PLMNwACT</sub>	1 <sup>st</sup>	PLMN 3

### Test procedure

Method C is applied.

- a) The SS activates cells 1 and 2.
- b) The UE is switched on.
- c) PLMN 1 is selected manually.
- d) The SS waits for random access requests from the UE. A complete Location Update is done.
- e) Cell 1 is switched off.
- f) The SS waits to see if there is any random access request from the UE.
- g) Cell 3 is switched on.
- h) The SS waits to see if there is any random access request from the UE.
- i) PLMN 2 is selected manually.
- j) The SS waits for random access requests from the UE. A complete Location Update is done.
- k) Cell 2 is switched off.
- l) The SS waits to see if there is any random access request from the UE.

#### 6.1.1.3.5 Test Requirements

- 1) In step d), there shall be a response on Cell 1. The selected PLMN shall be PLMN 1.

- 2) In step f), there shall be no response from the UE within 2 min.
- 3) In step h), there shall be no response from the UE within 2 min.
- 4) In step j), there shall be a response on Cell 2. The selected PLMN shall be PLMN 2.
- 5) In step l), there shall be no response from the UE within 2 min.

#### 6.1.1.4 PLMN selection of RPLMN, HPLMN, UPLMN and OPLMN; Automatic mode

##### 6.1.1.4.1 Definition

Test to verify that in Automatic Network Selection Mode, the UE selects PLMNs in a prioritized order. Forbidden PLMNs shall not be selected. If available, the RPLMN shall be selected at switch-on, otherwise the list shall include in priority order HPLMN, User-PLMN and Operator-PLMN. The last priority in the list is "Other PLMN/access technology combinations" which is not included in this test.

Only UTRAN cells and a UE equipped with a USIM with Radio Access Technology fields set to UTRAN are considered.

##### 6.1.1.4.2 Conformance requirement

1. At switch on, or following recovery from lack of coverage, the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see TS 23.122, clause 4.5.2) attempts to perform a Location Registration.

If successful registration is achieved, the MS indicates the selected PLMN.

If there is no registered PLMN, or if registration is not possible due to the PLMN being unavailable or registration failure, the MS follows either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

2. Automatic Network Selection Mode Procedure:

The MS selects and attempts registration on other PLMNs, if available and allowable in the following order:

- 2.1 HPLMN (if not previously selected);
- 2.2 Each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 2.3 Each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 2.4 Other PLMN/access technology combinations with received high quality signal in random order;
- 2.5 Other PLMN/access technology combinations in order of decreasing signal quality.

If successful registration is achieved, the MS indicates the selected PLMN.

If registration cannot be achieved because no PLMNs are available and allowable, the MS indicates "no service" to the user, waits until a new PLMN is available and allowable and then repeats the procedure.

If there were one or more PLMNs which were available and allowable, but an LR failure made registration on those PLMNs unsuccessful or an entry in the "forbidden LAs for regional provision of service" list prevented a registration attempt, the MS selects the first such PLMN again and enters a limited service state.

3. If a "PLMN not allowed" message is received by an MS in response to an LR request from a VPLMN, that VPLMN is added to a list of "forbidden PLMNs" in the SIM and thereafter that VPLMN will not be accessed by the MS when in automatic mode. A PLMN is removed from the "forbidden PLMNs" list if, after a subsequent manual selection of that PLMN, there is a successful LR. This list is retained when the MS is switched off or the SIM is removed. The HPLMN shall not be stored on the list of "forbidden PLMNs".

## References

1. TS 23.122, clause 4.4.3.1.
2. TS 23.122, clause 4.4.3.1.1.
3. TS 23.122, clause 3.1.

NOTE: TS 31.102 defines the USIM fields.

## 6.1.1.4.3 Test purpose

1. To verify that if available, the RPLMN is selected at switch-on.
2. To verify that in Automatic Network Selection Mode Procedure, the UE selects the RPLMN, HPLMN, UPLMN and OPLMN in a prioritized order.
3. To verify that forbidden PLMNs are not selected.

## 6.1.1.4.4 Method of test

## Initial conditions

The UE is in automatic PLMN selection mode.

"IMSI attach" flag in the BCCH is set to allowed.

Cell levels are from table 6.3 (FDD).

All Radio Access Technology USIM fields and cells are UTRAN.

Cell	CPICH_ Ec [dBm/3.84 MHz] (FDD)	P-CCPCH_ RSCP [dBm] (TDD)	Test Channel	PLMN
Cell 1	-60	-50	1	PLMN 1
Cell 2	-65	-55	2	PLMN 2
Cell 3	-70	-60	3	PLMN 3
Cell 4	-75	-65	4	PLMN 4
Cell 5	-80	-70	5	PLMN 5
Cell 6	-85	-75	6	PLMN 6

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN
EF <sub>LOCI</sub>		PLMN 1
EF <sub>HPLMNwACT</sub>	1 <sup>st</sup>	PLMN 2
EF <sub>PLMNwACT</sub>	1 <sup>st</sup>	PLMN 3
	2 <sup>nd</sup>	PLMN 4
EF <sub>OPLMNwACT</sub>	1 <sup>st</sup>	PLMN 5
	2 <sup>nd</sup>	PLMN 6
EF <sub>FPLMN</sub>		PLMN 3

## Test procedure

Method C is applied.

- a) The SS activates cells 1-6 and monitors the cells for random access requests from the UE.
- b) The UE is switched on.
- c) The SS waits for random access requests from the UE.
- d) Cell 1 is switched off.

- e) The SS waits for random access requests from the UE.
- f) Cell 2 is switched off.
- g) The SS waits for random access requests from the UE.
- i) Cell 4 is switched off.
- j) The SS waits for random access requests from the UE.
- k) Cell 5 is switched off.
- l) The SS waits for random access requests from the UE.
- m) Cell 6 is switched off.

#### 6.1.1.4.5 Test Requirements

- 1) In step c), the response from the UE shall be on Cell 1. The displayed PLMN shall be PLMN 1.
- 2) In step e), the response from the UE shall be on Cell 2. The displayed PLMN shall be PLMN 2.
- 3) In step g), the response from the UE shall be on Cell 4. The displayed PLMN shall be PLMN 4.
- 4) In step j), the response from the UE shall be on Cell 5. The displayed PLMN shall be PLMN 5.
- 5) In step l), the response from the UE shall be on Cell 6. The displayed PLMN shall be PLMN 6.
- 6) After step m), the UE shall inform that only limited service is possible

#### 6.1.1.5 PLMN selection of "Other PLMN / access technology combinations"; Automatic mode

##### 6.1.1.5.1 Definition

Test to verify that in Automatic Network Selection Mode, the UE selects PLMNs in a prioritized order. Forbidden PLMNs shall not be selected. In this test are only considered "Other PLMN/access technology combinations" in the priority list.

Only UTRAN cells and a UE equipped with a USIM with Radio Access Technology fields set to UTRAN are considered.

##### 6.1.1.5.2 Conformance requirement

1. At switch on, or following recovery from lack of coverage, the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see TS 23.122, clause 4.5.2) attempts to perform a Location Registration.

If successful registration is achieved, the MS indicates the selected PLMN.

If there is no registered PLMN, or if registration is not possible due to the PLMN being unavailable or registration failure, the MS follows either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

2. Automatic Network Selection Mode Procedure:

The MS selects and attempts registration on other PLMNs, if available and allowable in the following order:

2.1 HPLMN (if not previously selected);

2.2 Each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

2.3 Each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

2.4 Other PLMN/access technology combinations with received high quality signal in random order;

2.5 Other PLMN/access technology combinations in order of decreasing signal quality.

In 2.5, the MS shall order the PLMN/access technology combinations in order of decreasing signal quality within each access technology. The order between PLMN/access technology combinations with different access technologies is an MS implementation issue.

If successful registration is achieved, the MS indicates the selected PLMN.

If registration cannot be achieved because no PLMNs are available and allowable, the MS indicates "no service" to the user, waits until a new PLMN is available and allowable and then repeats the procedure.

If there were one or more PLMNs which were available and allowable, but an LR failure made registration on those PLMNs unsuccessful or an entry in the "forbidden LAs for regional provision of service" list prevented a registration attempt, the MS selects the first such PLMN again and enters a limited service state.

3. If a "PLMN not allowed" message is received by an MS in response to an LR request from a VPLMN, that VPLMN is added to a list of "forbidden PLMNs" in the SIM and thereafter that VPLMN will not be accessed by the MS when in automatic mode. A PLMN is removed from the "forbidden PLMNs" list if, after a subsequent manual selection of that PLMN, there is a successful LR. This list is retained when the MS is switched off or the SIM is removed. The HPLMN shall not be stored on the list of "forbidden PLMNs".
4. The UE shall scan all RF channels in the UTRA band according to its capabilities to find available PLMNs. On each carrier, the UE shall search for the strongest cell according to the cell search procedures (for FDD, see TS 25.214, and TDD, see TS 25.224) and read its system information, in order to find out which PLMN the cell belongs to. If the UE can read the PLMN identity, the found PLMN shall be reported to the NAS as a high quality PLMN (but without the RSCP value), provided that the following high quality criterion is fulfilled:
  - For an FDD cell, the measured primary CPICH RSCP value shall be greater than or equal to -95 dBm.
  - For a TDD cell, the measured P-CCPCH RSCP shall be greater than or equal to -84 dBm.

Found PLMNs that do not satisfy the high quality criterion, but for which the UE has been able to read the PLMN identities are reported to the NAS together with the CPICH RSCP value for UTRA FDD cells and P-CCPCH RSCP for UTRA TDD cells.

## References

1. TS 23.122, clause 4.4.3.1.
2. TS 23.122, clause 4.4.3.1.1.
3. TS 23.122, clause 3.1.
4. TS 25.304, clause 5.1.2.2.

NOTE: TS 31.102 defines the USIM fields.

### 6.1.1.5.3 Test purpose

1. To verify that in Automatic Network Selection Mode Procedure, the UE selects "Other PLMN/access technology combinations" in a prioritized order according to conformance requirement 2.4 and 2.5.
2. To verify that forbidden PLMNs are not selected.

### 6.1.1.5.4 Method of test

#### Initial conditions

The UE is in automatic PLMN selection mode.

All Radio Access Technology USIM fields and cells are UTRAN.

Cell	CPICH_Ec [dBm/3.84 MHz] (FDD)	P-CCPCH_RSCP [dBm] (TDD)	High Quality signal	Test Channel	PLMN
Cell 1	-85	-74	Yes	1	PLMN 6
Cell 2	-80	-69	Yes	2	PLMN 7
Cell 3	-80	-69	Yes	3	PLMN 8
Cell 4	-94	-83	No	4	PLMN 9
Cell 5	-99	-88	No	5	PLMN 10
Cell 6	-104	-93	No	6	PLMN 11

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN
EF <sub>LOCI</sub>		PLMN 1
EF <sub>HPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 2
EF <sub>PLMNwAcT</sub>	1 <sup>st</sup>	PLMN 3
	2 <sup>nd</sup>	PLMN 4
EF <sub>OPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 5
	2 <sup>nd</sup>	PLMN 6
EF <sub>FPLMN</sub>		PLMN 10

#### Test procedure

Method B is applied.

- a) The SS activates cells 1-6 and monitors the cells for random access requests from the UE.
- b) The UE is switched on.
- c) The SS waits for random access requests from the UE.
- d) Cell 1 is switched off.
- e) The SS waits for random access requests from the UE.
- f) The cell associated to the currently shown PLMN shall be switched off.
- g) The SS waits for random access requests from the UE.
- h) The cell associated to the currently shown PLMN shall be switched off.
- i) The SS waits for random access requests from the UE.
- j) Cell 4 is switched off.
- k) The SS waits for random access requests from the UE.
- l) Cell 6 is switched off.

#### 6.1.1.5.5 Test Requirements

- 1) In step c), the response from the UE shall be on Cell 1. The displayed PLMN shall be PLMN 6.
- 2) In step e), the response from the UE shall be on either Cell 2 or 3. The displayed PLMN shall be the one associated with the cell on which the response was received.
- 3) In step g), the response from the UE shall be on either Cell 2 or 3 (excluding the cell in step 2). The displayed PLMN shall be the one associated with the cell on which the response was received.
- 4) In step i), the response from the UE shall be on Cell 4. The displayed PLMN shall be PLMN 9.
- 5) In step k), the response from the UE shall be on Cell 6. The displayed PLMN shall be PLMN 11.
- 6) After step l), the UE shall inform that only limited service is possible.

### 6.1.1.6 UE will transmit only if PLMN available

#### 6.1.1.6.1 Definition

Test to verify that the UE will not generate any RF output if no PLMN is available.

#### 6.1.1.6.2 Conformance requirement

[FFS: Currently no requirements exist in core specs.]

#### 6.1.1.6.3 Test purpose

1. To verify that the UE does not give any "Service indication" when no PLMN is available.
2. To verify that the UE will not generate any RF output when no PLMN is available.

#### 6.1.1.6.4 Method of test

Initial conditions

For FDD only:

Parameter	Unit	Cell 1	Cell 2	Cell 3
CPICH_Ec	dBm/3.84 MHz	-60	-65	-70

For TDD only:

Parameter	Unit	Cell 1	Cell 2	Cell 3
P-CCPCH RSCP	dBm	-69	-71	-73
Qrxlevmin	dBm	-103	-103	-103
Srxlev*	dB	34	32	30

Test procedure

Method C is applied.

- a) The SS activates the cells 1-3 and monitors them for random access requests from the UE.
- b) The UE is switched on.
- c) The SS waits for random access request from the UE.
- d) Cells 1-3 are switched off.
- e) The SS shall wait 20 s to allow the UE to detect the loss of cells.
- f) By MMI, an attempt to originate a call is made.
- g) By MMI, an attempt to originate an emergency call is made (only if UE supports speech).

#### 6.1.1.6.5 Test Requirements

- 1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.
- 2) In step f) and g), the UE shall not produce any RF output, neither give any "service indication" within 2 min.

### 6.1.1.7 Cell reselection of ePLMN in manual mode

#### 6.1.1.7.1 Definition

Test to verify that the UE shall be able to reselect another PLMN declared as equivalent PLMN as the registered PLMN in the manual mode.

#### 6.1.1.7.2 Conformance requirement

##### B) Manual network selection mode

Once the UE has registered on a PLMN selected by the user, the UE shall not automatically register on a different PLMN unless:

- i) The new PLMN is declared as an equivalent PLMN by the registered PLMN;

or,

- ii) The user selects automatic mode.

#### References:

TS 22.011 clause 3.2.2.2B

#### 6.1.1.7.3 Test purpose

To verify that in Manual Network Selection Mode Procedure, the UE can perform reselection to an equivalent PLMN.

#### 6.1.1.7.4 Method of test

##### Initial conditions

The UE is in manual PLMN selection mode.

Cell\_selection\_and\_reselection\_quality\_measure is CPICH\_RSCP (FDD).

All Radio Access Technology USIM fields and cells are UTRAN.

Cell	CPICH_RSCP [dBm] (FDD)	P-CCPCH_RSCP [dBm] (TDD)	Test Channel	PLMN
Cell 1	-78	[TBD]	1	PLMN 1
Cell 2	-62	[TBD]	2	PLMN 2
Cell 3	-68	[TBD]	3	PLMN 3

PLMN1 is the HPLMN.

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN
EF <sub>Loc1</sub>		PLMN 1

#### Test procedure

- a) The SS activates cells 1.
- b) The UE is switched on.
- c) The SS waits for random access requests from the UE.

- d) A Location Update Accept message shall be sent on reception of a Location Update message from the UE. The Location Update Accept message shall include PLMN3 in the equivalent PLMN list.
- e) Cell 2 and 3 are activated.

#### 6.1.1.7.5 Test Requirements

- 1) In step c), the response from the UE shall be on Cell 1. The displayed PLMN shall be PLMN 1.
- 2) In step e), the UE shall perform a cell reselection and Location Update to PLMN 3, which is equivalent to PLMN1.

### 6.1.2 Cell selection and reselection

#### 6.1.2.1 Cell reselection

##### 6.1.2.1.1 Definition

Test to verify that the UE performs the cell reselection correctly for intra/inter-frequency cells if the serving cell becomes barred or  $S < 0$ .

##### 6.1.2.1.2 Conformance requirement

1. When camped on a cell, the UE shall regularly search for a better cell according to the cell reselection criteria. If a better cell is found, that cell is selected. The change of cell may imply a change of RAT.
2. A "suitable cell" is a cell on which the UE may camp on to obtain normal service. Such a cell shall fulfil all the following requirements.
  - 2.1 The cell is part of the selected PLMN or of a PLMN considered as equivalent by the UE according to the information provided by the NAS.
  - 2.2 The cell is not barred.
  - 2.3 The cell is not part of the list of "forbidden LAs for roaming".
  - 2.4 The cell selection criteria are fulfilled.
3. When camped normally, the UE shall execute the cell reselection evaluation process on the following occasions/triggers:
  - 3.1 UE internal triggers, so as to meet performance as specified in TS 25.133 for FDD mode and in TS 25.123 for TDD mode.
  - 3.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified.
4. Cell Reselection Criteria:
  - 4.1 The UE shall perform ranking of all cells that fulfil the S criterion.
  - 4.2 The cells shall be ranked according to the R criteria. The best ranked cell is the cell with the highest R value. If an FDD cell is ranked as the best cell, the UE shall perform cell re-selection to that FDD cell. If a TDD cell is ranked as the best cell, the UE shall perform cell re-selection to that TDD cell.
  - 4.3 In all cases, the UE shall reselect the new cell, only if the cell reselection criteria are fulfilled during a time interval  $T_{resel}$ .
  - 4.4 The cell-ranking criterion R is derived from Q,  $Q_{hyst}$ ,  $Q_{offset}$ ,  $TEMP\_OFFSET$  and  $PENALTY\_TIME$ . However,  $TEMP\_OFFSET_n$  and  $PENALTY\_TIME_n$  are only applicable if the usage of HCS is indicated in system information.
5. When cell status "barred" is indicated, the UE shall select another cell according to the following rule:

5.1 If the "Intra-frequency cell re-selection indicator" IE in Cell Access Restriction IE is set to value "allowed", the UE may select another cell on the same frequency if selection/re-selection criteria are fulfilled.

5.2 If the "Intra-frequency cell re-selection indicator" IE is set to "not allowed" the UE shall not re-select a cell on the same frequency as the barred cell. For emergency call, the Intra-frequency cell re-selection indicator IE" shall be ignored, i.e. even if it is set to "not allowed" the UE may select another intra-frequency cell.

## References

1. TS 25.304, clause 5.2.1.
2. TS 25.304, clause 4.3.
3. TS 25.304, clause 5.2.5.1.
4. TS 25.304, clause 5.2.6.1.4.
5. TS 25.304, clause 5.3.1.1.

### 6.1.2.1.3 Test purpose

1. To verify that the UE performs cell reselection on the following occasions:
  - 1.1 Serving cell becomes barred;
  - 1.2  $S < 0$  for serving cell.
2. To verify conformance requirement 5.

NOTE: Reselection triggered by the cell becoming a part of a forbidden registration area is tested in clause 9.4.2.3 and clause 9.4.2.4.

### 6.1.2.1.4 Method of test

#### Initial conditions

Treselection, Qhyst, Qoffset, TEMP\_OFFSET and PENALTY\_TIME are not used, so the cell-ranking criterion R equals CPICH\_RSCP for FDD cells, and P-CCPCH RSCP for TDD cells.

Step a-c (FDD):

Parameter	Unit	Cell 1	Cell 2	Cell 3
Test Channel		1	1	2
CPICH_Ec	dBm/3.84 MHz	-60	-70	-80
Qrxlevmin	dBm	-115	-115	-115
Srxlev*	dBm	55	45	35
CellBarred		Not barred	Not barred	Not barred

Step a-c (TDD):

Parameter	Unit	Cell 1	Cell 2	Cell 3
P-CCPCH RSCP	dBm	-69	-71	-73
Qrxlevmin	dBm	-103	-103	-103
Srxlev*	dB	34	32	30

Step d-f:

CellBarred		Not barred -> Barred	Not barred	Not barred
Intra-frequency cell re-selection indicator		Not allowed		
Tbarred		10s		

Step g-h:

Intra-frequency cell re-selection indicator		Not Allowed -> Allowed		
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Step i-k (FDD):

Parameter	Unit	Cell 1	Cell 2	Cell 3
CellBarred		Barred -> Not barred	Not barred	Not barred

Step l-m (FDD):

Qrxlevmin	dBm	-115 -> -50	-115	-115
Srxlev*	dBm	55 -> -10	45	35

Step l-m (TDD):

Qrxlevmin		-103 -> -68	-103	-103
Srxlev*		34 -> -6	32	30

## Test procedure

Method B is applied.

- a) The SS activates Cell 1-3 and monitors them for random access requests from the UE.
- b) The UE is switched on.
- c) The SS waits for random access requests from the UE.
- d) The SS sets Cell 1 to be barred. The SS notifies UE of the BCCH modification.
- e) The SS waits for random access requests from the UE.
- f) The SS sets "Intra-frequency cell re-selection indicator" to "Allowed". The SS notifies UE of the BCCH modification.
- g) The SS waits for random access requests from the UE.
- h) The UE is switched off.
- i) The SS activates Cell 1-3 and monitors them for random access requests from the UE.
- j) The UE is switched on.
- k) The SS waits for random access requests from the UE.
- l) For FDD cell, Qrxlevmin is increased to -50 dBm, so S will become negative. For TDD cell, Qrxlevmin is increased to -68dBm, so S will become negative. The SS notifies UE of the BCCH modification
- m) The SS waits for random access requests from the UE.

#### 6.1.2.1.5 Test requirements

- 1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.
- 2) In step e), the UE shall respond on Cell 3.
- 3) In step g), the UE shall respond on Cell 2.
- 4) In step k), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.
- 5) In step m), the UE shall respond on Cell 2.

### 6.1.2.2 Cell reselection using Qhyst, Qoffset and Treselection

#### 6.1.2.2.1 Definition

Test to verify that the UE performs the cell reselection correctly if system information parameters Qoffset, Qhyst and Treselection are applied for non-hierarchical cell structures. TEMP\_OFFSET and PENALTY\_TIME are only applicable when HCS is applied and are tested in clauses 6.1.2.4 and 6.1.2.5.

#### 6.1.2.2.2 Conformance requirement

1. When camped normally, the UE shall execute the cell reselection evaluation process on the following occasions/triggers:
  - 1.1 UE internal triggers, so as to meet performance as specified in TS 25.133 for FDD mode and in TS 25.123 for TDD mode.
  - 1.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified.
2. Cell Reselection Criteria:
  - 2.1 The UE shall perform ranking of all cells that fulfil the S criterion.
  - 2.2 The cells shall be ranked according to the R criteria. The best ranked cell is the cell with the highest R value. If an FDD cell is ranked as the best cell, the UE shall perform cell re-selection to that FDD cell. If a TDD cell is ranked as the best cell, the UE shall perform cell re-selection to that TDD cell.
  - 2.3 In all cases, the UE shall reselect the new cell, only if the cell reselection criteria are fulfilled during a time interval Treselection.
  - 2.4 The cell-ranking criterion R is derived from Q, Qhyst, Qoffset, TEMP\_OFFSET and PENALTY\_TIME. However, TEMP\_OFFSETn and PENALTY\_TIMEn are only applicable if the usage of HCS is indicated in system information.

#### References

1. TS 25.304, clause 5.2.5.1.
2. TS 25.304, clause 5.2.6.1.4.

#### 6.1.2.2.3 Test purpose

1. To verify that the UE calculates R from Qhyst and Qoffset and that the modification of these parameters on the BCCH triggers the cell reselection evaluation process. TEMP\_OFFSET and PENALTY\_TIME are not applied.
2. To verify that the UE reselects the new cell, if the cell reselection criteria are fulfilled during a time interval Treselection.

## 6.1.2.2.4 Method of test

Initial conditions

For FDD only:

Step a-c:

Parameter	Unit	Cell 1	Cell 2
Test channel		1	1
CPICH_Ec	dBm/3.84 MHz	-60	-70
Qhyst1 <sub>s</sub>	dB	20	0
R <sub>s</sub> *	dB	-40	-70
R <sub>n</sub> *	dB	-70	-60

Step d-e:

CPICH_Ec	dBm/3.84 MHz	-60 -> -70	-70 -> -60
R <sub>s</sub> *	dB	-40 -> -50	-70 -> -60
R <sub>n</sub> *	dB	-70 -> -60	-60 -> -70

Step f-g:

Qhyst1 <sub>s</sub>	dB	20 -> 0	0
R <sub>s</sub> *	dB	-50 -> -70	-60
R <sub>n</sub> *	dB	-60	-70

Step h-j:

CPICH_Ec	dBm/3.84 MHz	-70 -> -60	-60 -> -70
Qoffset1 <sub>s,n</sub>	dBm	0 -> 20	0
R <sub>s</sub> *	dBm	-70 -> -60	-60 -> -70
R <sub>n</sub> *	dBm	-60 -> -90	-70 -> -60

Step k-l:

CPICH_Ec	dBm/3.84 MHz	-60 -> -70	-70 -> -60
R <sub>s</sub> *	dB	-60 -> -70	-70 -> -60
R <sub>n</sub> *	dB	-90 -> -80	-60 -> -70

Step m-n:

Qoffset1 <sub>s,n</sub>	dB	20 -> 0	0
R <sub>s</sub> *	dB	-70	-60
R <sub>n</sub> *	dB	-80 -> -60	-70

Step o-p:

Treselection <sub>s</sub>	s	30	0
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For TDD only:

Step a-c:

Parameter	Unit	Cell 1	Cell 2
P-CCPCH RSCP	dBm	-68	-71
$Q_{hyst1_s}$	dB	10	0
$R_s^*$	dB	-58	-71
$R_n^*$	dB	-71	-68

Step d-e:

P-CCPCH RSCP	dBm	-68 -> -71	-71 -> -68
$R_s^*$	dB	-58 -> -61	-68
$R_n^*$	dB	-71 -> -68	-71

Step f-g:

$Q_{hyst1_s}$	dB	10 -> 0	0
$R_s^*$	dB	-61 -> -71	-68
$R_n^*$	dB	-68	-71

Step h-j:

P-CCPCH RSCP	dBm	-71 -> -68	-68 -> -71
$Q_{offset1_{s,n}}$	dB	0 -> 10	0
$R_s^*$	dB	-71 -> -68	-71
$R_n^*$	dB	-68 -> -81	-68

Step k-l:

P-CCPCH RSCP	dBm	-68 -> -71	-71 -> -68
$R_s^*$	dB	-68 -> -71	-71 -> -68
$R_n^*$	dB	-81 -> -78	-68 -> -71

Step m-n:

$Q_{offset1_{s,n}}$	dB	10 -> 0	0
$R_s^*$	dB	-71	-68
$R_n^*$	dB	-78 -> -68	-71

Step o-p:

$T_{reselection_s}$	s	0 -> 30	0
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## Test procedure

Method B is applied.

- The SS activates Cell 1 and 2 and monitors them for random access requests from the UE.
- The UE is switched on.
- The SS waits to see if there is any random access requests from the UE.
- The SS changes the level of Cell 1 and 2 and waits for 10 s (TS 25.133, A.4.2.1.2 for FDD mode and TS 25.123, A.4.2.1.2 for TDD mode).
- The SS waits for random access requests from the UE.
- The SS resets  $Q_{hyst}$  for Cell 1 and notifies UE of the BCCH modification.
- The SS waits for random access requests from the UE.
- The UE is switched off. The SS changes the level of Cell 1 and Cell 2. The SS changes  $Q_{offset}$  in Cell 1.
- The UE is switched on.
- The SS waits to see if there is any random access requests from the UE.
- The SS changes the level of Cell 1 and 2 and waits for 10 s (TS 25.133, clause A.4.2.1.2 for FDD mode and TS 25.123, clause A.4.2.1.2 for TDD mode).

- l) The SS waits for random access requests from the UE.
- m) The SS resets Qoffset for Cell 1, and notifies UE of the BCCH modification.
- n) The SS waits for random access requests from the UE.
- o) Step h-n) is repeated except that Treselection is 30 s

#### 6.1.2.2.5 Test Requirements

- 1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.
- 2) In step e), the UE shall keep responding on Cell 1.
- 3) In step g), the UE shall respond on Cell 2.
- 4) In step j), the UE shall select a cell to camp on and eventually make a reselection to Cell 1.
- 5) In step l), the UE shall keep responding on Cell 1.
- 6) In step n), the UE shall respond on Cell 2.
- 7) In step o), the UE shall respond as in previous steps except that when reselecting to Cell 2, there shall be no response from the UE on Cell 2 within 28 s of notifying UE on the BCCH modification, but the UE shall respond on Cell 2 within 35 s.

NOTE: Minimum time set by Treselection – 2 s tolerance. Maximum time set by Treselection + 1 280 msec. for DRX cycle + 1280 ms for system information block type scheduling + 2 s tolerance.

#### 6.1.2.3 HCS Cell reselection

##### 6.1.2.3.1 Definition

Test to verify that the UE performs the cell reselection correctly for hierarchical cell structures. This shall be done according to the HCS priority, the received signal quality value Q and the quality level threshold criterion H.

##### 6.1.2.3.2 Conformance requirement

1. When camped normally, the UE shall execute the cell reselection evaluation process on the following occasions/triggers:
  - 1.1 UE internal triggers, so as to meet performance as specified in TS 25.133 for FDD mode and in TS 25.123 for TDD mode.
  - 1.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified.
2. Cell Reselection Criteria for hierarchical cells:
  - 2.1 The quality level threshold criterion H for hierarchical cell structures is used to determine whether prioritised ranking according to hierarchical cell re-selection rules shall apply, and is calculated from the Q, Qhcs, TEMP\_OFFSET and PENALTY\_TIME parameters.
  - 2.2 The UE shall perform ranking of all cells that fulfil the S criterion among all cells that have the highest HCS\_PRIO among those cells that fulfil the criterion  $H \geq 0$ .
  - 2.3 The cells shall be ranked according to the R criteria. The best ranked cell is the cell with the highest R value. If an FDD cell is ranked as the best cell, the UE shall perform cell re-selection to that FDD cell. If a TDD cell is ranked as the best cell, the UE shall perform cell re-selection to that TDD cell.
  - 2.4 In all cases, the UE shall reselect the new cell, only if the cell reselection criteria are fulfilled during a time interval Treselection.
  - 2.5 The cell-ranking criterion R is derived from Q, Qhyst, Qoffset, TEMP\_OFFSET, PENALTY\_TIME.

## References

1. TS 25.304, clause 5.2.2.
2. TS 25.304, clause 5.2.6.1.4.

## 6.1.2.3.3 Test purpose

1. Verify that the UE ignores cells with  $H < 0$  for reselection and that  $H$  is calculated from  $Q_{hcs}$ . The modification of this parameter on the BCCH shall trigger the cell reselection evaluation process.
2. Verify that the UE ranks cells based on both HCS priority and  $R$ .  $Q_{hyst}$ ,  $Q_{offset}$ ,  $TEMP\_OFFSET$ ,  $PENALTY\_TIME$  and  $T_{resel}$  are not applied so  $R$  equals  $CPICH\_RSCP$  for FDD cells, and  $P-CCPCH\_RSCP$  for TDD cells.

## 6.1.2.3.4 Method of test

## Initial conditions

For FDD only:

Step a-c:

Parameter	Unit	Cell 1	Cell 2	Cell 3
CPICH_Ec	dBm/3.84 MHz	-60	-65	-70
HCS priority		6	7	7
$Q_{hcs_s}$	dBm	-80	-50	-50
$H_s^*$	dBm	20	-15	-20

Step d-e:

$Q_{hcs_s}$	dBm	-80	-50	-50 -> -80
$H_s^*$	dBm	20	-15	-20 -> 10

Step f-g:

$Q_{hcs_s}$	dBm	-80	-50 -> -80	-80
$H_s^*$	dBm	20	-15 -> 15	10

For TDD only:

Step a-c:

Parameter	Unit	Cell 1	Cell 2	Cell 3
P-CCPCH RSCP	dBm	-69	-71	-73
HCS priority		6	7	7
$Q_{hcs_s}$	dB	-30	-10	-10
$H_s^*$	dB	-39	-61	-63

Step d-e:

$Q_{hcs_s}$	dB	-30	-10	-10 -> -30
$H_s^*$	dB	-39	-61	-63 -> -43

Step f-g:

$Q_{hcs_s}$	dB	-30	-10 -> -30	-30
$H_s^*$	dB	-39	-61 -> -41	-43

## Test procedure

Method B is applied.

- a) The SS activates the cells 1-3 and monitors them for random access requests from the UE.
- b) The UE is switched on.
- c) The SS waits for random access requests from the UE.

- d) The SS changes  $Q_{hcs}$  for Cell 3.
- e) The SS waits for random access requests from the UE.
- f) The SS changes  $Q_{hcs}$  for Cell 2.
- g) The SS waits for random access requests from the UE.

#### 6.1.2.3.5 Test requirements

- 1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.
- 2) In step e), the UE shall respond on Cell 3.
- 3) In step g), the UE shall respond on Cell 2.

### 6.1.2.4 HCS Cell reselection using reselection timing parameters for the H criterion

#### 6.1.2.4.1 Definition

Test to verify that the UE performs the cell reselection correctly for hierarchical cell structures using TEMP\_OFFSET and PENALTY\_TIME applied to the H criterion.

#### 6.1.2.4.2 Conformance requirement

- 1. When camped normally, the UE shall execute the cell reselection evaluation process on the following occasions/triggers:
  - 1.1 UE internal triggers, so as to meet performance as specified in TS 25.133 for FDD mode and in TS 25.123 for TDD mode.
  - 1.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified.
- 2. Cell Reselection Criteria for hierarchical cells:
  - 2.1 The quality level threshold criterion H for hierarchical cell structures is used to determine whether prioritised ranking according to hierarchical cell re-selection rules shall apply, and is calculated from the Q,  $Q_{hcs}$ , TEMP\_OFFSET and PENALTY\_TIME parameters.
  - 2.2 The UE shall perform ranking of all cells that fulfil the S criterion among all cells that have the highest HCS\_Prio among those cells that fulfil the criterion  $H \geq 0$ .
  - 2.3 The cells shall be ranked according to the R criteria. The best ranked cell is the cell with the highest R value. If an FDD cell is ranked as the best cell, the UE shall perform cell re-selection to that FDD cell. If a TDD cell is ranked as the best cell, the UE shall perform cell re-selection to that TDD cell.
  - 2.4 In all cases, the UE shall reselect the new cell, only if the cell reselection criteria are fulfilled during a time interval T<sub>reselction</sub>.
  - 2.5 The cell-ranking criterion R is derived from Q,  $Q_{hyst}$ ,  $Q_{offset}$ , TEMP\_OFFSET and PENALTY\_TIME.
- 3. TEMP\_OFFSET<sub>n</sub> applies an offset to the H criteria for the duration of PENALTY\_TIME<sub>n</sub> after the timer T<sub>n</sub> has started for that cell. T<sub>n</sub> shall be started from zero when  $Q_{meas,n} > Q_{hcs,n}$ . TEMP\_OFFSET is only applied to the H criteria if the cells have different HCS priorities.

#### References

- 1. TS 25.304, clause 5.2.2.
- 2,3. TS 25.304, clause 5.2.6.1.4.

## 6.1.2.4.3 Test purpose

1. Verify that TEMP\_OFFSET is applied to the H criterion for a period of PENALTY\_TIME and that the timer is started when  $Q_{meas,n} > Q_{hcs_n}$  if serving and neighbour cell have different HCS priorities.

## 6.1.2.4.4 Method of test

Initial conditions

For FDD only:

Step a-c:

Parameter	Unit	Cell 1	Cell 2	Cell 3
CPICH_Ec	dBm/3.84 MHz	-60	-70	-70
HCS priority		2	4	7
$Q_{hcs_s}$	dBm	-80		
$Q_{hcs_{n=2}}$	dBm	-50		
$Q_{hcs_{n=3}}$	dBm	-50		
TEMP_OFFSET <sub>1n=2</sub>	dBm	30		
TEMP_OFFSET <sub>1n=3</sub>	dBm	30		
$H_s^*$	dBm	20		
$H_{n=2}^*$	dBm	-20		
$H_{n=3}^*$	dBm	-20		
PENALTY_TIME <sub>n=2</sub>	sec	40		
PENALTY_TIME <sub>n=3</sub>	sec	60		

Step d-e:

$Q_{hcs_s}$	dBm	-80		
$Q_{hcs_{n=2}}$	dBm	-50 -> -80		
$Q_{hcs_{n=3}}$	dBm	-50 -> -80		
$H_s^*$	dBm	20		
$H_{n=2}^*$	dBm	-20 -> 10 (after 40 sec)		
$H_{n=3}^*$	dBm	-20 -> 10 (after 60 sec)		

For TDD only:

Step a-c:

Parameter	Unit	Cell 1	Cell 2	Cell 3
P-CCPCH RSCP	dBm	-69	-73	-73
HCS priority		2	4	7
Qhcs <sub>s</sub>	dB	-20		
Qhcs <sub>n=2</sub>	dB	-10		
Qhcs <sub>n=3</sub>	dB	-10		
TEMP_OFFSET <sub>2n=2</sub>	dB	10		
TEMP_OFFSET <sub>2n=3</sub>	dB	10		
H <sub>s</sub> *	dB	-49		
H <sub>n=2</sub> *	dB	-63		
H <sub>n=3</sub> *	dB	-63		
PENALTY_TIME <sub>n=2</sub>	sec	40		
PENALTY_TIME <sub>n=3</sub>	sec	60		

Step d-e:

Qhcs <sub>s</sub>	dB	-20		
Qhcs <sub>n=2</sub>	dB	-10 -> -20		
Qhcs <sub>n=3</sub>	dB	-10 -> -20		
H <sub>s</sub> *	dB	-49		
H <sub>n=2</sub> *	dB	-63 -> -53 (after 40 sec)		
H <sub>n=3</sub> *	dB	-63 -> -53 (after 60 sec)		

## Test procedure

Method B is applied.

- The SS activates the cells 1-3 and monitors them for random access requests from the UE.
- The UE is switched on.
- The SS waits for random access requests from the UE.
- The SS changes Qhcs for Cell 2 and 3.
- The SS waits for random access requests from the UE.

### 6.1.2.4.5 Test requirements

- In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.
- In step e), there shall be no response from the UE on Cell 2 within 38 s of changing the parameters but the UE shall respond on Cell 2 within 44 s. There shall be no response from the UE on Cell 3 within 58 s of changing the parameters but the UE shall respond on Cell 3 within 64 s.

NOTE: Minimum time set by PENALTY\_TIME (cell 2) - 2 s tolerance. Maximum time set by PENALTY\_TIME (cell 2) + 1 280 msec. for DRX cycle + 2 s tolerance. Same calculation for Cell 3.

## 6.1.2.5 HCS Cell reselection using reselection timing parameters for the R criterion

### 6.1.2.5.1 Definition

Test to verify that the UE performs the cell reselection correctly for hierarchical cell structures using TEMP\_OFFSET and PENALTY\_TIME applied to the R criterion.

#### 6.1.2.5.2 Conformance requirement

1. When camped normally, the UE shall execute the cell reselection evaluation process on the following occasions/triggers:
  - 1.1 UE internal triggers, so as to meet performance as specified in TS 25.133 for FDD mode and in TS 25.123 for TDD mode.
  - 1.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified.
2. Cell Reselection Criteria for hierarchical cells:
  - 2.1 The quality level threshold criterion H for hierarchical cell structures is used to determine whether prioritised ranking according to hierarchical cell re-selection rules shall apply, and is calculated from the Q, Q<sub>hcs</sub>, TEMP\_OFFSET and PENALTY\_TIME parameters.
  - 2.2 The UE shall perform ranking of all cells that fulfil the S criterion among all cells, not considering HCS priority levels, if no cell fulfil the criterion  $H \geq 0$ .
  - 2.3 The cells shall be ranked according to the R criteria. The best ranked cell is the cell with the highest R value. If a FDD cell is ranked as the best cell, the UE shall perform cell re-selection to that FDD cell. If a TDD cell is ranked as the best cell, the UE shall perform cell re-selection to that TDD cell.
  - 2.4 In all cases, the UE shall reselect the new cell, only if the cell reselection criteria are fulfilled during a time interval T<sub>reselction</sub>.
  - 2.5 The cell-ranking criterion R is derived from Q, Q<sub>hyst</sub>, Q<sub>offset</sub>, TEMP\_OFFSET, PENALTY\_TIME.
3. TEMP\_OFFSET<sub>n</sub> applies an offset to the R criteria for the duration of PENALTY\_TIME<sub>n</sub> after the timer T<sub>n</sub> has started for that cell. T<sub>n</sub> shall be started from zero when  $Q_{meas,n} > Q_{meas,s} + Q_{offset2_{s,n}}$ . TEMP\_OFFSET is only applied to the R criteria if the cells have identical priorities.

#### References

1. TS 25.304, clause 5.2.2.
- 2,3. TS 25.304, clause 5.2.6.1.4.

#### 6.1.2.5.3 Test purpose

1. Verify that TEMP\_OFFSET is applied to the R criterion for a period of PENALTY\_TIME and that the timer is started when  $Q_{meas,n} > Q_{meas,s} + Q_{offset2_{s,n}}$  if serving and neighbour cell have identical HCS priorities.

## 6.1.2.5.4 Method of test

Initial conditions

For FDD only:

Step a-c:

Parameter	Unit	Cell 1	Cell 2	Cell 3
CPICH_Ec	dBm/3.84 MHz	-60	-70	-70
HCS priority		1	1	1
TEMP_OFFSET <sub>2n=2</sub>	dBm	20		
TEMP_OFFSET <sub>2n=3</sub>	dBm	20		
PENALTY_TIME <sub>n=2</sub>	sec	40		
PENALTY_TIME <sub>n=3</sub>	sec	60		
H <sub>s</sub> *	dBm	-60		
H <sub>n=2</sub> *	dBm	-70		
H <sub>n=3</sub> *	dBm	-70		
R <sub>s</sub> *	dBm	-60		
R <sub>n=2</sub> *	dBm	-70		
R <sub>n=3</sub> *	dBm	-70		

Step d-e:

CPICH_Ec	dBm/3.84 MHz	-60 -> -70	-70 -> -65	-70 -> -60
R <sub>s</sub> *	dBm	-70		
R <sub>n=2</sub> *	dBm	-85 -> -65 (after 40 sec)		
R <sub>n=3</sub> *	dBm	-80 -> -60 (after 60 sec)		

For TDD only:

Step a-c:

Parameter	Unit	Cell 1	Cell 2	Cell 3
P-CCPCH RSCP	dBm	-69	-73	-73
HCS priority		1	1	1
H <sub>s</sub> *	dB	-69		
H <sub>n=2</sub> *	dB	-73		
H <sub>n=3</sub> *	dB	-73		
R <sub>s</sub> *	dB	-69		
R <sub>n=2</sub> *	dB	-73		
R <sub>n=3</sub> *	dB	-73		

Step d-e:

Qoffset <sub>1s,n=2</sub>	dB	0 -> -10		
Qoffset <sub>1s,n=3</sub>	dB	0 -> -10		
TEMP_OFFSET <sub>1n=2</sub>	dB	10		
TEMP_OFFSET <sub>1n=3</sub>	dB	10		
PENALTY_TIME <sub>n=2</sub>	sec	40		
PENALTY_TIME <sub>n=3</sub>	sec	60		
R <sub>s</sub> *	dB	-13		
R <sub>n=2</sub> *	dB	-73 -> -63 (after 40 sec)		
R <sub>n=3</sub> *	dB	-73 -> -63 (after 60 sec)		

## Test procedure

Method B is applied.

- a) The SS activates the cells 1-3 and monitors them for random access requests from the UE.
- b) The UE is switched on.
- c) The SS waits for random access requests from the UE.
- d) The SS changes the level of Cell 1-3.
- e) The SS waits for random access requests from the UE.

### 6.1.2.5.5 Test requirements

- 1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.
- 2) In step e), there shall be no response from the UE on Cell 2 within 38 s of changing the parameters but the UE shall respond on Cell 2 within 50 s. There shall be no response from the UE on Cell 3 within 58 s of changing the parameters but the UE shall respond on Cell 3 within 70 s.

NOTE: Minimum time set by PENALTY\_TIME (cell 2) – 2 s tolerance. Maximum time set by PENALTY\_TIME (cell 2) + 6.4 s ( $T_{\text{evaluateFDD}}$  from TS 25.133, table 4.1 for FDD mode and  $T_{\text{evaluateTDD}}$  from TS 25.123, table 4.1 for TDD mode) + 1 280 msec. for system info scheduling + 2 s tolerance. Same calculation for Cell 3.

### 6.1.2.6 Emergency calls

#### 6.1.2.6.1 Definition

Test to verify that the UE shall be able to initiate emergency calls when no suitable cells of the selected PLMN are available, but at least one acceptable cell is available.

#### 6.1.2.6.2 Conformance requirement

1. Acceptable cell:

An "acceptable cell" is a cell on which the UE may camp to obtain limited service (originate emergency calls). Such a cell shall fulfil the following requirements, which is the minimum set of requirements to initiate an emergency call in a UTRAN network:

- 1.1 The cell is not barred;
- 1.2 The cell selection criteria are fulfilled.
2. A "suitable cell" is a cell on which the UE may camp on to obtain normal service. Such a cell shall fulfil all the following requirements.
  - 2.1 The cell is part of the selected PLMN or, of a PLMN considered as equivalent by the UE according to the information provided by the NAS.
  - 2.2 The cell is not barred.
  - 2.3 The cell is not part of the list of "forbidden LAs for roaming".
  - 2.4 The cell selection criteria are fulfilled.
3. If the UE is unable to find any suitable cell of selected PLMN the UE shall enter the *Any cell selection* state.
4. Any Cell Selection State: In this state, the UE shall attempt to find an acceptable cell of an any PLMN to camp on, trying all RATs that are supported by the UE and searching first for a high quality cell. The UE, which is not camped on any cell, shall stay in this state until an acceptable cell is found.

5. Camped on Any Cell State: In this state the UE obtains limited service. The UE shall regularly attempt to find a suitable cell of the selected PLMN, trying RATs that are supported by the UE. If a suitable cell is found, this causes an exit to the Camped normally State.
6. In the Camped on Any Cell State, the UE shall perform the cell reselection evaluation process on the following occasions/triggers:
  - 6.1 UE internal triggers, so as to meet performance as specified in TS 25.133 for FDD mode and TS 25.123 for TDD mode.
  - 6.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified.

## References

1. TS 25.304, clause 4.3.
2. TS 25.304, clause 4.3.
3. TS 25.304, clause 5.2.2.1.
4. TS 25.304, clause 5.2.8.
5. TS 25.304, clause 5.2.2.5.
6. TS 25.304, clause 5.2.9.1.

### 6.1.2.6.3 Test purpose

1. To verify that the UE shall be able to initiate emergency calls when no suitable cells of the selected PLMN are available, but at least one acceptable cell is available.
2. To verify that the UE selects a cell with  $S > 0$  and  $CellBarred = 0$  (acceptable cell) when no suitable cells of the selected PLMN are available.
3. To verify that the UE ranks the acceptable cells according to the cell-ranking criterion  $R$  which in this test case equals  $Q$  as  $Q_{hyst}$ ,  $Q_{offset}$ ,  $TEMP\_OFFSET$  and  $PENALTY\_TIME$  parameters are not used. Treselection is not used either.

### 6.1.2.6.4 Method of test

#### Initial conditions

In step a-d, Cell 1 and 2 are neither suitable nor acceptable cells. Cell 3 is an acceptable cell but not suitable.

In step e-f, both Cell 1 and 3 are acceptable cells.

#### Step a-d:

For FDD only:

Parameter	Unit	Cell 1	Cell 2	Cell 3
CPICH_Ec	dBm/3.84 MHz	-65	-60	-70
Qrxlevmin	dBm	-80	-50	-80
Srxlev*	dBm	15	-10	10
CellBarred		1	0	0
PLMN		forbidden	forbidden	forbidden

For TDD only:

Parameter	Unit	Cell 1	Cell 2	Cell 3
P-CCPCH RSCP	dBm	-69	-77	-71
CellBarred		1	0	0
PLMN		forbidden	forbidden	forbidden

Step e-f:

CellBarred		1 -> 0	0	0
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NOTE: All the BCCH cells belong to the same PLMN, which is not the UE's home PLMN and is in the USIM's forbidden PLMN's list.

## Test procedure

Method C is applied.

- a) The SS activates the cells and monitors them for random access requests from the UE.
- b) The UE is switched on.
- c) 50 s after switch on, an emergency call is initiated on the UE.
- d) The SS waits for random access request from the UE.
- e) The SS changes the CellBarred of Cell 1 to 0.
- f) After 30 s an emergency call is initiated on the UE.
- g) The SS waits for random access request from the UE.

### 6.1.2.6.5 Test requirements

- 1) In step d), the first access from the UE shall be on Cell 3.
- 2) In step g), the first access from the UE shall be on Cell 1.

## 6.1.2.7 Emergency calls; Intra-frequency cell "Not allowed"

### 6.1.2.7.1 Definition

Test to verify that for emergency call and cell status "barred", the Intra-frequency cell re-selection indicator IE is ignored, i.e. even if it is set to "not allowed" the UE may select another intra-frequency cell.

### 6.1.2.7.2 Conformance requirement

1. When cell status "barred" is indicated:
  - The UE is not permitted to select/re-select this cell, not even for emergency calls.
  - The UE shall select another cell according to the following rule:
    - If the "Intra-frequency cell re-selection indicator" IE is set to "not allowed" the UE shall not re-select a cell on the same frequency as the barred cell. For emergency call, the Intra-frequency cell re-selection indicator IE shall be ignored, i.e. even if it is set to "not allowed" the UE may select another intra-frequency cell.

## References

1. TS 25.304, clause 5.3.1.1.

## 6.1.2.7.3 Test purpose

To verify that for emergency call and cell status "barred", the Intra-frequency cell re-selection indicator IE is ignored, i.e. even if it is set to "not allowed" the UE may select another intra-frequency cell.

## 6.1.2.7.4 Method of test

## Initial conditions

Cell 1 and 2 are on the same carrier frequency.

Step a-c:

For FDD only:

Parameter	Unit	Cell 1	Cell 2
CPICH_Ec	dBm/3.84 MHz	-60	-70
Intra-frequency cell re-selection indicator		Not allowed	Not allowed
CellBarred		0	0

For TDD only:

Parameter	Unit	Cell 1	Cell 2
P-CCPCH RSCP	dBm	-77	-69
CellBarred	dBm	0	0

Step d-i:

CellBarred		0 -> 1	0
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## Test procedure

Method C is applied.

- a) The SS activates the cells and monitors them for any random access requests from the UE.
- b) The UE is switched on.
- c) The SS waits for random access request from the UE.
- d) The SS sets Cell 1 to be barred.
- e) The SS waits to see if there is any random access request from the UE.
- f) By MMI, an attempt to originate a call is made.
- g) The SS waits to see if there is any random access request from the UE.
- h) By MMI, an emergency call is initiated on the UE.
- i) The SS waits for random access request from the UE.

## 6.1.2.7.5 Test requirements

- 1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.
- 2) In step e), there shall be no response from the UE within 2 min.
- 3) In step g), there shall be no response from the UE within 2 min. It shall not be possible to originate the call.

4) In step i), the UE shall respond on Cell 2. It shall be possible to originate the emergency call.

## 6.1.2.8 Cell reselection: Equivalent PLMN

### 6.1.2.8.1 Definition

Test to verify that the UE performs the cell reselection correctly to a cell belonging to a PLMN Equivalent to the registered PLMN, if the serving cell of registered PLMN becomes barred or  $S < 0$ .

### 6.1.2.8.2 Conformance requirement

1. When camped on a cell, the UE shall regularly search for a better cell according to the cell reselection criteria. If a better cell is found, that cell is selected. The change of cell may imply a change of RAT.
2. A "suitable cell" is a cell on which the UE may camp on to obtain normal service. Such a cell shall fulfil all the following requirements.
  - 2.1 The cell is part of the selected PLMN or of a PLMN considered as equivalent by the UE according to the information provided by the NAS
  - 2.2 The cell is not barred
  - 2.3 The cell is not part of the list of "forbidden LAs for roaming"
  - 2.4 The cell selection criteria are fulfilled
3. When camped normally, the UE shall execute the cell reselection evaluation process on the following occasions/triggers:
  - 3.1 UE internal triggers, so as to meet performance as specified in TS 25.133 for FDD mode and in TS 25.123 for TDD mode.
  - 3.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified
4. Cell Reselection Criteria:
  - 4.1 The UE shall perform ranking of all cells that fulfil the S criterion
  - 4.2 The cells shall be ranked according to the R criteria. The best ranked cell is the cell with the highest R value. If an FDD cell is ranked as the best cell, the UE shall perform cell re-selection to that FDD cell. If a TDD cell is ranked as the best cell, the UE shall perform cell re-selection to that TDD cell.
  - 4.3 In all cases, the UE shall reselect the new cell, only if the cell reselection criteria are fulfilled during a time interval T<sub>resel</sub>.
  - 4.4 The cell-ranking criterion R is derived from Q, Q<sub>hyst</sub>, Q<sub>offset</sub>, TEMP\_OFFSET and PENALTY\_TIME. However, TEMP\_OFFSET<sub>n</sub> and PENALTY\_TIME<sub>n</sub> are only applicable if the usage of HCS is indicated in system information.
5. When cell status "barred" is indicated, the UE shall select another cell according to the following rule:
  - 5.1 If the "Intra-frequency cell re-selection indicator" IE in Cell Access Restriction IE is set to value "allowed", the UE may select another cell on the same frequency if selection/re-selection criteria are fulfilled.
  - 5.2 If the "Intra-frequency cell re-selection indicator" IE is set to "not allowed" the UE shall not re-select a cell on the same frequency as the barred cell. For emergency call, the Intra-frequency cell re-selection indicator IE shall be ignored, i.e. even if it is set to "not allowed" the UE may select another intra-frequency cell.

## References

1. TS 25.304, 5.2.1
2. TS 25.304, 4.3
3. TS 25.304, 5.2.5.1

4. TS 25.304, 5.2.6.1.4

5. TS 25.304, 5.3.1.1

#### 6.1.2.8.3 Test purpose

1. To confirm that the UE treats the cell of the equivalent PLMN as a cell of the current PLMN.
2. To verify that the UE performs cell reselection on the following occasions:
  - 2.1 Serving cell becomes barred.
  - 2.2  $S < 0$  for serving cell.
3. To verify conformance requirement 5.

NOTE: Reselection triggered by the cell becoming a part of a forbidden registration area is tested in clause 9.4.2.3 "Location updating / rejected / location area not allowed" and 9.4.2.4 "Location updating / rejected / roaming not allowed in this LA".

#### 6.1.2.8.4 Method of test

##### Initial conditions

Treselection, Qhyst, Qoffset, TEMP\_OFFSET and PENALTY\_TIME are not used, so the cell-ranking criterion R equals CPICH\_RSCP for FDD cells, and P-CCPCH RSCP for TDD cells.

The UE is Idle Updated on PLMN1 in cell 1, and The SS includes PLMN 2 and PLMN 3 under IE 'Equivalent PLMN' during Idle Update Procedure.

Cell 1 indicates in System Information Block Type 11 that Cell 2 and Cell 3 are neighbouring cells.

Cell 2 indicates in System Information Block Type 11 that Cell 1 and Cell 3 are neighbouring cells.

Cell 3 indicates in System Information Block Type 11 that Cell 1 and Cell 2 are neighbouring cells.

Step a-c (FDD):

Parameter	Unit	Cell 1	Cell 2	Cell 3
Test Channel		1	1	2
PLMN		PLMN 1	PLMN 2	PLMN 3
CPICH_Ec	dBm/ 3.84 MHz	-60	-70	-80
Qrxlevmin	dBm	-115	-115	-115
Srxlev*	dB	55	45	35
CellBarred		Not barred	Not barred	Not barred

Step a-c (TDD):

Parameter	Unit	Cell 1	Cell 2	Cell 3
P-CCPCH RSCP	dBm	-69	-71	-73
Qrxlevmin	dBm	-103	-103	-103
Srxlev*	dB	34	32	30

Step d-f:

CellBarred		Not barred->Barred		
Intra-frequency cell re-selection indicator		Not Allowed		
Tbarred	s	10		

Step g-h:

Intra-frequency cell re-selection indicator		Not Allowed -> Allowed		
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Step i-k:

Parameter	Unit	Cell 1	Cell 2	Cell 3
CellBarred		Barred -> Not barred	Not barred	Not barred

Step l-m (FDD):

Qrxlevmin	dBm	-115 -> -50	-115	-115
Srxlev*	dBm	55 -> -10	45	35

Step l-m (TDD):

Qrxlevmin	dBm	-103 -> -60	-103	-103
Srxlev*	dBm	34 -> -9	32	30

## Test procedure

Method C is applied.

- a) The SS activates Cell 1-3 and monitors them for random access requests from the UE.
- b) The UE is switched on.
- c) The SS waits for random access requests from the UE. A complete Location Update is done. SS specifies PLMN 2 and 3 are Equivalent to PLMN 1 in Location Update Accept Message.
- d) The SS sets Cell 1 to be barred. The SS notifies UE of the BCCH modification.
- e) The SS waits for random access requests from the UE. A complete Location Update is done. SS specifies PLMN 1 and 2 are Equivalent to PLMN 3 in Location Update Accept Message.
- f) The SS sets "Intra-frequency cell re-selection indicator" to "Allowed".
- g) The SS waits for random access requests from the UE. A complete Location Update is done.
- h) The UE is switched off.
- i) The SS activates Cell 1-3 and monitors them for random access requests from the UE.
- j) The UE is switched on.
- k) The SS waits for random access requests from the UE. A complete Location Update is done. SS specifies PLMN 2 and 3 are Equivalent to PLMN 1 in Location Update Accept Message.
- l) For FDD cell, Qrxlevmin is increased to -50 dBm, so S will become negative. For TDD cell, Qrxlevmin is increased to -60dBm, so S will become negative. The SS notifies UE of the BCCH modification

m) The SS waits for random access requests from the UE.

#### 6.1.2.8.5 Test requirements

- 1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.
- 2) In step e), the UE shall respond on Cell 3.
- 3) In step g), the UE shall respond on Cell 2.
- 4) In step k), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.
- 5) In step m), the UE shall respond on Cell 2.

## 6.2 Multi-mode environment (2G/3G case)

### 6.2.1 PLMN and RAT selection and reselection

#### 6.2.1.1 Selection of the correct PLMN and associated RAT

##### 6.2.1.1.1 Definition

Test to verify that the UE selects the correct combination of PLMN and associated access technology according to the fields on the USIM.

##### 6.2.1.1.2 Conformance requirement

1. At switch on, or following recovery from lack of coverage, the MS selects the registered PLMN or equivalent PLMN (if it is available) using all access technologies that the MS is capable of and if necessary (in the case of recovery from lack of coverage, see TS 23.122, clause 4.5.2) attempts to perform a Location Registration.

If successful registration is achieved, the MS indicates the selected PLMN.

If there is no registered PLMN, or if registration is not possible due to the PLMN being unavailable or registration failure, the MS follows either Automatic or Manual Network Selection Mode Procedure depending on its operating mode.

2. The "HPLMN Selector with Access Technology", "User Controlled PLMN Selector with Access Technology" and "Operator Controlled PLMN Selector with Access Technology" data fields in the SIM include associated access technologies for each PLMN entry. The PLMN/access technology combinations are listed in priority order. If an entry includes more than one access technology, then no priority is defined for the preferred access technology and the priority is an implementation issue.
3. To allow provision for multiple HPLMN codes, the HPLMN access technologies are stored on the SIM together with PLMN codes. This version of the specification does not support multiple HPLMN codes and the "HPLMN Selector with Access Technology" data field is only used by the MS to get the HPLMN access technologies. The HPLMN code is the PLMN code included in the IMSI.
4. Automatic Network Selection Mode Procedure:

The MS selects and attempts registration on other PLMNs, if available and allowable in the following order:

- 4.1 HPLMN (if not previously selected);
- 4.2 Each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 4.3 Each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 4.4 Other PLMN/access technology combinations with received high quality signal in random order;

4.5 Other PLMN/access technology combinations in order of decreasing signal quality.

## References

1. TS 23.122, clause 4.4.3.1.
2. TS 23.122, clause 4.4.3
3. TS 23.122, clause 4.4.3
4. TS 23.122, clause 4.4.3.1.1

NOTE: TS 31.102 defines the USIM fields.

### 6.2.1.1.3 Test purpose

1. To verify that the UE selects the correct combination of HPLMN/access technology combination according to the fields on the USIM.

### 6.2.1.1.4 Method of test

#### Initial conditions

The UE is in automatic PLMN selection mode.

Cell levels are from tables 6.3 and 6.4.

Cell	CPICH_Ec / RF signal level [dBm/3.84 MHz]	P-CCPCH_RSCP/ RF signal level [dBm] (TDD)	Test Channel	PLMN	Radio Access Technology
Cell 1	-48	-48	1	PLMN 1	GSM
Cell 2	-72	-61	1	PLMN 1	UTRAN
Cell 3	-75	-64	2	PLMN 2	UTRAN
Cell 4	-50	-50	2	PLMN 2	GSM

The UE is equipped with a USIM containing default values except for those listed below.

#### USIM A

USIM field	Priority	PLMN	Access Technology Identifier
EF <sub>LOCI</sub>			
EF <sub>HPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 1	GSM
	2 <sup>nd</sup>	PLMN 1	UTRAN

#### USIM B

USIM field	Priority	PLMN	Access Technology Identifier
EF <sub>LOCI</sub>			
EF <sub>HPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 2	UTRAN
	2 <sup>nd</sup>	PLMN 2	GSM

## Test procedure

Method B is applied.

- a) The SS activates cells 1-4 and monitors the cells for random access requests from the UE. The UE shall have a USIM with settings according to USIM A.
- b) The UE is switched on.
- c) The SS waits for random access requests from the UE.

- d) The UE is switched off and a USIM with settings according to USIM B is inserted.
- e) The UE is switched on.
- f) The SS waits for random access requests from the UE.

#### 6.2.1.1.5 Test Requirements

- 1) In step c), the response from the UE shall be on Cell 1. The displayed PLMN shall be PLMN1 (GSM).
- 2) In step f), the response from the UE shall be on Cell 3. The displayed PLMN shall be PLMN2 (UTRAN).

### 6.2.1.2 Selection of RAT for HPLMN; Manual mode

#### 6.2.1.2.1 Definition

Test to verify that the UE selects the HPLMN RAT according to the HPLMN RAT priority list on the USIM. If no RAT on the list is available, the UE shall try to obtain registration on the same PLMN using other UE-supported RATs.

#### 6.2.1.2.2 Conformance requirement

- 1. To allow provision for multiple HPLMN codes, the HPLMN access technologies are stored on the SIM together with PLMN codes. This version of the specification does not support multiple HPLMN codes and the "HPLMN Selector with Access Technology" data field is only used by the MS to get the HPLMN access technologies. The HPLMN code is the PLMN code included in the IMSI.
- 2. For HPLMN, the MS shall search for all access technologies it is capable of. The MS shall start its search using the access technologies stored in the "HPLMN Selector with Access Technology" data field on the SIM in priority order (i.e. the PLMN/access technology combinations are listed in priority order, if an entry includes more than one access technology then no priority is defined for the preferred access technology and the priority is an implementation issue).
- 3. Manual Network Selection Mode Procedure:

The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes PLMNs in the "forbidden PLMNs" list and PLMNs which only offer services not supported by the MS.

If displayed, PLMNs meeting the criteria above are presented in the following order:

- 3.1 HPLMN;
- 3.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 3.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 3.4 Other PLMN/access technology combinations with received high quality signal in random order;
- 3.5 Other PLMN/access technology combinations in order of decreasing signal quality.

The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the "forbidden LAs for roaming", "forbidden LAs for regional provision of service", "forbidden PLMNs for GPRS service" and "forbidden PLMNs" lists.

If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell and enter the limited service state.

NOTE: It is an MS implementation option whether to indicate access technologies to the user. If the MS does display access technologies, then the access technology used should be the access technology chosen by the user for that PLMN. If the MS does not display access technologies, then the access technology chosen for a particular PLMN should be the highest priority available access technology for that PLMN, if the associated access technologies have a priority order.

## References

1. TS 23.122, clause 4.4.3.
2. TS 23.122, clause 4.4.3.1.1 (f).
3. TS 23.122, clause 4.4.3.1.2.

NOTE: TS 31.102 defines the USIM fields.

### 6.2.1.2.3 Test purpose

1. To verify that:

1.1 the UE searches for a HPLMN RAT according to the HPLMN Selector with Access Technology data field on the USIM in priority order.

1.2 If no RAT on the priority list is available, the UE tries to obtain registration on the same PLMN using other UE-supported RATs.

### 6.2.1.2.4 Method of test

#### Initial conditions

The UE is in manual PLMN selection mode.

Cell levels are from tables 6.3 and 6.4.

Cell	CPICH_Ec / RF signal level [dBm/3.84 MHz] (FDD)	P-CCPCH_RSCP/ RF signal level [dBm] (TDD)	Test Channel	PLMN	Radio Access Technology
Cell 1	-72	-61	1	PLMN 2	UTRAN
Cell 2	-48	-48	1	PLMN 2	GSM
Cell 3	-75	-64	2	PLMN 3	UTRAN
Cell 4	-50	-50	2	PLMN 3	GSM

The UE is equipped with a USIM containing default values except for those listed below.

#### USIM A

USIM field	Priority	PLMN	Access Technology Identifier
EF <sub>LOCI</sub>		PLMN 1	
EF <sub>HPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 2	UTRAN
	2 <sup>nd</sup>		GSM

#### USIM B

USIM field	Priority	PLMN	Access Technology Identifier
EF <sub>LOCI</sub>		PLMN 1	
EF <sub>HPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 2	UTRAN
	2 <sup>nd</sup>		

## Test procedure

Method B is applied.

- a) The SS activates cells 1-4 and monitors the cells for random access requests from the UE. The UE shall have a USIM with settings according to USIM A.
- b) The UE is switched on.
- c) PLMN2 (UTRAN) shall be selected when the PLMN list is presented.
- d) The SS waits for random access requests from the UE.
- e) Cell 1 is switched off.
- f) PLMN2 (GSM) shall be selected when the PLMN list is presented.
- g) The SS waits for random access requests from the UE.
- h) The UE is switched off and a USIM with settings according to USIM B is inserted. All cells except Cell 1 are active.
- i) The UE is switched on.
- j) PLMN2 (GSM) shall be selected when the PLMN list is presented.
- k) The SS waits for random access requests from the UE.

### 6.2.1.2.5 Test Requirements

- 1) In step c), the list shall be presented. It shall contain as highest priority PLMN2 (UTRAN as number 1 on the list and GSM as number 2).
- 2) In step d), the response from the UE shall be on Cell 1 (1<sup>st</sup> priority RAT for  $EF_{HPLMNwAcT}$ ). The displayed PLMN shall be PLMN2 (UTRAN).
- 3) In step f), the list shall be presented. It shall contain as highest priority PLMN2 (GSM).
- 4) In step g), the response from the UE shall be on Cell 2 (2<sup>nd</sup> priority RAT for  $EF_{HPLMNwAcT}$ ). The displayed PLMN shall be PLMN2 (GSM).
- 5) In step j), the list shall be presented. It shall contain as highest priority PLMN2 (GSM).
- 6) In step k), the response from the UE shall be on Cell 2. The displayed PLMN shall be PLMN2 (GSM). (PLMN2 is not available on UTRAN so registration on the same PLMN is attempted using other UE-supported RATs).

### 6.2.1.3 Selection of RAT for UPLMN; Manual mode

#### 6.2.1.3.1 Definition

Test to verify that the UE selects the UPLMN RAT according to the UPLMN RAT priority list on the USIM. If no RAT on the list is available, the UE shall not try to obtain registration on the same PLMN(s) with other RAT(s) but instead search for PLMNs in the OPLMN list.

#### 6.2.1.3.2 Conformance requirement

1. Manual Network Selection Mode Procedure:

The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes PLMNs in the "forbidden PLMNs" list and PLMNs which only offer services not supported by the MS.

If displayed, PLMNs meeting the criteria above are presented in the following order:

- 1.1 HPLMN;

- 1.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 1.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 1.4 Other PLMN/access technology combinations with received high quality signal in random order;
- 1.5 Other PLMN/access technology combinations in order of decreasing signal quality.

The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the "forbidden LAs for roaming", "forbidden LAs for regional provision of service", "forbidden PLMNs for GPRS service" and "forbidden PLMNs" lists.

If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell and enter the limited service state.

**NOTE:** It is an MS implementation option whether to indicate access technologies to the user. If the MS does display access technologies, then the access technology used should be the access technology chosen by the user for that PLMN. If the MS does not display access technologies, then the access technology chosen for a particular PLMN should be the highest priority available access technology for that PLMN, if the associated access technologies have a priority order.

## References

1. TS 23.122, clause 4.4.3.1.2.

**NOTE:** TS 31.102 defines the USIM fields.

### 6.2.1.3.3 Test purpose

1. To verify that:
  - 1.1 the UE selects the UPLMN RAT according to the UPLMN RAT priority list on the USIM.
  - 1.2 If no RAT on the list is available, the UE does not try to obtain registration on the same PLMN with another RAT but instead searches for PLMNs in the OPLMN list.

### 6.2.1.3.4 Method of test

#### Initial conditions

The UE is in manual PLMN selection mode.

Cell levels are from tables 6.3 and 6.4.

Cell	CPICH_Ec / RF signal level [dBm/3.84 MHz] (FDD)	P-CCPCH_RSCP/ RF signal level [dBm] (TDD)	Test Channel	PLMN	Radio Access Technology
Cell 1	-72	-61	1	PLMN 3	UTRAN
Cell 2	-48	-48	1	PLMN 3	GSM
Cell 3	-75	-64	2	PLMN 4	UTRAN
Cell 4	-50	-50	2	PLMN 4	GSM
Cell 5	-78	-67	3	PLMN 5	UTRAN

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN	Access Technology Identifier
EF <sub>LOCI</sub>		PLMN 1	
EF <sub>HPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 2	UTRAN
	2 <sup>nd</sup>		GSM
EF <sub>PLMNwAcT</sub>	1 <sup>st</sup>	PLMN 3	UTRAN
	2 <sup>nd</sup>	PLMN 4	GSM
EF <sub>OPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 5	UTRAN
	2 <sup>nd</sup>	PLMN 6	GSM

## Test procedure

Method B is applied.

- a) The SS activates cells 1-5 and monitors the cells for random access requests from the UE.
- b) The UE is switched on.
- c) PLMN3 (UTRAN) shall be selected when the PLMN list is presented.
- d) The SS waits for random access requests from the UE.
- e) Cell 1 is switched off.
- f) PLMN4 (GSM) shall be selected when the PLMN list is presented.
- g) The SS waits for random access requests from the UE.
- h) Cell 4 is switched off.
- i) PLMN5 (UTRAN) shall be selected when the PLMN list is presented.
- j) The SS waits for random access requests from the UE.

### 6.2.1.3.5 Test Requirements

- 1) In step c), the list shall be presented. It shall contain in priority PLMN3 (UTRAN), PLMN4 (GSM), other PLMNs.
- 2) In step d), the response from the UE shall be on Cell 1 (1<sup>st</sup> priority RAT for EF<sub>PLMNwAcT</sub>). The displayed PLMN shall be PLMN3 (UTRAN).
- 3) In step f), the list shall be presented. It shall contain in priority PLMN4 (GSM), PLMN5 (UTRAN), other PLMNs.
- 4) In step g), the response from the UE shall be on Cell 4 (2<sup>nd</sup> priority RAT for EF<sub>PLMNwAcT</sub>). The displayed PLMN shall be PLMN4 (GSM).
- 5) In step i), the list shall be presented. It shall contain as highest priority PLMN5 (UTRAN).
- 6) In step j), the response from the UE shall be on Cell 5 (1<sup>st</sup> priority RAT for EF<sub>OPLMNwAcT</sub>). The displayed PLMN shall be PLMN5 (UTRAN).

### 6.2.1.4 Selection of RAT for OPLMN; Manual mode

#### 6.2.1.4.1 Definition

Test to verify that the UE selects the OPLMN RAT according to the OPLMN RAT priority list on the USIM. If no RAT on the list is available, the UE shall not try to obtain registration on the same PLMN(s) with other RAT(s) but instead search for other PLMN/access technology combinations with received high quality signal in random order.

#### 6.2.1.4.2 Conformance requirement

1. Manual Network Selection Mode Procedure:

The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes PLMNs in the "forbidden PLMNs" list and PLMNs which only offer services not supported by the MS.

If displayed, PLMNs meeting the criteria above are presented in the following order:

- 1.1 HPLMN;
- 1.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 1.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 1.4 Other PLMN/access technology combinations with received high quality signal in random order;
- 1.5 Other PLMN/access technology combinations in order of decreasing signal quality.

The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the "forbidden LAs for roaming", "forbidden LAs for regional provision of service", "forbidden PLMNs for GPRS service" and "forbidden PLMNs" lists.

If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell and enter the limited service state.

NOTE: It is an MS implementation option whether to indicate access technologies to the user. If the MS does display access technologies, then the access technology used should be the access technology chosen by the user for that PLMN. If the MS does not display access technologies, then the access technology chosen for a particular PLMN should be the highest priority available access technology for that PLMN, if the associated access technologies have a priority order.

## References

1. TS 23.122, clause 4.4.3.1.2.

NOTE: TS 31.102 defines the USIM fields.

### 6.2.1.4.3 Test purpose

1. To verify that:
  - 1.1 the UE selects the OPLMN RAT according to the OPLMN RAT priority list on the USIM.
  - 1.2 If no RAT on the list is available, the UE does not try to obtain registration on the same PLMN(s) with other RAT(s) but instead searches for "other PLMN/access technology combinations with received high quality signal in random order".

### 6.2.1.4.4 Method of test

#### Initial conditions

The UE is in manual PLMN selection mode.

Cell levels are from tables 6.3 and 6.4.

Cell	CPICH_Ec / RF signal level [dBm/3.84 MHz] (FDD)	P-CCPCH_RSCP / RF signal level [dBm] (TDD)	Test Channel	PLMN	Radio Access Technology
Cell 1	-72	-61	1	PLMN 5	UTRAN
Cell 2	-48	-48	1	PLMN 5	GSM
Cell 3	-75	-64	2	PLMN 6	UTRAN
Cell 4	-50	-50	2	PLMN 6	GSM
Cell 5	-78	-67	3	PLMN 7	UTRAN

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN	Access Technology Identifier
EF <sub>LOCI</sub>		PLMN 1	
EF <sub>HPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 2	UTRAN
	2 <sup>nd</sup>		GSM
EF <sub>PLMNwAcT</sub>	1 <sup>st</sup>	PLMN 3	UTRAN
	2 <sup>nd</sup>	PLMN 4	GSM
EF <sub>OPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 5	UTRAN
	2 <sup>nd</sup>	PLMN 6	GSM

## Test procedure

Method B is applied.

- a) The SS activates cells 1-5 and monitors the cells for random access requests from the UE.
- b) The UE is switched on.
- c) PLMN5 (UTRAN) shall be selected when the PLMN list is presented.
- d) The SS waits for random access requests from the UE.
- e) Cell 1 is switched off.
- f) PLMN6 (GSM) shall be selected when the PLMN list is presented.
- g) The SS waits for random access requests from the UE.
- h) Cell 4 is switched off.
- i) PLMN7 (UTRAN) shall be selected when the PLMN list is presented.
- j) The SS waits for random access requests from the UE.

### 6.2.1.4.5 Test Requirements

- 1) In step c), the list shall be presented. It shall contain in priority PLMN5 (UTRAN), PLMN6 (GSM), other PLMNs.
- 2) In step d), the response from the UE shall be on Cell 1 (1<sup>st</sup> priority RAT for EF<sub>OPLMNwAcT</sub>). The displayed PLMN shall be PLMN5 (UTRAN).
- 3) In step f), the list shall be presented. It shall contain as highest priority PLMN6 (GSM) followed by PLMN5 (GSM), PLMN6 (UTRAN) and PLMN7 (UTRAN) in random order.
- 4) In step g), the response from the UE shall be on Cell 4 (2<sup>nd</sup> priority RAT for EF<sub>OPLMNwAcT</sub>). The displayed PLMN shall be PLMN6 (GSM).
- 5) In step i), the list shall be presented. It shall contain PLMN5 (GSM), PLMN6 (UTRAN) and PLMN7 (UTRAN) in random order.

6) In step j), the response from the UE shall be on Cell 5. The displayed PLMN shall be PLMN7 (UTRAN).

## 6.2.1.5 Selection of "Other PLMN / access technology combinations"; Manual mode

### 6.2.1.5.1 Definition

Test to verify that if neither RPLMN, HPLMN, UPLMN nor OPLMN is available, the UE first tries to obtain registration on "Other PLMN/access technology combinations with received high quality signal in random order" and secondly on "Other PLMN/access technology combinations in order of decreasing signal quality".

### 6.2.1.5.2 Conformance requirement

#### 1. Manual Network Selection Mode Procedure:

The MS indicates whether there are any PLMNs, which are available using all supported access technologies. This includes PLMNs in the "forbidden PLMNs" list and PLMNs which only offer services not supported by the MS.

If displayed, PLMNs meeting the criteria above are presented in the following order:

1.1 HPLMN;

1.2 PLMNs contained in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

1.3 PLMNs contained in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);

1.4 Other PLMN/access technology combinations with received high quality signal in random order;

1.5 Other PLMN/access technology combinations in order of decreasing signal quality.

In 1.5, the MS shall order the PLMN/access technology combinations in order of decreasing signal quality within each access technology. The order between PLMN/access technology combinations with different access technologies is an MS implementation issue.

The user may select his desired PLMN and the MS then initiates registration on this PLMN using the access technology chosen by the user for that PLMN or using the highest priority available access technology for that PLMN, if the associated access technologies have a priority order. (This may take place at any time during the presentation of PLMNs). For such a registration, the MS shall ignore the contents of the "forbidden LAs for roaming", "forbidden LAs for regional provision of service", "forbidden PLMNs for GPRS service" and "forbidden PLMNs" lists.

If the user does not select a PLMN, the selected PLMN shall be the one that was selected before the PLMN selection procedure started. If no such PLMN was selected or that PLMN is no longer available, then the MS shall attempt to camp on any acceptable cell and enter the limited service state.

**NOTE:** It is an MS implementation option whether to indicate access technologies to the user. If the MS does display access technologies, then the access technology used should be the access technology chosen by the user for that PLMN. If the MS does not display access technologies, then the access technology chosen for a particular PLMN should be the highest priority available access technology for that PLMN, if the associated access technologies have a priority order.

2. UTRA case: The UE shall scan all RF channels in the UTRA band according to its capabilities to find available PLMNs. On each carrier, the UE shall search for the strongest cell according to the cell search procedures (for FDD, see TS 25.214, and TDD, see TS 25.224) and read its system information, in order to find out which PLMN the cell belongs to. If the UE can read the PLMN identity, the found PLMN shall be reported to the NAS as a high quality PLMN (but without the RSCP value), provided that the following high quality criterion is fulfilled:

- For an FDD cell, the measured primary CPICH RSCP value shall be greater than or equal to -95 dBm.
- For a TDD cell, the measured P-CCPCH RSCP value shall be greater than or equal to -84 dBm.

Found PLMNs that do not satisfy the high quality criterion, but for which the UE has been able to read the PLMN identities are reported to the NAS together with the CPICH RSCP value for UTRA FDD cells and P-CCPCH RSCP for UTRA TDD cells.

3. GSM case: A PLMN shall be understood to be received with high quality signal if the signal level is above -85 dBm.

## References

1. TS 23.122, clause 4.4.3.1.2.
2. TS 25.304, clause 5.1.2.2.
3. TS 03.22, clause 4.4.3.

NOTE: TS 31.102 defines the USIM fields.

### 6.2.1.5.3 Test purpose

1. To verify that:
  - 1.1 If neither RPLMN, HPLMN, UPLMN nor OPLMN is available, the UE tries to obtain registration on "Other PLMN/access technology combinations with received high quality signal in random order".
  - 1.2 If no PLMN is available in test purpose 1.1, the UE tries to obtain registration on "Other PLMN/access technology combinations in order of decreasing signal quality".
2. The "random order" in test purpose 1.1 is not verified.

### 6.2.1.5.4 Method of test

#### Initial conditions

The UE is in manual PLMN selection mode.

Cell	CPICH_Ec /RF signal level [dBm/3.84 MHz] (FDD)	P-CCPCH_RSCP / RF signal level [dBm] (TDD)	High Quality signal	Test Channel	PLMN	Radio Access Technology
Cell 1	-80	-69	Yes	1	PLMN 7	UTRAN
Cell 2	-65	-65	Yes	1	PLMN 8	GSM
Cell 3	-98	-87	No	2	PLMN 9	UTRAN
Cell 4	-101	-90	No	2	PLMN 10	UTRAN
Cell 5	-88	-88	No	3	PLMN 11	GSM
Cell 6	-91	-91	No	3	PLMN 12	GSM

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN	Access Technology Identifier
EF <sub>LOCI</sub>		PLMN 1	
EF <sub>HPLMNwACT</sub>	1 <sup>st</sup>	PLMN 2	UTRAN
	2 <sup>nd</sup>		GSM
EF <sub>PLMNwACT</sub>	1 <sup>st</sup>	PLMN 3	UTRAN
	2 <sup>nd</sup>	PLMN 4	GSM
EF <sub>OPLMNwACT</sub>	1 <sup>st</sup>	PLMN 5	UTRAN
	2 <sup>nd</sup>	PLMN 6	GSM
EF <sub>FPLMN</sub>		PLMN 7	
		PLMN 12	

## Test procedure

Method B is applied.

- a) The SS activates cells 1-6 and monitors the cells for random access requests from the UE.
- b) The UE is switched on.
- c) PLMN11 shall be selected when the PLMN list is presented.
- d) The SS waits for random access requests from the UE.
- e) Cell 5 is switched off.
- f) PLMN8 shall be selected when the PLMN list is presented.
- g) The SS waits for random access requests from the UE.
- h) Cell 2 is switched off.
- i) PLMN10 shall be selected when the PLMN list is presented.
- j) The SS waits for random access requests from the UE.
- k) Cell 4 is switched off.
- l) PLMN7 shall be selected when the PLMN list is presented. The SS shall reject the Registration Request from the UE.
- m) Cell 1 is switched off.
- n) PLMN9 shall be selected when the PLMN list is presented.
- o) The SS waits for random access requests from the UE.
- p) Cell 3 is switched off.
- q) PLMN12 shall be selected when the PLMN list is presented. The SS shall reject the Registration Request from the UE.
- r) Cell 6 is switched off.

### 6.2.1.5.5 Test Requirements

In all steps, the PLMN priority list shall be as follows: PLMN7, PLMN8 in random order followed by the other PLMNs. PLMN9 shall always come before PLMN10 and PLMN11 shall always come before PLMN12.

- 1) In step c), the list shall be presented and contain PLMN7, 8, 9, 10, 11, 12.
- 2) In step d), the response from the UE shall be on Cell 5. The displayed PLMN shall be PLMN11.
- 3) In step f), the list shall be presented and contain PLMN7, 8, 9, 10, 12.
- 4) In step g), the response from the UE shall be on Cell 2. The displayed PLMN shall be PLMN8.
- 5) In step i), the list shall be presented and contain PLMN7, 9, 10, 12.
- 6) In step j), the response from the UE shall be on Cell 4. The displayed PLMN shall be PLMN10.
- 7) In step l), the list shall be presented and contain PLMN7, 9, 12. After the PLMN has been selected, the list shall appear again as the UE cannot perform registration.
- 9) In step n), the list shall be presented and contain PLMN9, 12.
- 10) In step o), the response from the UE shall be on Cell 3. The displayed PLMN shall be PLMN9.
- 11) In step q), the list shall be presented and shall only contain PLMN12. After the PLMN has been selected, the list shall appear again as the UE cannot perform registration.

13) After step r), the UE shall inform that no network is available

## 6.2.1.6 Selection of RAT for HPLMN; Automatic mode

### 6.2.1.6.1 Definition

Test to verify that the UE selects the HPLMN RAT according to the HPLMN RAT priority list on the USIM. If no RAT on the list is available, the UE shall try to obtain registration on the same PLMN using other UE-supported RATs.

### 6.2.1.6.2 Conformance requirement

1. To allow provision for multiple HPLMN codes, the HPLMN access technologies are stored on the SIM together with PLMN codes. This version of the specification does not support multiple HPLMN codes and the "HPLMN Selector with Access Technology" data field is only used by the MS to get the HPLMN access technologies. The HPLMN code is the PLMN code included in the IMSI.
2. The "HPLMN Selector with Access Technology", "User Controlled PLMN Selector with Access Technology" and "Operator Controlled PLMN Selector with Access Technology" data fields in the SIM include associated access technologies for each PLMN entry. The PLMN/access technology combinations are listed in priority order. If an entry includes more than one access technology, then no priority is defined for the preferred access technology and the priority is an implementation issue.
3. Automatic Network Selection Mode Procedure:

The MS selects and attempts registration on other PLMNs, if available and allowable in the following order:

- 3.1 HPLMN (if not previously selected);
- 3.2 Each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 3.3 Each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 3.4 Other PLMN/access technology combinations with received high quality signal in random order;
- 3.5 Other PLMN/access technology combinations in order of decreasing signal quality.

If successful registration is achieved, the MS indicates the selected PLMN.

If registration cannot be achieved because no PLMNs are available and allowable, the MS indicates "no service" to the user, waits until a new PLMN is available and allowable and then repeats the procedure.

If there were one or more PLMNs which were available and allowable, but an LR failure made registration on those PLMNs unsuccessful or an entry in the "forbidden LAs for regional provision of service" list prevented a registration attempt, the MS selects the first such PLMN again and enters a limited service state.

## References

1. TS 23.122, clause 4.4.3.
2. TS 23.122, clause 4.4.3.1.1 (f).
3. TS 23.122, clause 4.4.3.1.1.

NOTE: TS 31.102 defines the USIM fields.

### 6.2.1.6.3 Test purpose

1. To verify that:
  - 1.1 the UE searches for a HPLMN RAT according to the HPLMN Selector with Access Technology data field on the USIM in priority order.

1.2 If no RAT on the priority list is available, the UE tries to obtain registration on the same PLMN using other UE-supported RATs.

#### 6.2.1.6.4 Method of test

##### Initial conditions

The UE is in automatic PLMN selection mode.

Cell levels are from tables 6.3 and 6.4.

Cell	CPICH_Ec / RF signal level [dBm/3.84 MHz] (FDD)	P-CCPCH_RSCP / RF signal level [dBm] (TDD)	Test Channel	PLMN	Radio Access Technology
Cell 1	-72	-61	1	PLMN 2	UTRAN
Cell 2	-48	-48	1	PLMN 2	GSM
Cell 3	-75	-64	2	PLMN 3	UTRAN
Cell 4	-50	-50	2	PLMN 3	GSM

The UE is equipped with a USIM containing default values except for those listed below.

##### USIM A

USIM field	Priority	PLMN	Access Technology Identifier
EF <sub>LOCI</sub>		PLMN 1	
EF <sub>HPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 2	UTRAN
	2 <sup>nd</sup>	PLMN 2	GSM

##### USIM B

USIM field	Priority	PLMN	Access Technology Identifier
EF <sub>LOCI</sub>		PLMN 1	
EF <sub>HPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 2	UTRAN
	2 <sup>nd</sup>		

##### Test procedure

Method B is applied.

- a) The SS activates cells 1-4 and monitors the cells for random access requests from the UE. The UE shall have a USIM with settings according to USIM A.
- b) The UE is switched on.
- c) The SS waits for random access requests from the UE.
- d) The UE is switched off and a USIM with settings according to USIM A is again inserted. All cells except Cell 1 are active.
- e) The SS waits for random access requests from the UE.
- f) The UE is switched off and a USIM with settings according to USIM B is inserted. All cells except Cell 1 are active.
- g) The UE is switched on.
- h) The SS waits for random access requests from the UE.

### 6.2.1.6.5 Test Requirements

- 1) In step c), the response from the UE shall be on Cell 1 (1<sup>st</sup> priority RAT for EF<sub>HPLMNwAcT</sub>). The displayed PLMN shall be PLMN2 (UTRAN).
- 2) In step e), the response from the UE shall be on Cell 2 (2<sup>nd</sup> priority RAT for EF<sub>HPLMNwAcT</sub>). The displayed PLMN shall be PLMN2 (GSM).
- 3) In step h), the response from the UE shall be on Cell 2. The displayed PLMN shall be PLMN2 (GSM). (PLMN2 is not available on UTRAN so registration on the same PLMN is attempted using other UE-supported RATs).

### 6.2.1.7 Selection of RAT for UPLMN; Automatic mode

#### 6.2.1.7.1 Definition

Test to verify that the UE selects the UPLMN RAT according to the UPLMN RAT priority list on the USIM. If no RAT on the list is available, the UE shall not try to obtain registration on the same PLMN(s) with other RAT(s) but instead search for PLMNs in the OPLMN list.

#### 6.2.1.7.2 Conformance requirement

1. Automatic Network Selection Mode Procedure:

The MS selects and attempts registration on other PLMNs, if available and allowable in the following order:

- 1.1 HPLMN (if not previously selected);
- 1.2 Each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 1.3 Each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 1.4 Other PLMN/access technology combinations with received high quality signal in random order;
- 1.5 Other PLMN/access technology combinations in order of decreasing signal quality.

If successful registration is achieved, the MS indicates the selected PLMN.

If registration cannot be achieved because no PLMNs are available and allowable, the MS indicates "no service" to the user, waits until a new PLMN is available and allowable and then repeats the procedure.

If there were one or more PLMNs which were available and allowable, but an LR failure made registration on those PLMNs unsuccessful or an entry in the "forbidden LAs for regional provision of service" list prevented a registration attempt, the MS selects the first such PLMN again and enters a limited service state.

#### References

1. TS 23.122, clause 4.4.3.1.1.

NOTE: TS 31.102 defines the USIM fields.

#### 6.2.1.7.3 Test purpose

1. To verify that:
  - 1.1 the UE selects the UPLMN RAT according to the UPLMN RAT priority list on the USIM.
  - 1.2 If no RAT on the list is available, the UE does not try to obtain registration on the same PLMN with another RAT but instead searches for PLMNs in the OPLMN list.

## 6.2.1.7.4 Method of test

## Initial conditions

The UE is in automatic PLMN selection mode.

Cell levels are from tables 6.3 and 6.4.

In system information broadcast in each cell, the neighbouring cell list does not contain any other cell belonging to the same PLMN.

Cell	CPICH_Ec / RF signal level [dBm/3.84 MHz] (FDD)	P-CCPCH / RF signal level [dBm] (TDD)	Test Channel	PLMN	Radio Access Technology
Cell 1	-72	-61	1	PLMN 3	UTRAN
Cell 2	-48	-48	1	PLMN 3	GSM
Cell 3	-75	-64	2	PLMN 4	UTRAN
Cell 4	-50	-50	2	PLMN 4	GSM
Cell 5	-78	-67	3	PLMN 5	UTRAN

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN	Access Technology Identifier
EF <sub>LOCI</sub>		PLMN 1	
EF <sub>HPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 2	UTRAN
	2 <sup>nd</sup>	PLMN 2	GSM
EF <sub>PLMNwAcT</sub>	1 <sup>st</sup>	PLMN 3	UTRAN
	2 <sup>nd</sup>	PLMN 4	GSM
EF <sub>OPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 5	UTRAN
	2 <sup>nd</sup>	PLMN 6	GSM

## Test procedure

Method B is applied.

- a) The SS activates cells 1-5 and monitors the cells for random access requests from the UE.
- b) The UE is switched on.
- c) The SS waits for random access requests from the UE.
- d) Cell 1 is switched off.
- e) The SS waits for random access requests from the UE.
- f) Cell 4 is switched off.
- g) The SS waits for random access requests from the UE.

## 6.2.1.7.5 Test Requirements

- 1) In step c), the response from the UE shall be on Cell 1 (1<sup>st</sup> priority RAT for EF<sub>PLMNwAcT</sub>). The displayed PLMN shall be PLMN3 (UTRAN).
- 2) In step e), the response from the UE shall be on Cell 4 (2<sup>nd</sup> priority RAT for EF<sub>PLMNwAcT</sub>). The displayed PLMN shall be PLMN4 (GSM).
- 3) In step g), the response from the UE shall be on Cell 5 (1<sup>st</sup> priority RAT for EF<sub>OPLMNwAcT</sub>). The displayed PLMN shall be PLMN5 (UTRAN).

## 6.2.1.8 Selection of RAT for OPLMN; Automatic mode

### 6.2.1.8.1 Definition

Test to verify that the UE selects the OPLMN RAT according to the OPLMN RAT priority list on the USIM. If no RAT on the list is available, the UE shall not try to obtain registration on the same PLMN(s) with other RAT(s) but instead search for other PLMN/access technology combinations with received high quality signal in random order.

### 6.2.1.8.2 Conformance requirement

#### 1. Automatic Network Selection Mode Procedure:

The MS selects and attempts registration on other PLMNs, if available and allowable in the following order:

- 1.1 HPLMN (if not previously selected);
- 1.2 Each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 1.3 Each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 1.4 Other PLMN/access technology combinations with received high quality signal in random order;
- 1.5 Other PLMN/access technology combinations in order of decreasing signal quality.

If successful registration is achieved, the MS indicates the selected PLMN.

If registration cannot be achieved because no PLMNs are available and allowable, the MS indicates "no service" to the user, waits until a new PLMN is available and allowable and then repeats the procedure.

If there were one or more PLMNs which were available and allowable, but an LR failure made registration on those PLMNs unsuccessful or an entry in the "forbidden LAs for regional provision of service" list prevented a registration attempt, the MS selects the first such PLMN again and enters a limited service state.

## References

1. TS 23.122, clause 4.4.3.1.1.

NOTE: TS 31.102 defines the USIM fields.

### 6.2.1.8.3 Test purpose

1. To verify that:
  - 1.1 the UE selects the OPLMN RAT according to the OPLMN RAT priority list on the USIM.
  - 1.2 If no RAT on the list is available, the UE does not try to obtain registration on the same PLMN(s) with other RAT(s) but instead searches for "other PLMN/access technology combinations with received high quality signal in random order".

### 6.2.1.8.4 Method of test

#### Initial conditions

The UE is in automatic PLMN selection mode.

Cell levels are from tables 6.3 and 6.4.

In system information broadcast in each cell, the neighbouring cell list does not contain any other cell belonging to the same PLMN.

Cell	CPICH_Ec / RF signal level [dBm/3.84 MHz] (FDD)	P-CCPCH_RSCP / RF signal level [dBm] (TDD)	Test Channel	PLMN	Radio Access Technology
Cell 1	-72	-61	1	PLMN 5	UTRAN
Cell 2	-48	-48	1	PLMN 5	GSM
Cell 3	-75	-64	2	PLMN 6	UTRAN
Cell 4	-50	-50	2	PLMN 6	GSM
Cell 5	-78	-67	3	PLMN 7	UTRAN

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN	Access Technology Identifier
EF <sub>LOCI</sub>		PLMN 1	
EF <sub>HPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 2	UTRAN
	2 <sup>nd</sup>	PLMN 2	GSM
EF <sub>PLMNwAcT</sub>	1 <sup>st</sup>	PLMN 3	UTRAN
	2 <sup>nd</sup>	PLMN 4	GSM
EF <sub>OPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 5	UTRAN
	2 <sup>nd</sup>	PLMN 6	GSM

## Test procedure

Method B is applied.

- The SS activates cells 1-5 and monitors the cells for random access requests from the UE.
- The UE is switched on.
- The SS waits for random access requests from the UE.
- Cell 1 is switched off.
- The SS waits for random access requests from the UE.
- Cell 4 is switched off.
- The SS waits for random access requests from the UE.

### 6.2.1.8.5 Test Requirements

- In step c), the response from the UE shall be on Cell 1 (1<sup>st</sup> priority RAT for EF<sub>OPLMNwAcT</sub>). The displayed PLMN shall be PLMN5 (UTRAN).
- In step e), the response from the UE shall be on Cell 4 (2<sup>nd</sup> priority RAT for EF<sub>OPLMNwAcT</sub>). The displayed PLMN shall be PLMN6 (GSM).
- In step g), the response from the UE shall be on either Cell 2, 3 or 5 (other PLMN/access technology combination) with associated PLMN5 (GSM), PLMN6 (UTRAN) or PLMN7 (UTRAN) shown.

### 6.2.1.9 Selection of "Other PLMN / access technology combinations"; Automatic mode

#### 6.2.1.9.1 Definition

Test to verify that if neither RPLMN, HPLMN, UPLMN nor OPLMN is available, the UE first tries to obtain registration on "Other PLMN/access technology combinations with received high quality signal in random order" and secondly on "Other PLMN/access technology combinations in order of decreasing signal quality".

### 6.2.1.9.2 Conformance requirement

#### 1. Automatic Network Selection Mode Procedure:

The MS selects and attempts registration on other PLMNs, if available and allowable in the following order:

- 1.1 HPLMN (if not previously selected);
- 1.2 Each PLMN in the "User Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 1.3 Each PLMN in the "Operator Controlled PLMN Selector with Access Technology" data field in the SIM (in priority order);
- 1.4 Other PLMN/access technology combinations with received high quality signal in random order;
- 1.5 Other PLMN/access technology combinations in order of decreasing signal quality.

In 1.5, the MS shall order the PLMN/access technology combinations in order of decreasing signal quality within each access technology. The order between PLMN/access technology combinations with different access technologies is an MS implementation issue.

If successful registration is achieved, the MS indicates the selected PLMN.

If registration cannot be achieved because no PLMNs are available and allowable, the MS indicates "no service" to the user, waits until a new PLMN is available and allowable and then repeats the procedure.

If there were one or more PLMNs which were available and allowable, but an LR failure made registration on those PLMNs unsuccessful or an entry in the "forbidden LAs for regional provision of service" list prevented a registration attempt, the MS selects the first such PLMN again and enters a limited service state.

#### 2. UTRA case: The UE shall scan all RF channels in the UTRA band according to its capabilities to find available PLMNs. On each carrier, the UE shall search for the strongest cell according to the cell search procedures (for FDD, see TS 25.214, and TDD, see TS 25.224) and read its system information, in order to find out which PLMN the cell belongs to. If the UE can read the PLMN identity, the found PLMN shall be reported to the NAS as a high quality PLMN (but without the RSCP value), provided that the following high quality criterion is fulfilled:

- For an FDD cell, the measured primary CPICH RSCP value shall be greater than or equal to -95 dBm.
- For a TDD cell, the measured P-CCPCH RSCP shall be greater than or equal to -84 dBm.

Found PLMNs that do not satisfy the high quality criterion, but for which the UE has been able to read the PLMN identities are reported to the NAS together with the CPICH RSCP value for UTRA FDD cells and P-CCPCH RSCP for UTRA TDD cells.

#### 3. GSM case: A PLMN shall be understood to be received with high quality signal if the signal level is above -85 dBm.

### References

1. TS 23.122, clause 4.4.3.1.1.
2. TS 25.304, clause 5.1.2.2.
3. TS 03.22, clause 4.4.3.

NOTE: TS 31.102 defines the USIM fields.

## 6.2.1.9.3 Test purpose

1. To verify that:

1.1 If neither RPLMN, HPLMN, UPLMN nor OPLMN is available, the UE tries to obtain registration on "Other PLMN/access technology combinations with received high quality signal in random order".

1.2 If no PLMN is available in test purpose 1.1, the UE tries to obtain registration on "Other PLMN/access technology combinations in order of decreasing signal quality".

2. The "random order" in test purpose 1.1 is not verified.

## 6.2.1.9.4 Method of test

## Initial conditions

The UE is in automatic PLMN selection mode.

Cell	CPICH_Ec /RF signal level [dBm/3.84 MHz] (FDD)	P-CCPCH_RSCP / RF signal level [dBm] (TDD)	"High Quality signal"	Test Channel	PLMN	Radio Access Technology
Cell 1	-80	-69	Yes	1	PLMN 7	UTRAN
Cell 2	-65	-65	Yes	1	PLMN 8	GSM
Cell 3	-103	-93	No	2	PLMN 9	UTRAN
Cell 4	-110	-100	No	3	PLMN 10	UTRAN
Cell 5	-90	-88	No	3	PLMN 11	GSM
Cell 6	-95	-91	No	4	PLMN 12	GSM

The UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN	Access Technology Identifier
EF <sub>LOCI</sub>		PLMN 1	
EF <sub>HPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 2	UTRAN
	2 <sup>nd</sup>	PLMN 2	GSM
EF <sub>PLMNwAcT</sub>	1 <sup>st</sup>	PLMN 3	UTRAN
	2 <sup>nd</sup>	PLMN 4	GSM
EF <sub>OPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 5	UTRAN
	2 <sup>nd</sup>	PLMN 6	GSM

## Test procedure

Method B is applied.

- a) The SS activates cells 1-6 and monitors the cells for random access requests from the UE.
- b) The UE is switched on.
- c) The SS waits for random access requests from the UE.
- d) The cell on which a response was received, is switched off.
- e) Step c-d) is repeated until the UE informs that no network is available.

## 6.2.1.9.5 Test Requirements

- 1) In step c), the displayed PLMN is noted.
- 2) When the test procedure has finished, the noted PLMNs shall have appeared in the following order: PLMN7, PLMN8 in random order followed by the other PLMNs. PLMN9 shall come before PLMN10 and PLMN11 shall come before PLMN12.

## 6.2.2 Cell selection and reselection

### 6.2.2.1 Cell reselection if cell becomes barred or $S < 0$ ; UTRAN to GSM

#### 6.2.2.1.1 Definition

Test to verify that if both a GSM and UTRAN network is available, the UE performs cell reselection from UTRAN to GSM if the UTRAN cell becomes barred or  $S$  falls below zero.

#### 6.2.2.1.2 Conformance requirement

1. When camped on a cell, the UE shall regularly search for a better cell according to the cell reselection criteria. If a better cell is found, that cell is selected. The change of cell may imply a change of RAT.
2. A "suitable cell" is a cell on which the UE may camp on to obtain normal service. Such a cell shall fulfil all the following requirements.
  - 2.1 The cell is part of the selected PLMN or, of a PLMN considered as equivalent by the UE according to the information provided by the NAS.
  - 2.2 The cell is not barred.
  - 2.3 The cell is not part of the list of "forbidden LAs for roaming".
  - 2.4 The cell selection criteria are fulfilled.
3. When camped normally, the UE shall execute the cell reselection evaluation process on the following occasions/triggers:
  - 3.1 UE internal triggers, so as to meet performance as specified in TS 25.133 for FDD and TS 25.123 for TDD.
  - 3.2 When information on the BCCH used for the cell reselection evaluation procedure has been modified.
4. Cell Reselection Criteria:
  - 4.1 The UE shall perform ranking of all cells that fulfil the  $S$  criterion.
  - 4.2 The cells shall be ranked according to the  $R$  criteria specified above, deriving  $Q_{meas,n}$  and  $Q_{meas,s}$  and calculating the  $R$  values using CPICH RSCP, P-CCPCH RSCP and the averaged received signal level as specified in TS 25.133 and TS 25.123 for FDD, TDD and GSM cells, respectively. The best ranked cell is the cell with the highest  $R$  value. If a TDD or GSM cell is ranked as the best cell, then the UE shall perform cell re-selection to that TDD or GSM cell.
  - 4.3 In all cases, the UE shall reselect the new cell, only if the cell reselection criteria are fulfilled during a time interval  $T_{reselction}$ .
  - 4.4 The cell-ranking criterion  $R$  is derived from  $Q$ ,  $Q_{hyst}$ ,  $Q_{offset}$ ,  $TEMP\_OFFSET$  and  $PENALTY\_TIME$ . However,  $TEMP\_OFFSET$  and  $PENALTY\_TIME$  are only applicable if the usage of HCS is indicated in system information.

#### References

1. TS 25.304, clause 5.2.1.
2. TS 25.304, clause 4.3.
3. TS 25.304, clause 5.2.5.1.
4. TS 25.304, clause 5.2.6.1.4.

#### 6.2.2.1.3 Test purpose

1. To verify that the UE performs reselection from UTRAN to GSM on the following occasions:

1.1 Serving cell becomes barred.

1.2  $S < 0$  for serving cell.

#### 6.2.2.1.4 Method of test

Initial conditions

All cells belong to the same PLMN.

The Inter-RAT Cell Info List of Cell 1 (UTRAN) refers to Cell 2 (GSM) and Cell 3 (GSM).

The 3G Neighbour Cell Description of Cell 2 (GSM) and Cell 3 (GSM) refers to Cell 1 (UTRAN)

Step a-c:

Parameter	Unit	Cell 1 (UTRAN)
Test Channel		1
CPICH Ec (FDD)	dBm	-60
P-CCPCH RSCP (TDD)	dBm	-60
Qrxlevmin	dBm	-100
Srxlev*	dBm	40
CellBarred		Not barred

Parameter	Unit	Cell 2 (GSM)	Cell 3 (GSM)
Test Channel		1	2
RF Signal Level	dBm	-80	-85
RXLEV_ACCESS_MIN	dBm	-100	-100
C1*	dBm	20	15
FDD_Qmin	dB	-20	-20
FDD_Qoffset	dBm	0	0

Step d-f:

Parameter	Unit	Cell 1 (UTRAN)
CellBarred		Not barred -> Barred
Tbarred	s	80

Step g:

Parameter	Unit	Cell 1 (UTRAN)
Qrxlevmin	dB	-100 -> -40
Srxlev*	dB	40 -> -20

Test procedure

Method B is applied.

- The SS activates cells 1, 2, and 3. The SS monitors cells 1, 2 and 3 for random access requests from the UE.
- The UE is switched on.
- The SS waits for random access request from the UE.
- The SS sets Cell 1 to be barred.
- The SS waits for random access request from the UE.
- The UE is switched off.

- g) Step a-e) is repeated except that in step d),  $Q_{rxlevmin}$  is increased, so  $S$  will become negative instead of being barred.

#### 6.2.2.1.5 Test Requirements

- 1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.
- 2) In step e), the UE shall respond on Cell 2.
- 3) In step g), the UE shall respond on Cell 2 after  $Q_{rxlevmin}$  is increased.

### 6.2.2.2 Cell reselection if cell becomes barred or $C1 < 0$ ; GSM to UTRAN

#### 6.2.2.2.1 Definition

Test to verify that if both a GSM and UTRAN network is available, the UE performs cell reselection from GSM to UTRAN if the GSM cell becomes barred or the path loss criterion  $C1$  falls below zero for a period of 5 s.

#### 6.2.2.2.2 Conformance requirement

1. At least every 5 s the MS shall calculate the value of  $C1$  and  $C2$  for the serving cell and re-calculate  $C1$  and  $C2$  values for non serving cells (if necessary). The MS shall then check whether:
  - 1.1 The path loss criterion ( $C1$ ) for current serving cell falls below zero for a period of 5 s. This indicates that the path loss to the cell has become too high.
  2. While camped on a cell of the registered PLMN ("camped normally"), the MS may need to select a different cell ("normal cell reselection" state). The following events trigger a cell reselection:
    - 2.1 The path loss criterion parameter  $C1$  (see TS 03.22, clause 3.6) indicates that the path loss to the cell has become too high;
    - 2.2 The cell camped on (current serving cell) has become barred.

#### References

1. TS 05.08, clause 6.6.2.
2. TS 23.122, clause 4.5.

#### 6.2.2.2.3 Test purpose

1. To verify that the UE performs reselection from GSM to UTRAN on the following occasions:
  - 1.1 Serving cell becomes barred.
  - 1.2 The path loss criterion  $C1$  for serving cell falls below zero for a period of 5 s.

#### 6.2.2.2.4 Method of test

##### Initial conditions

The USIM does not contain any preferred RAT.

The 3G Neighbour Cell Description of Cell 1 (GSM) refers Cell 2 (UTRAN) and Cell 3 (UTRAN).

The Inter-RAT Cell Info List of Cell 2 (UTRAN) and Cell 3 (UTRAN) refers to Cell 1 (GSM).

Step a-c:

Parameter	Unit	Cell 1 (GSM)
Test Channel		1
RF Signal Level	dBm	-50
RXLEV_ACCESS_MIN	dBm	-70
MS_TXPWR_MAX_CCH	dBm	Max. output power of UE
FDD_Qmin	dB	-20
FDD_Qoffset	dBm	0
CELL_BAR_ACCESS		Not barred
C1*	dBm	20

Parameter	Unit	Cell 2 (UTRAN)	Cell 3 (UTRAN)
P-CCPCH_RSCP (TDD)	dBm	-60	-70
CPICH_Ec (FDD)	dBm/3.84 MHz	-60	-70
Qrxlevmin	dBm	-100	-100
Srxlev*	dBm	40	30

Step d-e:

Parameter	Unit	Cell 1 (GSM)
CELL_BAR_ACCESS		Not barred -> Barred

Step f-g:

Parameter	Unit	Cell 1 (GSM)
RF Signal Level	dBm	-50 -> -80 (4sec) -> -50
C1*	dBm	20 -> -10 (4sec) -> 20

Step h:

Parameter	Unit	Cell 1 (GSM)
RF Signal Level	dBm	-50 -> -80
C1*	dBm	20 -> -10

### Test procedure

Method B is applied.

- The SS activates cells 1, 2, and 3. The SS monitors cells 1, 2 and 3 for random access requests from the UE.
- The UE is switched on.
- The SS waits for random access request from the UE.
- The SS sets Cell 1 to be barred.
- The SS waits for random access request from the UE.
- The UE is switched off.
- Step a-e) is repeated except that in step d), the SS reduces signal level on Cell 1 to -80 dBm for 4 s and then raises the level back to -50 dBm (C1 becomes -10 dBm during this period).

h) The SS reduces signal level on Cell 1 to  $-80$  dBm.

#### 6.2.2.2.5 Test Requirements

- 1) In step c), after the UE has responded on Cell 1, it shall not respond on any other cell within 1 min.
- 2) In step e), the UE shall respond on Cell 2.
- 3) In step g), there shall be no access on Cell 2 within 30 s, after having reduced the signal level on Cell 1.
- 4) In step h), the UE shall respond on Cell 2.

### 6.2.2.3 Cell reselection timings; GSM to UTRAN

#### 6.2.2.3.1 Definition

Test to verify that the UE meets the cell reselection timing requirements when both a GSM and UTRAN network is available.

#### 6.2.2.3.2 Conformance requirement

1. If the 3G Cell Reselection list (see TS 04.18) includes UTRAN frequencies, the MS shall, at least every 5 s update the value RLA\_C for the serving cell and each of the at least 6 strongest non-serving GSM cells.
  - 1.1 The MS shall then reselect a suitable UTRAN cell if its measured RSCP value exceeds the value of RLA\_C for the serving cell and all of the suitable non-serving GSM cells by the value XXX\_Qoffset for a period of 5 s and, for FDD, the UTRAN cells measured Ec/No value is equal or greater than the value FDD\_Qmin.
    - Ec/No and RSCP are the measured quantities.
    - FDD\_Qmin and XXX\_Qoffset are broadcast on BCCH of the serving cell. XXX indicates other radio access technology/mode.
  - 1.2 In case of a cell reselection occurring within the previous 15 s, XXX\_Qoffset is increased by 5 dB.
  - 1.3 Cell reselection to UTRAN shall not occur within 5 s after the MS has reselected a GSM cell from an UTRAN cell if a suitable GSM cell can be found.
  - 1.4 If more than one UTRAN cell fulfils the above criteria, the UE shall select the cell with the greatest RSCP value.
2. The MS shall be able to identify and select a new best UTRAN cell on a frequency, which is part of the 3G Cell Reselection list, within 30 s after it has been activated under the condition that there is only one UTRAN frequency in the list and under good radio conditions.

The allowed time is increased by 30 s for each additional UTRAN frequency in the 3G Cell Reselection list. However, multiple UTRAN cells on the same frequency in the neighbour cell list does not increase the allowed time.

NOTE: Definitions of measurements are in TS 25.215 and TS 25.101 for FDD mode, in TS 25.225 and TS 25.102 for TDD mode, clause 3.2 and TS 05.08, clause 6.1.

#### References

1. TS 05.08, clause 6.6.5.
2. TS 05.08, clause 6.6.4.

#### 6.2.2.3.3 Test purpose

1. To verify that:
  - 1.1 The UE meets conformance requirement 1.1 and additionally, that no reselection is performed if the period is less than 5 s

1.2 The UE meets conformance requirement 1.2.

1.3 The UE meets conformance requirement 1.3.

#### 6.2.2.3.4 Method of test

##### Initial conditions

The 3G Neighbour Cell Description of Cell 1 (GSM) refers Cell 2 (UTRAN) and Cell 3 (UTRAN).

The Inter-RAT Cell Info List of Cell 2 (UTRAN) and Cell 3 (UTRAN) refers to Cell 1 (GSM).

Step a-c:

Parameter	Unit	Cell 1 (GSM)	Cell 2 (GSM)
Test Channel		1	2
RF Signal Level	dBm	-70	-85
RXLEV_ACCESS_MIN	dBm	-100	-100
MS_TXPWR_MAX_CCH	dBm	Max. output power of UE	Max. output power of UE
FDD_Qmin	dBm	-20	-20
FDD_Qoffset	dBm	5	5

Parameter	Unit	Cell 3 (UTRAN)
Test Channel		1
CPICH_RSCP (FDD)	dBm	-74
P-CCPCH_RSCP (TDD)	dBm	-63
Qrxlevmin	dBm	-100
Srxlev*	dBm	26

Step d-g:

Parameter	Unit	Cell 1 (GSM)	Cell 2 (GSM)
RF Signal Level	dBm	-70 -> -82 (4 s) -> -70	OFF

Step h-j:

Parameter	Unit	Cell 1 (GSM)	Cell 2 (GSM)
RF Signal Level	dBm	-82 -> -70	OFF

Step k-m:

Parameter	Unit	Cell 1 (GSM)	Cell 2 (GSM)
RF Signal Level	dBm	-82 -> -70 -> -82	OFF

##### Test procedure

NOTE: Step a-c): Test purpose 1.3. Step d-g): test purpose 1.1. Step h-k): test purpose 1.2.

Method B is applied.

- The SS activates the channels. The UE is not paged on any of the cells.
- The UE is switched on.
- After 50 s, the SS starts paging continuously on cells 1 and 3 for 20 s. The SS monitors cells 1 and 3 for random access requests from the UE.

- d) Cell 2 is switched off. The SS stops paging on the cells and waits for 20 s. (The UE should revert to Cell 1 due to cell reselection).
- e) The SS starts paging continuously on Cell 3.
- f) The SS decreases the transmit level of Cell 1 to  $-82$  dBm for a period of 4 s (RSCP will then exceed  $RLA_C$  value of Cell 1 by more than  $XXX\_Qoffset$ ) and then changes the level back to  $-70$  dBm.
- g) The SS waits to see if there is any random access requests from the UE on Cell 3.
- h) The SS stops paging on all cells and sets the transmit level of Cell 1 to  $-82$  dBm.
- i) The SS waits 20 s and then starts paging continuously on Cell 1. (The UE should revert to Cell 3 due to cell reselection).
- j) The SS increases the transmit level of Cell 1 to  $-70$  dBm and waits for the UE to access on Cell 1. The SS records the time  $t$  from the increase in the level of Cell 1 to the first response from the UE.
- k) The SS stops paging on all cells and sets the transmit level of Cell 1 back to  $-82$  dBm.
- l) The SS waits 20 s (The UE should revert to Cell 3 due to cell reselection).
- m) The SS increases the transmit level of Cell 1 to  $-70$  dBm. After  $t+2$  s (i.e. 2 s after reselection to Cell 1), the SS starts paging continuously on Cell 3, changes the level of Cell 1 back to  $-82$  dBm and waits to see if there is any random access request on Cell 3. (Within 15 sec after reselection to GSM, the level of Cell 1 is  $-82 + 10$  dBm =  $-72$  dBm. After the 15 s period, the level of Cell 1 is  $-82 + 5$  dBm =  $-77$  dBm. The level of Cell 3 is  $-74$  dBm, thus leading to reselection to Cell 3 after 15 s).

#### 6.2.2.3.5 Test Requirements

- 1) In step c), after the UE has reselected Cell 1 from Cell 3 as indicated by random access requests, any random access requests on Cell 3 shall not occur within 4,5 s of the last random access request on Cell 1.
- 2) In step g), there shall be no access on Cell 3 within 34 s of decreasing the level of Cell 1.
- 3) In step j), the UE shall respond on Cell 1.
- 4) In step m), there shall be no response on Cell 3 within 11 s after the level of Cell 1 is changed back to  $-82$  dBm.

NOTE: The 11 s is derived from  $(t+15)$  s minimum cell reselection timer minus  $(t+2)$  s from the start of step m) up to the decrease of the level of Cell 1. A further 2 s are subtracted to cover for any uncertainty introduced by the random access process occurring after step g).

---

## 7 Layer 2

### 7.1 MAC

#### General

If not otherwise mentioned, the same procedures as used in RRC test specification (TS 34.123-1 clause 8) or in the generic setup procedures (TS 34.108 clause 7) applies to reach initial conditions for MAC testing.

If not explicitly described, the same message contents and settings are applied as described in the RRC test description default settings.

In some MAC test cases, which are explicitly mentioned, the RLC in the system simulator is operated in Transparent Mode (RLC TM) for the tested channel. Accordingly, no RLC header will be added by the RLC entity. Also, there is no header included by the MAC protocol in the system simulator. The UE, however, shall always be configured as specified in TS 34.108 for the respective test case.

Where RLC TM is used, the payload size in the system simulator is set to the value, that corresponds to the transport block size expected by the UE for the respective configuration. The bit positions which are interpreted as RLC and MAC headers by the UE, are included into the RLC payload by the system simulator.

For test cases where AM RLC is employed in either UE, SS, or both, the default parameter settings as defined in clause 7.2.3.1 are applicable if not mentioned otherwise.

#### 7.1.1 Mapping between logical channels and transport channels

##### 7.1.1.1 CCCH mapped to RACH/FACH / Invalid TCTF

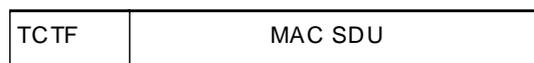
###### 7.1.1.1.1 Definition

This tests that the MAC applies the correct header to the MAC PDU according to the type of logical channel carried on the RACH/FACH transport channel. Incorrect application of MAC headers would result in inoperation of the UE.

###### 7.1.1.1.2 Conformance requirement

CCCH mapped to RACH/FACH:

- TCTF field is included in MAC header.



The following fields are defined for the MAC header:

- Target Channel Type Field
- ...

## Coding of the Target Channel Type Field on FACH for FDD

TCTF	Designation
00	BCCH
01000000	CCCH
01000001- 01111111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
10000000	CTCH
10000001- 10111111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
11	DCCH or DTCH over FACH

## Reference(s)

TS 25.321 clauses 9.2.1 and 9.2.1.4.

## 7.1.1.1.3 Test purpose

1. To verify that the UE discards PDUs with reserved or incorrect values in the TCTF field.
2. To verify that the TCTF field is correctly applied when a CCCH is mapped to the RACH/FACH.

## 7.1.1.1.4 Method of test

## Initial conditions

## System Simulator:

1 cell, default parameters, Ciphering Off.

The SCCPCH is configured as specified in TS 34.108 clause 6.10.2.4.3.3 (Interactive/Background 32 kbps RAB + SRB for PCCH + SRB for CCCH + SRB for DCCH + SRB for BCCH) with the following exceptions for the FACH:

Higher layer	RAB/signalling RB	SRB#0
	User of Radio Bearer	Test
RLC	Logical channel type	CCCH
	RLC mode	TM
	Payload sizes, bit	168
	Max data rate, bps	33600 (alt. 50400)
	RLC header, bit	0
MAC	MAC header, bit	0 (note)
	MAC multiplexing	Simulated by SS
Layer 1	TrCH type	FACH
	TB sizes, bit	168
TFS	TF0, bits	0 x 168
	TF1, bits	1 x 168
	TF2, bits	2 x 168
	TF3, bits	N/A (alt. 3 x 168)

TTI, ms	10
Coding type	CC 1/2
CRC, bit	16
Max number of bits/TTI before rate matching	752 (alt. 1136)
RM attribute	200-240
NOTE: The SS MAC layer must be configured not to add a MAC header so that the header can be added by the test case in order to create the necessary invalid values.	

And using the configuration in TS 34.108 clause 6.10.2.4.3.3 for the PCH.

The TFCS should be configured as specified in clause 6.10.2.4.3.3.1.4.

User Equipment:

The UE shall operate under normal test conditions, Ciphering Off.

The Test-USIM shall be inserted.

The SS starts broadcasting the System Information as specified in TS 34.108 clause 6.1, using the configuration for the PRACH and SCCPCH (signalled in SYSTEM INFORMATION 5) as follows:

1. The SCCPCH is configured as specified in TS 34.108 clause 6.10.2.4.3.3 (Interactive/Background 32 kbps RAB + SRB for PCCH + SRB for CCCH + SRB for DCCH + SRB for BCCH).
2. The PRACH is configured as specified in TS 34.108 clause 6.10.2.4.4.1.

The SS follows the procedure in TS 34.108 clause 7.2.2.1 (CS UE) or 7.2.2.2 (PS UE) so that the UE shall be in idle mode and registered.

Test procedure

- a) The SS pages the UE.
- b) The SS waits for the first RRC CONNECTION REQUEST message to arrive on the PRACH/CCCH.
- c) The SS responds with an RRC CONNECTION SETUP message (specified in TS 34.108 cclause 9: Contents of RRC CONNECTION SETUP message: UM (Transition to CELL\_DCH). In this case the SS will transmit the message in 152 bit (note) segments, with a valid UM RLC header and with the MAC header set as follows:

Field	Value
TCTF	00'B

NOTE: In the case of a 2-bit MAC header the segment shall be padded to the correct length.

- d) The SS waits for retransmission of the RRC CONNECTION REQUEST on the PRACH/CCCH due to expiry of timer T300.
- e) The SS repeats steps c) and d), with the TCTF field set as follows:

Iteration	TCTF Value
2	01000001'B
3	10000000'B
4	10000001'B
5	11'B

- f) The SS repeats steps c) and d), with the TCTF field set as to 01000000'B.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		PAGING TYPE 1	
2	→		RRC CONNECTION REQUEST	
3	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 1))	Sent with incorrect TCTF = 00'B
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 2))	Sent with incorrect TCTF = 00'B
			...	
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT n))	Sent with incorrect TCTF = 00'B
4	→		RRC CONNECTION REQUEST	
5	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 1))	Sent with incorrect TCTF = 0100 0001'B
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 2))	Sent with incorrect TCTF = 0100 0001'B
			...	
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT n))	Sent with incorrect TCTF = 0100 0001'B
6	→		RRC CONNECTION REQUEST	
7	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 1))	Sent with incorrect TCTF = 1000 0000'B
	←		MAC PDU(TCTF, UE-ID, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 2))	Sent with incorrect TCTF = 1000 0000'B
			...	
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT n))	Sent with incorrect TCTF = 1000 0000'B
8	→		RRC CONNECTION REQUEST	
9	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 1))	Sent with incorrect TCTF = 1000 0001'B
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 2))	Sent with incorrect TCTF = 1000 0001'B
			...	
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT n))	Sent with incorrect TCTF = 1000 0001'B
10	→		RRC CONNECTION REQUEST	
11	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 1))	Sent with incorrect TCTF = 11'B
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 2))	Sent with incorrect TCTF = 11'B
			...	
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT n))	Sent with incorrect TCTF = 11'B
12	→		RRC CONNECTION REQUEST	
13	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 1))	Sent with correct TCTF = 0100 0000'B
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT 2))	Sent with correct TCTF = 0100 0000'B
			...	
	←		MAC PDU(TCTF, RLC UM PDU(SN, RRC CONNECTION SETUP SEGMENT n))	Sent with correct TCTF = 0100 0000'B
14	→		RRC CONNECTION SETUP COMPLETE	TCTF Field is recognised as correct for the CCCH

Specific Message Contents

None.

### 7.1.1.1.5 Test Requirement

On the first iteration, and on each iteration in step e) the UE should not recognise the RRC CONNECTION SETUP message and therefore should retransmit the RRC CONNECTION REQUEST after each expiry of T300 (the UE should send up to N300=7 RRC CONNECTION REQUESTs before abandoning the procedure).

On the final iteration the UE should respond with an RRC CONNECTION SETUP COMPLETE message.

### 7.1.1.2 DTCH or DCCH mapped to RACH/FACH / Invalid TCTF

#### 7.1.1.2.1 Definition

This tests that the MAC applies the correct header to the MAC PDU according to the type of logical channel carried on the RACH/FACH transport channel. Incorrect application of MAC headers would result in inoperation of the UE.

#### 7.1.1.2.2 Conformance requirement

DTCH or DCCH mapped to RACH/FACH:

TCTF field, C/T field, UE-Id type field and UE-Id are included in the MAC header.

The following fields are defined for the MAC header:

- Target Channel Type Field

...

#### Coding of the Target Channel Type Field on FACH for FDD

TCTF	Designation
00	BCCH
01000000	CCCH
01000001- 01111111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
10000000	CTCH
10000001- 10111111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
11	DCCH or DTCH over FACH

#### Reference(s)

TS 25.321 clauses 9.2.1 and 9.2.1.1 c).

#### 7.1.1.2.3 Test purpose

1. To verify that the UE discards PDUs with reserved or incorrect values in the TCTF field.
2. To verify that the TCTF field, C/T field, UE-Id type and UE-Id field are correctly applied when a DTCH or DCCH is mapped to the RACH/FACH.

#### 7.1.1.2.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters, Ciphering Off.

The SCCPCH is configured as specified in TS 34.108 clause 6.10.2.4.3.3 (Interactive/Background 32 kbps RAB + SRB for PCCH + SRB for CCCH + SRB for DCCH + SRB for BCCH) with the following exceptions for the FACH:

Higher layer	RAB/signalling RB	RB#3 (SRB#3)	
	User of Radio Bearer	Test	
RLC	Logical channel type	DCCH	
	RLC mode	TM	
	Payload sizes, bit	168	
	Max data rate, bps	33600 (alt. 50400)	
	RLC header, bit	0	
MAC	MAC header, bit	0 (note)	
	MAC multiplexing	Simulated by SS	
Layer 1	TrCH type	FACH	
	TB sizes, bit	168	
	TFS	TF0, bits	0 x 168
		TF1, bits	1 x 168
		TF2, bits	2 x 168
		TF3, bits	N/A (alt. 3 x 168)
	TTL, ms	10	
	Coding type	CC ½	
	CRC, bit	16	
	Max number of bits/TTL before rate matching	752 (alt. 1136)	
	RM attribute	200-240	
NOTE:	The SS MAC layer must be configured not to add a MAC header so that the header can be added by the test case in order to create the necessary invalid values.		

and using the configuration in TS 34.108 clause 6.10.2.4.3.3 for the PCH.

The TFCS should be configured as specified in clause 6.10.2.4.3.3.1.4.

#### User Equipment:

The UE shall operate under normal test conditions, Ciphering Off.

The Test-USIM shall be inserted.

The SS starts broadcasting the System Information as specified in TS 34.108 clause 6.1, using the configuration for the PRACH and SCCPCH (signalled in SYSTEM INFORMATION 5) as follows:

1. The SCCPCH is configured as specified in TS 34.108 clause 6.10.2.4.3.3 (Interactive/Background 32 kbps RAB + SRB for PCCH + SRB for CCCH + SRB for DCCH + SRB for BCCH).
2. The PRACH is configured as specified in TS 34.108 clause 6.10.2.4.4.1.

The SS follows the procedure in TS 34.108 clause 7.4.2.1 (Mobile Terminated) so that the UE shall be in state BGP 6-2 (CS-CELL\_FACH\_INITIAL).

#### Test procedure

- a) The SS receives the PAGING RESPONSE message from the UE and checks the TCTF field.
- b) The SS transmits MAC PDUs containing RLC AM PDUs containing a DIRECT TRANSFER message containing an AUTHENTICATION REQUEST message.
  1. Dummy octet string for NAS Message, of size sufficient enough to fit in one RLC PDU of 144 bits, including the correct RLC AM header.
  2. The IE CN Domain Identity is Set to PS Domain (no signalling connection for this domain exists).

3. The polling bit in RLC header is set for transmission of RLC STATUS PDU.

The MAC header shall be set as follows:

Field	Value
TCTF	00'B
UE ID Type	C-RNTI
UE ID	As set in RRC CONNECTION SETUP message.
C/T	Logical Channel ID for SRB #3 (AM-DCCH NAS High Priority)

Where a TCTF size of 8-bits is used, 6-bits from the RLC payload shall be discarded.

- c) The SS monitors the RACH for 10 s to ensure that no RACH access occurs.
- d) The SS again transmits MAC PDUs as in b) above, but this time uses the correct TCTF of 11'B. The sequence numbers in the RLC headers shall be identical with those sent in b).
- e) SS Receives RLC Status PDU on SRB #3 acknowledging the receipt of the above RLC PDU.
- f) The SS receives a RRC STATUS message on the uplink DCCH using AM RLC on SRB # 2.
- g) The SS repeats steps b), c), d) e) and f), with the TCTF field set as follows in step b):

Iteration	TCTF Value
2	01000000'B
3	01000001'B
4	10000000'B
5	10000001'B

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	→		PAGING RESPONSE	Check TCTF
2		←	MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN=x, DIRECT TRANSFER))	Sent with incorrect TCTF = 00'B, 0100 0000'B, 0100 0001'B, 1000 0000'B, or 1000 0001'B,
2a			wait for T = 10 s	SS monitors for RACH access attempts
3		←	MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN=x, DIRECT TRANSFER))	Sent with correct TCTF = 11'B
4	→		RLC-STATUS-PDU	ACK PDUs with SN = x and TCTF Field is recognised as correct for the DCCH.
5	→		RRC Status PDU	

Steps 2 – 5 of above expected sequence are repeated for iterations 2 to 5. Note: For iteration k the SN in steps 2 and 4 starts with x + (k – 1).

Specific Message Contents

None

#### 7.1.1.2.5 Test Requirement

In step a) the TCTF field should have the value 00'B. Note that this may be implied from receipt of the PAGING RESPONSE message correctly by the SS test script.

During the test the SS shall request an RLC status report with every transmitted PDU by setting of the Polling Bit. The UE shall not send any STATUS PDUs indicating missing PDUs.

At the end of each iteration (steps 4 and 5 of expected sequence) the SS shall receive an RRC Status PDU on SRB # 2, and RLC Status PDU on SRB # 3 with TCTF field set to value '01' B.

### 7.1.1.3 DTCH or DCCH mapped to RACH/FACH / Invalid C/T Field

#### 7.1.1.3.1 Definition

This tests that the MAC applies the correct header to the MAC PDU according to the type of logical channel carried on the RACH/FACH transport channel. Incorrect application of MAC headers would result in inoperation of the UE.

#### 7.1.1.3.2 Conformance requirement

DTCH or DCCH mapped to RACH/FACH:

TCTF field, C/T field, UE-Id type field and UE-Id are included in the MAC header.

The following fields are defined for the MAC header:

- C/T field  
The C/T field provides identification of the logical channel instance when multiple logical channels are carried on the same transport channel...

**Structure of the C/T field**

C/T field	Designation
0000	Logical channel 1
0001	Logical channel 2
...	...
1110	Logical channel 15
1111	Reserved (PDUs with this coding will be discarded by this version of the protocol)

#### Reference(s)

TS 25.321 clauses 9.2.1 and 9.2.1.1 c).

#### 7.1.1.3.3 Test purpose

1. To verify that the UE discards PDUs with reserved or incorrect values in C/T field.
2. To verify that the TCTF field, C/T field, UE-Id type and UE-Id field are correctly applied when a DTCH or DCCH is mapped to the RACH/FACH.

#### 7.1.1.3.4 Method of test

##### Initial conditions

System Simulator:

See clause 7.1.1.2.4.

User Equipment:

See clause 7.1.1.2.4.

##### Test procedure

- a) The SS receives the PAGING RESPONSE message from the UE and checks the C/T field.

- b) The SS transmits MAC PDUs containing RLC AM PDUs containing a DIRECT TRANSFER message containing.
1. Dummy octet string for NAS Message, of size sufficient enough to fit in one RLC PDU of 144 bits, including the correct RLC AM header.
  2. The IE CN Domain Identity is Set to PS Domain (no signalling connection for this domain exists).
  3. The polling bit in RLC header is set for Transmission of RLC STATUS PDU.

The MAC header shall be set as follows:

Field	Value
TCTF	11'B
UE ID Type	C-RNTI
UE ID	As set in RRC CONNECTION SETUP message.
C/T	0111'B

- c) The SS monitors the RACH for 10 s to ensure that no RACH access occurs.
- d) The SS again transmits MAC PDUs as in b) above, but this time uses the correct C/T value for AM-DCCH NAS High Priority of 0010'B. The sequence numbers in the RLC headers shall be identical with those sent in b).
- e) SS receives RLC Status PDU on SRB #3 acknowledging the receipt of the above RLC PDU.
- f) The SS receives a RRC STATUS message on the uplink DCCH using AM RLC on SRB # 2.
- g) The SS repeats steps b), c), d), e) and f), with the C/T field set as follows:

Iteration	C/T Value
2	1111'B

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		→	PAGING RESPONSE	Check C/T field
2		←	MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN=x, DIRECT TRANSFER))	Sent with incorrect C/T = 0111'B, or 1111'B.
2a			wait for T = 10 s	SS monitors for RACH access attempts
3		←	MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN=x, DIRECT TRANSFER))	Sent with correct C/T = 0010'B
4		→	RLC-STATUS-PDU	ACK PDUs with SN = x C/T Field is recognised as correct for the DCCH
5		→	RRC Status PDU	

Steps 2 to 5 of the expected sequence are repeated for iteration 2. Note: For iteration k the SN in steps 2 and 4 starts with  $x + (k - 1)$ .

Specific Message Contents

None

#### 7.1.1.3.5 Test Requirement

In step a) the C/T field should be set to the Logical Channel ID for SRB #3 (0010'B). Note that this may be implied from receipt of the PAGING RESPONSE message correctly by the SS test script.

During the test the SS shall request RLC status report with every transmitted PDU by setting of the Polling Bit. The UE shall not send any STATUS PDUs indicating missing PDUs.

At the end of each iteration (steps 4 and 5 of expected sequence) the SS shall receive a RLC Status PDU on SRB # 3, with C/T field set to value '0010'B and RRC Status PDU on SRB # 2.

#### 7.1.1.4 DTCH or DCCH mapped to RACH/FACH / Invalid UE ID Type Field

##### 7.1.1.4.1 Definition

This tests that the MAC applies the correct header to the MAC PDU according to the type of logical channel carried on the RACH/FACH transport channel. Incorrect application of MAC headers would result in inoperation of the UE.

##### 7.1.1.4.2 Conformance requirement

DTCH or DCCH mapped to RACH/FACH:

TCTF field, C/T field, UE-Id type field and UE-Id are included in the MAC header.

The following fields are defined for the MAC header:

- UE-Id Type  
The UE-Id Type field is needed to ensure correct decoding of the UE-Id field in MAC Headers.

**Table 9.2.1.7: UE-Id Type field definition**

UE-Id Type field 2 bits	UE-Id Type
00	U-RNTI
01	C-RNTI
10	Reserved (PDUs with this coding will be discarded by this version of the protocol)
11	Reserved (PDUs with this coding will be discarded by this version of the protocol)

##### Reference(s)

TS 25.321 clauses 9.2.1 and 9.2.1.1 c).

##### 7.1.1.4.3 Test purpose

1. To verify that the UE discards PDUs with reserved values in UE-Id type field.
2. To verify that the TCTF field, C/T field, UE-Id type and UE-Id field are correctly applied when a DTCH or DCCH is mapped to the RACH/FACH.

##### 7.1.1.4.4 Method of test

###### Initial conditions

###### System Simulator:

See clause 7.1.1.2.4.

###### User Equipment:

See clause 7.1.1.2.4.

## Test procedure

- a) The SS receives the PAGING RESPONSE message from the UE and checks the UE-Id Type field.
- b) The SS transmits MAC PDUs containing RLC AM PDUs containing a DIRECT TRANSFER message containing.
  1. Dummy octet string for NAS Message, of size sufficient enough to fit in one RLC PDU of 144 bits, including the correct RLC AM header.
  2. The IE CN Domain Identity is Set to PS Domain (no signalling connection for this domain exists)
  3. The polling bit in RLC header is set for transmission of RLC STATUS PDU.

The MAC header shall be set as follows:

Field	Value
TCTF	11'B
UE ID Type	10'B
UE ID	As set in RRC CONNECTION SETUP message.
C/T	Logical Channel ID for SRB #3 (AM-DCCH NAS High Priority): 0010'B

- c) The SS monitors the RACH for 10 s to ensure that no RACH access occurs.
- d) The SS again transmits MAC PDUs as in b) above, but this time uses the correct UE-Id type value for C-RNTI of 01'B. The sequence numbers in the RLC headers shall be identical with those sent in b).
- e) SS Receives RLC Status PDU on SRB #3 acknowledging the receipt of the above RLC PDU.
- f) The SS receives a RRC STATUS message on the uplink DCCH using AM RLC on SRB # 2
- g) The SS repeats steps b), c), d), e) and f), with the UE-Id type field set as follows in step b):

Iteration	UE-Id type Value
2	11'B

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	→		PAGING RESPONSE	Check UE-Id Type
2		←	MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN=x, DIRECT TRANSFER))	Sent with incorrect UE-Id Type = 10'B, or 11'B.
2a			wait for T = 10 s	SS monitors for RACH access attempts
3		←	MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN=x, DIRECT TRANSFER))	Sent with correct UE-Id Type = 01'B
4	→		RLC-STATUS-PDU	ACK PDU with SN = x UE-Id is recognised as correct for the UE
5	→		RRC Status PDU	RRC

Steps 2 to 5 of the expected sequence are repeated for iteration 2. Note: For iteration k the SN in step 2 and 4 starts with  $x + (k - 1)$ .

## Specific Message Contents

None

#### 7.1.1.4.5 Test Requirement

In step a) the UE-Id Type field should be set to 01'B. Note that this may be implied from receipt of the PAGING RESPONSE message correctly by the SS test script.

During the test the SS request an RLC status report with every transmitted PDU by setting of the Polling Bit. The UE shall not send any STATUS PDUs indicating missing PDUs.

At the end of each iteration (steps 4 and 5 of expected sequence) the SS shall receive a RLC Status PDU on SRB # 3, with UE Id type correctly set to '01'B and RRC Status PDU on SRB # 2.

### 7.1.1.5 DTCH or DCCH mapped to RACH/FACH / Incorrect UE ID

#### 7.1.1.5.1 Definition

This tests that the MAC applies the correct header to the MAC PDU according to the type of logical channel carried on the RACH/FACH transport channel. Incorrect application of MAC headers would result in inoperation of the UE.

#### 7.1.1.5.2 Conformance requirement

DTCH or DCCH mapped to RACH/FACH:

TCTF field, C/T field, UE-Id type field and UE-Id are included in the MAC header.

The following fields are defined for the MAC header:

- UE-Id  
The UE-Id field provides an identifier of the UE on common transport channels...

#### Lengths of UE Id field

UE Id type	Length of UE Id field
U-RNTI	32 bits
C-RNTI	16 bits

#### Reference(s)

TS 25.321 clauses 9.2.1 and 9.2.1.1 c).

#### 7.1.1.5.3 Test purpose

1. To verify that the UE ignores PDUs with UE-Ids that do not match the Id allocated to it.
2. To verify that the TCTF field, C/T field, UE-Id type and UE-Id field are correctly applied when a DTCH or DCCH is mapped to the RACH/FACH.

#### 7.1.1.5.4 Method of test

##### Initial conditions

##### System Simulator:

See clause 7.1.1.2.4.

##### User Equipment:

See clause 7.1.1.2.4.

##### Test procedure

- a) The SS receives the PAGING RESPONSE message from the UE and checks the UE-Id field.

- b) The SS transmits MAC PDUs containing RLC AM PDUs containing a DIRECT TRANSFER message containing.
1. Dummy Octet String for NAS Message, of size sufficient enough to fit in one RLC PDU of 144 bits, including the correct RLC AM header.
  2. The IE CN Domain Identity is Sset to PS Domain (no signalling connection for this domain exists)
  3. The polling bit in RLC header is set for transmission of RLC STATUS PDU.

The MAC header shall be set as follows:

Field	Value
TCTF	11'B
UE ID Type	C-RNTI
UE ID	Address allocated in RRC CONNECTION SETUP message + 1.
C/T	Logical Channel ID for SRB #3 (AM-DCCH NAS High Priority): 0010'B

- c) The SS monitors the RACH for 10 s to ensure that no RACH access occurs.
- d) The SS again transmits MAC PDUs as in b) above, but this time uses the correct UE-Id value of the address allocated in the RRC CONNECTION SETUP message. The sequence numbers in the RLC headers shall be identical with those sent in b).
- e) SS Receives RLC Status PDU on SRB #3 acknowledging the receipt of the above RLC PDU
- f) The SS receives a RRC STATUS message on the uplink DCCH using AM RLC on SRB # 2.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	→		PAGING RESPONSE	Check UE-Id
2		←	MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN=x, DIRECT TRANSFER))	Sent with incorrect UE-Id = C-RNTI+1
2a			wait for T = 10 s	SS monitors for RACH access attempts
3		←	MAC PDU(TCTF, UE-ID, C/T, RLC AM PDU(SN=x, DIRECT TRANSFER))	Sent with correct UE-Id = C-RNTI
4	→		RLC-STATUS-PDU	ACK PDUs with SN = x UE-Id is recognised as correct for the UE
5	→		RRC Status PDU	

Specific Message Contents

None

#### 7.1.1.5.5 Test Requirement

In step a) the UE-Id field should be set to the C-RNTI allocated in the RRC CONNECTION SETUP message. Note that this may be implied from receipt of the PAGING RESPONSE message correctly by the SS test script.

During the test the SS shall request an RLC status report with every transmitted PDU by setting of the Polling Bit. The UE shall not send any STATUS PDUs indicating missing PDUs.

At the end of the expected sequence (steps 4 and 5) the SS shall receive receive RLC Status PDU on SRB # 3 with correct C-RNTI and RRC Status PDU on SRB # 2.

### 7.1.1.6 DTCH or DCCH mapped to DSCH or USCH

#### 7.1.1.6.1 Definition and applicability

Applicable for if mode TDD only or FDD only is supported.

#### 7.1.1.6.2 Conformance requirement

The TCTF field is included in the MAC header for TDD only. The UE-Id type and UE-Id are included in the MAC header for FDD only. The C/T field is included if multiplexing on MAC is applied.

#### Reference(s)

TS 25.321 clause 9.2.1.1.

#### 7.1.1.6.3 Test purpose

To verify when DTCH or DCCH is mapped to DSCH or USCH, the TCTF field is applied for TDD only, the UE-Id type and UE-Id are applied for FDD only. If multiplexing on MAC is applied, C/T field is included, otherwise, the C/T field is not included in the MAC header.

#### 7.1.1.6.4 Method of test

##### Initial conditions

##### System Simulator:

- 1 cell, default parameters. Ciphering Off.

##### User Equipment:

- The UE shall operate under normal test conditions, Ciphering Off.
- The Test-USIM shall be inserted.

The UE is in Connected mode and a connection is established as described in the TS 34.123-1, 7.3 PDCP testing, clause "Setup a UE originated PS session using IP Header compression in AM RLC (using Loop back test mode 1).

#### Related ICS/IXIT Statement(s)

TBD

#### Foreseen Final State of the UE

#### Test procedure

- The SS sends a certain data block to the UE.
- After having received the data block via configured mapped channels, the UE forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its MAC configuration to the SS.
- The SS receives the returned data block and checks its MAC header whether the TCTF is applied for TDD only, or the UE-Id type and UE-Id are applied for FDD only and the C/T field shall not be applied.
- The SS configures the RLC.
- The SS starts a Radio Bearer Reconfiguration procedure to be connected in RLC transparent mode and configures the Radio Bearer for multiplexing.
- The SS sends a certain data block to the UE.
- After having received the data block via configured mapped channels, the UE forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its MAC configuration to the SS.

- h) The SS receives the returned data block and check its MAC header whether the TCTF is applied for TDD only, or the UE-Id type and UE-Id are applied for FDD only and the C/T field is applied.
- i) The SS reconfigures its RLC mode to be in AM.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	DATA BLOCK	The SS sends one data block with MAC header, sets TCTF as "DCCH or DTCH over USCH or DSCH" for TDD only, or sets UE-Id type as "C-RNTI", and UE-Id as C-RNTI of UE for FDD only.
2		→	LOOP BACK DATA BLOCK	SS receives the loop back data block from the Uplink RB and checks the MAC header.
3				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as "AM mode".
4		←	RADIO BEARER RECONFIGURE	Reconfigures the downlink and uplink radio bearer as multiplexing .
5		→	RADIO BEARER RECONFIGURATION COMPLETE	
6				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as "Transparent mode".
7		←	DATA BLOCK	The SS sends one data block with MAC header, sets TCTF as "DCCH or DTCH over USCH or DSCH" for TDD only, or sets UE-Id type as "C-RNTI", and UE-Id as C-RNTI of UE for FDD only and C/T field is included.
8		→	LOOP BACK DATA BLOCK	SS receives the loop back data block from the Uplink RB and checks the MAC header.
9				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as "AM mode".

## Specific Message Contents

## RADIO BEARER SET UP:

Information Element	Value/remark
RLC info - RLC mode	AM RLC
RB mapping info -Downlink - Number of logical channels - Downlink transport channel type	1 DSCH
-Uplink - Number of logical channels - Uplink transport channel type	1 USCH

## RADIO BEARER RECONFIGURE:

Information Element	Value/remark
RLC info - RLC mode	AM RLC
RB mapping info -Downlink - Number of logical channels - Downlink transport channel type	2 DSCH
-Uplink - Number of logical channels - Uplink transport channel type	2 USCH

## 7.1.1.6.5 Test requirements

TCTF field in the MAC header of loop back data block is "DTCH or DCCH over DSCH or USCH" for TDD only. The UE-ID type and UE-Id are applied in the MAC header for FDD only. If multiplexing on MAC is applied, C/T field is included, otherwise, C/T field is not included.

## 7.1.1.7 DTCH or DCCH mapped to CPCH

## 7.1.1.7.1 Definition and applicability

All UEs which support CPCH.

## 7.1.1.7.2 Conformance requirement

UE-Id type field and UE-Id are included in the MAC header. The C/T field is included in the MAC header if multiplexing on MAC is applied.

## Reference(s)

TS 25.321 clauses 9.2.1.1 and 11.3.

TS 25.214 clause 6.2.

TS 25.211 clause 5.3.3.11.

## 7.1.1.7.3 Test purpose

To verify when DTCH or DCCH mapped to CPCH, UE-Id type field and UE-Id are included in the MAC header. if multiplexing on MAC is applied, the C/T field is included in the MAC header, otherwise, C/T field is not included.

## 7.1.1.7.4 Method of test

## Initial conditions

## System Simulator:

- 1 cell, default parameters, Ciphering Off.

## User Equipment:

- The UE shall operate under normal test conditions, Ciphering Off.
- The Test-USIM shall be inserted.

The UE is in Connected mode and a connection is established as described in the TS 34.123-1, 7.3 PDCP testing, clause "Setup a UE originated PS session using IP Header compression in UM RLC (using Loop back test mode 1).

Related ICS/IXIT Statement(s)

TBD

Foreseen Final State of the UE

Test procedure

- a) The SS sends SIBs 7, 8, and 9, sends CSICH information and waits 30 s.
- b) The SS reconfigures its RLC mode to be in transparent mode RLC. Afterwards its sends a certain data block to the UE.
- c) After having received the data block via configured mapped channels, the UE forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its MAC configuration to the SS.
- d) The SS receives the returned data block and checks its MAC header, whether a UE-Id type and a UE-Id are included.
- e) The SS reconfigures its RLC mode to be in AM.
- f) The SS starts a Radio Bearer Reconfiguration procedure to be connected in RLC transparent mode and configures the Radio Bearer for multiplexing.
- g) The SS sends the next data block via its MAC entity with MAC header, including the UE-Id type as "C-RNTI" and UE-Id as C-RNTI of the UE.C/T field.
- h) After having received the data block via configured mapped channels, the UE forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its MAC configuration to the SS.
- i) The SS receives the returned data block and checks its MAC header, whether UE-Id type, UE-Id field are included and C/T field is applied or not.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		SIBs 7, 8 and 9 and CSICH information	Containing default settings for CPCH.
2	←		DATA BLOCK	The SS sends one data block with MAC header, sets UE-Id type as "C-RNTI", and UE-Id as C-RNTI of UE.
3	→		LOOP BACK DATA BLOCK	SS receives the loop back data block from the Uplink RB and checks the MAC header.
4				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as "AM mode".
5	←		RADIO BEARER RECONFIGURE	Reconfigures the downlink and uplink radio bearer as multiplexing.
6	→		RADIO BEARER RECONFIGURATION COMPLETE	
7				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as "Transparent mode".
8	←		DATA BLOCK	The SS sends one data block with MAC header, sets UE-Id type as "C-RNTI", and UE-Id as C-RNTI of UE.
9	→		LOOP BACK DATA BLOCK	SS receives the loop back data block from the Uplink RB and checks the MAC header.
10				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as "AM mode".

## Specific Message Contents

## RADIO BEARER SET UP:

Information Element	Value/remark
RLC info - RLC mode	AM RLC
RB mapping info -Downlink - Number of logical channels - Downlink transport channel type	1 FACH
-Uplink - Number of logical channels - Uplink transport channel type	1 CPCH

## RADIO BEARER RECONFIGURE:

Information Element	Value/remark
RLC info - RLC mode	AM RLC
RB mapping info -Downlink - Number of logical channels - Downlink transport channel type	2 FACH
-Uplink - Number of logical channels - Uplink transport channel type	2 CPCH

## PRACH persistence level info in System Information Block type 7

Information Element	Value/Remark
PRACHs listed in SIB 5 - Dynamic persistence level	All set to 8, which maps to minimum persistence value, no access allowed
PRACHs listed in SIB 6 - Dynamic persistence level	All set to 8, which maps to minimum persistence value, no access allowed

## CPCH parameters in System Information Block type 8

Information Element	Value/Remark
Back off control parameters	
- N_ap_retrans_max	15
- N_access_fails	15
- NF_bo_no_aich	15
- NS_bo_busy	15
- NF_bo_all_busy	15
- NF_bo_mismatch	15
- T_CPCH	0
Power Control Algorithm	algorithm 1
TPC step size	1
DL DPCCH BER	15

## CPCH set info in System Information Block type 8

Information Element	Value/Remark
AP preamble scrambling code	16
AP-AICH channelisation code	15
CD preamble scrambling code	17
CD/CA-ICH channelisation code	16
DeltaPp-m	0
UL DPCCH Slot Format	1
N_start_message	8
CPCH status indication mode	PA mode
PCPCH Channel #1 info	
- UL scrambling code	18
- DL channelisation code	15
- PCP length	8
- UCSM info	
- Minimum spreading factor	64
- NF_max	64
- AP signature	15
PCPCH Channel #2 info	
- UL scrambling code	19
- DL channelisation code	14
- PCP length	8
- UCSM info	
- Minimum spreading factor	64
- NF_max	64
- AP signature	14

## PCPCH persistence level info in System Information Block type 9

Information Element	Value/Remark
CPCH set persistence levels - PCPCH persistence level	Both set to 1, immediate access allowed

## CSICH Information broadcast by SS PHY

Information Element	Value/Remark
PCPCH Channel Availability (PCA) :	
-PCA1	Available
-PCA2	Available

## 7.1.1.7.5 Test requirements

The UE-Id type and UE-Id field are included in the MAC header. When multiplexing on MAC is not applied, C/T field is included in the MAC header. Otherwise, C/T field is not included.

## 7.1.1.8 DTCH or DCCH mapped to DCH / Invalid C/T Field

## 7.1.1.8.1 Definition

This tests that the MAC applies the correct header to the MAC PDU according to the type of logical channel carried on the DCH transport channel. Incorrect application of MAC headers would result in inoperation of the UE.

## 7.1.1.8.2 Conformance requirement

DTCH or DCCH mapped to DCH, no multiplexing of dedicated channels on MAC: -no MAC header is required.

DTCH or DCCH mapped to DCH, with multiplexing of dedicated channels on MAC: -C/T field is included in MAC header.

The following fields are defined for the MAC header:

- C/T field  
The C/T field provides identification of the logical channel instance when multiple logical channels are carried on the same transport channel...

#### Structure of the C/T field

C/T field	Designation
0000	Logical channel 1
0001	Logical channel 2
...	...
1110	Logical channel 15
1111	Reserved (PDUs with this coding will be discarded by this version of the protocol)

#### Reference(s)

TS 25.321 clauses 9.2.1 and 9.2.1.1 b).

#### 7.1.1.8.3 Test purpose

1. To verify that the UE discards PDUs with reserved or incorrect values in C/T field.
2. To verify that the C/T field is correctly applied when a DTCH or DCCH is mapped to a DCH.

#### 7.1.1.8.4 Method of test

#### Initial conditions

#### System Simulator:

- 1 cell, default parameters, Ciphering Off.

The DCH/DPCH is configured as specified in TS 34.108 clause 6.10.2.4.1.2: Stand-alone UL:3.4 DL:3.4 kbps SRBs for DCCH) with the following exception:

Higher layer	RAB/signalling RB	RB#3 (SRB#3)	
	User of Radio Bearer	NAS_DT High prio	
RLC	Logical channel type	DCCH	
	RLC mode	TM	
	Payload sizes, bit	148	
	Max data rate, bps	3700	
	RLC header, bit	0	
MAC	MAC header, bit	0 (note)	
	MAC multiplexing	Simulated by SS	
Layer 1	TrCH type	DCH	
	TB sizes, bit	148	
	TFS	TF0, bits	0 x 148
		TF1, bits	1 x 148
	TTI, ms	40	
	Coding type	CC 1/3	
	CRC, bit	16	
	Max number of bits/TTI before rate matching	516	
	Uplink; Max number of bits/radio frame before rate matching	129	
	RM attribute	155-165	
NOTE: The SS MAC layer must be configured not to add a MAC header so that the header can be added by the test case in order to create the necessary invalid values.			

The TFCS should be configured as specified in clause 6.10.2.4.1.2.1.1.2.

#### User Equipment:

The UE shall operate under normal test conditions, Cipherring Off.

The Test-USIM shall be inserted.

The SS starts broadcasting the System Information as specified in TS 34.108 clause 6.1, using the configuration for the PRACH and SCCPCH (signalled in SYSTEM INFORMATION 5) as follows:

1. The SCCPCH is configured as specified in TS 34.108 clause 6.10.2.4.3.3 (Interactive/Background 32 kbps RAB + SRB for PCCH + SRB for CCCH + SRB for DCCH + SRB for BCCH).
2. The PRACH is configured as specified in TS 34.108 clause 6.10.2.4.4.1.

The SS follows the procedure in TS 34.108 clause 7.4.2.1 (Mobile Terminated) so that the UE shall be in state BGP 6-1 (CS-CELL\_DCH\_INITIAL). During this procedure the RRC CONNECTION SETUP message shall allocate a DCH to carry the signalling radio bearers as follows:

1. The DCH/DPCH is configured as specified in TS 34.108 clause 6.10.2.4.1.2: Stand-alone UL:3.4 DL:3.4 kbps SRBs for DCCH).

#### Test procedure

- a) The SS receives the PAGING RESPONSE message from the UE and checks the C/T field.
- b) The SS transmits MAC PDUs containing RLC AM PDUs containing a DIRECT TRANSFER message containing
  1. Dummy octet string for NAS Message, of size sufficient enough to fit in one RLC PDU of 144 bits, including the correct RLC AM header.
  2. The IE CN Domain Identity is Set to PS Domain (no signalling connection for this Domain exists).

3. The polling bit in RLC header is set for transmission of RLC STATUS PDU.

The MAC header shall be set as follows:

Field	Value
C/T	0100'B

- c) The SS monitors the DCH (DCCH/SRB#3) for 10 s to ensure that no transmissions occur.
- d) The SS again transmits MAC PDUs as in b) above, but this time uses the correct C/T value for AM-DCCH NAS High Priority of 0010'B. The sequence numbers in the RLC headers shall be identical with those sent in b).
- e) SS Receives RLC Status PDU on SRB #3 acknowledging the receipt of the above RLC PDU.
- f) The SS receives a RRC STATUS message on the uplink DCCH using AM RLC on SRB # 2.
- g) The SS repeats steps b), c), d), e) and f), with the C/T field set as follows in step b):

Iteration	C/T Value
2	1111'B

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		→	PAGING RESPONSE	Check C/T field
2		←	MAC PDU(C/T, RLC AM PDU(SN=x, DIRECT TRANSFER))	Sent with incorrect C/T = 0100'B, or 1111'B
2a			wait for T = 10 s	SS monitors for DCH (SRB#3) transmissions
3		←	MAC PDU(C/T, RLC AM PDU(SN=x, DIRECT TRANSFER))	Sent with correct C/T = 0010'B
4		→	RLC-STATUS-PDU	ACK PDUs with SN = x C/T Field is recognised as correct for the DCCH
5		→	RRC Status PDU	

Steps 2 to 5 of the expected sequence are repeated for iteration 2. Note: For iteration 2 the SN in steps 2 and 4 starts with x+1.

Specific Message Contents

None

#### 7.1.1.8.5 Test Requirement

In step a) the C/T field should be set to the Logical Channel ID for SRB #3 (0010'B). Note that this may be implied from receipt of the PAGING RESPONSE message correctly by the SS test script.

During the test the SS shall request RLC status reports with every transmitted PDU by setting of the Polling Bit. The UE shall not send any STATUS PDUs indicating missing PDUs.

At the end of each iteration (steps 4 and 5 of expected sequence) the SS shall receive a RLC Status PDU on SRB # 3 with C/T field set to '0010'B and RRC Status PDU on SRB # 2.

## 7.1.2 RACH/FACH procedures

### 7.1.2.1 Selection and control of Power Level

#### 7.1.2.1.1 Void

NOTE Test case "Selection and control of Power Level (FDD)" has been removed as the test purpose is implicitly tested by radio resource management test cases in TS 34.121 clause 8.4.2.1 and 8.4.2.2.

#### 7.1.2.1.2 Selection and control of Power Level (3,84 Mcps TDD option) (FFS)

#### 7.1.2.1.3 Selection and control of Power Level (1,28 Mcps TDD option)

##### 7.1.2.1.3.1 Definition and applicability

All TDD 1,28 Mcps UE

##### 7.1.2.1.3.2 Conformance requirement

1. The UE sets the initial preamble transmit power to the value  $P_{UpPCH}$  given in clause 8.5.7 of TS 25.331.
2. If the UE does not receive an acknowledgement on the FPACH then the UE increases the preamble transmission power by the specified increment  $P_{wramp}$ .
3. The UE ceases power ramping after the maximum number of pre-amble increments permitted has been completed.
4. Where the UE is permitted to complete a number of power ramping cycles, the UE returns to the initial transmit power (no increment applied) at the start of each cycle. The number of cycles completed before the UE ceases transmission should equal the maximum number of permitted power ramping cycles.
5. The UE does not transmit on PRACH resources.

##### Reference(s)

TS 25.224 clause 5.6.

TS 25.331 clause 8.5.7.

TS 25.321 clause 11.2.3.

##### 7.1.2.1.3.3 Test Purpose

To verify that:

- the UE selects the correct preamble transmit powers during a power ramp cycle, taking account of the desired  $UpPCH$  receive power and power ramp step specified in the BCH layer 3 message SIB 5,
- the number of steps in a power ramp cycle and the number of power ramp cycles completed when no reply is received from the UTRAN is equal to the values specified for these parameters in the BCH layer 3 messages SIB 5,
- the UE does not transmit on the PRACH resources specified in the BCH message SIB 5.

##### 7.1.2.1.3.4 Method of test

##### Initial conditions

The UE is attached to the network and in idle mode.

Related ICS/IXT Statement(s)

TBD

Foreseen Final State of the UE

The same as the initial condition.

Test procedure

- a) The SS pages the UE to initiate the RACH access procedure;
- b) The SS does not respond to UpPCH transmissions received from the UE;
- c) The SS measures the power level of each UpPCH code that the UE transmits;
- d) The SS monitors the PRACH resources to ensure that no transmissions are received from the UE;
- e) The procedure is continued until the maximum permitted power ramping cycles, and within each power ramping cycle, the maximum number of UpPCH transmissions have been made. The UpPCH and PRACH channels are then continued for time, tbd, to ensure that no further transmissions are made by the UE.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	PAGE	
2		->	UpPCH	$P_{UpPCH} = L_{PCCPCH} + PRX_{UpPCHdes}$
3		->	UpPCH	$P_{UpPCH} = L_{PCCPCH} + PRX_{UpPCHdes} + Pwr_{ramp}$
4			.....	
5		->	UpPCH	$P_{UpPCH} = L_{PCCPCH} + PRX_{UpPCHdes} + n \cdot Pwr_{ramp}$
6		->	UpPCH	$P_{UpPCH} = L_{PCCPCH} + PRX_{UpPCHdes}$
7		->	UpPCH	$P_{UpPCH} = L_{PCCPCH} + PRX_{UpPCHdes} + Pwr_{ramp}$
8			.....	
9		->	UpPCH	$P_{UpPCH} = L_{PCCPCH} + PRX_{UpPCHdes} + n \cdot Pwr_{ramp}$
10			Wait for time-period	

7.1.2.1.3.5 Test requirements

The power of the first UpPCH transmission should equal  $P_{UpPCH} = L_{PCCPCH} + PRX_{UpPCHdes}$ , subsequent transmissions should increase in power by  $Pwr_{ramp}$  until the maximum permitted number of steps in a power ramping cycle has been completed. The power ramping cycle should be repeated  $M_{max}$  times before the UE ceases to transmit. The UE should not transmit on any PRACH resources.

7.1.2.2 Correct application of Dynamic Persistence

7.1.2.2.1 Correct application of Dynamic Persistence (FDD)

7.1.2.2.1.1 Definition and applicability

All FDD UE.

7.1.2.2.1.2 Conformance requirement

The UE implements the dynamic persistence algorithm by:

- 1. reading the current dynamic persistence value from the BCH;
- 2. perform a random draw against the current dynamic persistence value. The random function is TBD;

3. defer transmission for one frame and repeat the process if the result of the random draw is negative, otherwise proceed with a RRC CONNECTION REQUEST.

#### Reference(s)

TS 25.321, clause 11.2.2 (figure 11.2.2.1).

#### 7.1.2.2.1.3 Test purpose

To verify that if the UE correctly operates the dynamic persistence algorithm outlined in fig 11.2.2.1 of TS25.321.

#### 7.1.2.2.1.4 Method of test

#### Initial conditions

##### System Simulator:

1 cell, default parameters, Ciphering Off.

##### User Equipment:

The UE shall operate under normal test conditions, Ciphering Off.

The Test-USIM shall be inserted.

#### Related ICS/IXIT Statement(s)

TBD

#### Foreseen Final State of the UE

The same as the initial conditions.

#### Test procedure

##### Iteration 1

- a) The SS changes the default system information messages such that the dynamic persistence level is set to 8, and scaling factors are not transmitted. This results in a dynamic persistence value ( $P_i$ ) of 0.0078125 for all access service classes. Note: ASC#0 is not used because NumASC=7 and the lowest MLP value =1. - See 25.321, clause 11.2.1.
- b) The SS waits until the UE has enough time to take account of the changes.
- c) The SS repeatedly pages the UE 100 times, waiting for the reception of a RRC CONNECTION REQUEST from the UE before each subsequent page.

##### Iteration 2

The SS performs step a to c) once more, but changes the default system information messages such that the dynamic persistence level is set to 1, and no scaling factors are transmitted. This results in a dynamic persistence value ( $P_i$ ) of 1 for all access service classes.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	PAGE	
2		→	RRC CONNECTION REQUEST	

The above sequence is repeated 100 times.

#### 7.1.2.2.5 Test requirements

##### Iteration 1

The SS shall receive a RRC CONNECTION REQUEST from the UE on average every 1.28 seconds  $\pm 0.15s$  after each paging request.

##### Iteration 2

The SS shall receive a RRC CONNECTION REQUEST from the UE within 150ms after each paging request.

#### 7.1.2.2.2 Correct application of Dynamic Persistence (3.84 Mcps TDD option) (FFS)

#### 7.1.2.2.3 Correct application of Dynamic Persistence (1.28 Mcps TDD option)

##### 7.1.2.2.3.1 Definition and applicability

All TDD 1.28 Mcps UE

##### 7.1.2.2.3.2 Conformance requirement

The UE responds to changes in the dynamic persistence parameter broadcast in SIB 7.

##### Reference(s)

TS 25.331 clause 8.5.12.

TS 25.321 clause 11.2.3.

##### 7.1.2.2.3.3 Test Purpose

To verify that if the dynamic persistence value broadcast in SIB7 is set to zero, the UE will not attempt RACH access.

##### 7.1.2.2.3.4 Method of test

##### Initial conditions

The UE is attached to the network and in idle mode. The Sim card should be configured so that the UE adopts  $ASC = 1$  or greater. The SS BCH broadcast will include SIB 7 with the dynamic persistence parameter set to zero.

##### Related ICS/IXT Statement(s)

TBD

##### Foreseen Final State of the UE

The same as the initial condition.

##### Test procedure

- a) The SS repeatedly pages the UE for  $T_{??}$  seconds.
- b) The SS monitors UpPCH for a response from the UE.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	PAGE	
2			Wait	

#### 7.1.2.2.3.5 Test Requirements

No UpPCH transmission should be received from the UE.

### 7.1.2.3 Correct Selection of RACH parameters

#### 7.1.2.3.1 Correct Selection of RACH parameters (FDD)

##### 7.1.2.3.1.1 Definition

The physical random access procedure described in this subclause is initiated upon request of a PHY-Data-REQ primitive from the MAC sublayer.

The UE selection of "PRACH system information" is described in TS 25.331 clause 8.5.17.

##### 7.1.2.3.1.2 Conformance requirement

A. The physical random-access procedure shall be performed as follows:

- 1 Derive the available uplink access slots, in the next full access slot set, for the set of available RACH sub-channels within the given ASC with the help of TS 25.214, subclauses 6.1.1. and 6.1.2. Randomly select one access slot among the ones previously determined. If there is no access slot available in the selected set, randomly select one uplink access slot corresponding to the set of available RACH sub-channels within the given ASC from the next access slot set. The random function shall be such that each of the allowed selections is chosen with equal probability.
- 2 Randomly select a signature from the set of available signatures within the given ASC. The random function shall be such that each of the allowed selections is chosen with equal probability.
- 3 Set the Preamble Retransmission Counter to Preamble Retrans Max.
- ...
- 5 ... Transmit a preamble using the selected uplink access slot, signature, and preamble transmission power.
- 6 If no positive or negative acquisition indicator ( $AI \neq +1$  nor  $-1$ ) corresponding to the selected signature is detected in the downlink access slot corresponding to the selected uplink access slot:
  - 6.1 Select the next available access slot in the set of available RACH sub-channels within the given ASC.
  - 6.2 Randomly select a new signature from the set of available signatures within the given ASC. The random function shall be such that each of the allowed selections is chosen with equal probability.
  - ...
  - 6.4 Decrease the Preamble Retransmission Counter by one.
  - 6.5 If the Preamble Retransmission Counter  $> 0$  then repeat from step 5. Otherwise pass L1 status ("No ack on AICH") to the higher layers (MAC) and exit the physical random access procedure.
- 7 If a negative acquisition indicator corresponding to the selected signature is detected in the downlink access slot corresponding to the selected uplink access slot, pass L1 status ("Nack on AICH received") to the higher layers (MAC) and exit the physical random access procedure.

- 8 Transmit the random access message three or four uplink access slots after the uplink access slot of the last transmitted preamble depending on the AICH transmission timing parameter. Transmission power of the control part of the random access message should be  $P_{p-m}$  [dB] higher than the power of the last transmitted preamble. Transmission power of the data part of the random access message is set according to subclause 5.1.1.2.
- 9 Pass L1 status "RACH message transmitted" to the higher layers and exit the physical random access procedure.

#### Reference(s)

TS 25.214 clause 6.1.

#### 7.1.2.3.1.3 Test purpose

To verify that:

A1 the UE, initially:

- determines the ASC for the given Access Class (AC).
- derives the available uplink access slots, in the next full access slot set, for the set of available RACH sub-channels within the given ASC with the help of TS 25.214, subclauses 6.1.1. and 6.1.2. and randomly select one access slot among the ones previously determined.
- randomly select a new signature from the set of available signatures within the given ASC.

A2 the UE, when not receiving any reply from UTRAN:

- selects the next available access slot in the set of available RACH sub-channels within the given ASC.
- randomly select a new signature from the set of available signatures within the given ASC.
- does not transmit on the PRACH resources specified in the BCH message SIB 5 after that the physical random access procedure is terminated.

A3 the UE, when detecting a negative acquisition indicator:

- does not transmit on the PRACH resources specified in the BCH message SIB 5 after that the physical random access procedure is terminated.

A4 the UE, when detecting a positive acquisition indicator:

- transmits the random access message three or four uplink access slots after the uplink access slot of the last transmitted preamble depending on the AICH transmission timing parameter.
- terminates the random access procedure.

#### 7.1.2.3.1.4 Method of test

##### Initial conditions

The UE shall be attached to the network and in idle mode.

The UE shall use Access Class AC#15 which provides permission to use ASC#0 for the initial access. This condition is achieved by inserting the USIM card with "Type B" setting of the parameter  $EF_{ACC}$  (Access Control Class) as defined in TS 34.108.

Preamble Retrans Max parameter in SIB5 set to 5.

Maximum number of preamble retransmission cycles in SIB 5 is set to  $M_{max} = 1$ .

2 ASC settings (ASC#0 and ASC#1) are defined (with default parameters) in SIB5, except that the parameter assigned sub channel number is set as follows:

ASC#0 Assigned sub channel number = '0001'B

ASC#1 Assigned sub channel number = '0010'B

The available sub-channel number defined in SIB5 is set to '1111 1111 1111'B. Note: this value allows RACH transmission on all sub-channels defined by "Assigned sub channel number" above.

#### Related ICS/IXIT Statement(s)

TBD

#### Foreseen Final State of the UE

The same as the initial conditions.

#### Test procedure

- a) The SS pages the UE until it performs a RACH access.
- b) The SS measures the access slot and preamble signature used.
- c) The SS does not acknowledge the RACH access, causing the UE to retry.
- d) The SS again measures the access slot and preamble signature used.
- e) The SS repeats the procedure from step c) until the maximum number of retries "Preamble Retrans Max" have been attempted, and monitors the RACH channel for 10 seconds to ensure that no further RACH accesses occur.
- f) The SS pages the UE until it performs a RACH access.
- g) The SS measures the the access slot and preamble signature used.
- h) The SS responds with a negative acquisition indicator on the AICH.
- i) The SS monitors the RACH channel for 10 seconds to ensure that no further RACH accesses occur.
- j) The SS pages the UE until it performs a RACH access.
- k) The SS measures the access slot used.
- l) The SS acknowledges the RACH access normally.
- m) The SS measures the first access slot used in the PRACH message part.
- n) The SS monitors the RACH channel for 10 seconds to ensure that no further RACH accesses occur.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		PAGE	Preamble Retransmission Counter = 5
2	→		Access Preamble	Access slot used = n, where n is defined by the table in clause 7.1.2.3.1.5 Signature used = any from {P <sub>0</sub> .. P <sub>7</sub> }
3	→		Access Preamble	Preamble Retransmission Counter = 4 Access slot used = mod(n+3,15) Signature used = any from {P <sub>0</sub> .. P <sub>7</sub> }
4	→		Access Preamble	Preamble Retransmission Counter = 3 Access slot used = mod(n+6,15) Signature used = any from {P <sub>0</sub> .. P <sub>7</sub> }
5	→		Access Preamble	Preamble Retransmission Counter = 2 Access slot used = mod(n+9,15) Signature used = any from {P <sub>0</sub> .. P <sub>7</sub> }
6	→		Access Preamble	Preamble Retransmission Counter = 1 Access slot used = mod(n+12,15) Signature used = any from {P <sub>0</sub> .. P <sub>7</sub> }
7			Wait for T = 10s	Preamble Retransmission Counter = 0 SS monitors for RACH access attempts
8	←		PAGE	
9	→		Access Preamble	Access slot used = n, where n is defined by the table in clause 7.1.2.3.1.5 Signature used = any from {P <sub>0</sub> .. P <sub>7</sub> }
10	←		AICH = NEG ACQUISITION IND	
11			Wait for T = 10s	SS monitors for RACH access attempts
12	←		PAGE	
13	→		Access Preamble	Access slot used = n, where n is defined by the table in clause 7.1.2.3.1.5 Signature used = any from {P <sub>0</sub> .. P <sub>7</sub> }
14	←		AICH = POS ACQUISITION IND	
15	→		RRC_CONNECTION_REQUEST	Message part. Access slot used = mod(n+3, 15)
16			Wait for T = 10s	SS monitors for RACH access attempts

Specific Message Contents

The following deviations from System Information Block type 5 in TS 34.108 are applicable:

PRACH power offset info, PRACH info, and PRACH partitioning in System Information Block type 5

Information Element	Value/Remark
PRACH info	
- CHOICE	FDD
- Available Sub Channel number	'1111 1111 1111 1111'B
PRACH partitioning	
- Access Service Class	
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#0)
- Available signature End Index	7 (ASC#0)
- Assigned Sub-channel Number	'0001'B
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#1)
- Available signature End Index	7 (ASC#1)
- Assigned Sub-channel Number	'0010'B
PRACH power offset	
- Preamble Retrans Max	5

7.1.2.3.1.5 Test requirements

A1

At step 2

- the SS shall receive a PRACH preamble using an access slot as defined below and using a preamble signature from the set of preamble signatures  $\{P_0 \dots P_7\}$ . See TS 25.213, clause 4.3.3.3 for a list of preamble codes.
- the access slot selected for the first access preamble can be any of the shaded table entries given below for ASC#0, depending on SFN (Note: the table entries which are not shaded are not allowed for ASC#0):

SFN modulo 8 of corresponding P-CCPCH frame	Sub-channel number											
	0	1	2	3	4	5	6	7	8	9	10	11
0	0	1	2	3	4	5	6	7				
1	12	13	14						8	9	10	11
2				0	1	2	3	4	5	6	7	
3	9	10	11	12	13	14						8
4	6	7					0	1	2	3	4	5
5			8	9	10	11	12	13	14			
6	3	4	5	6	7					0	1	2
7						8	9	10	11	12	13	14

A2

At steps 3, 4, 5, and 6

- the SS shall receive a PRACH preamble using access slot  $\text{mod}(n + 3, 15)$ , where  $n$  is the access slot used in the previous step, and using a preamble signature from the set of preamble signatures  $\{P_0 \dots P_7\}$ . See TS 25.213, clause 4.3.3.3 for a list of preamble codes.

At step 7

- the SS shall not receive on the PRACH resources specified in the BCH message SIB 5 after that the physical random access procedure is terminated.

A3

At step 11

- the SS shall not receive on the PRACH resources specified in the BCH message SIB 5 after that the physical random access procedure is terminated.

A4

At step 15

- the SS shall receive the random access message three access slots after the uplink access slot of the preamble received in step 13.

At step 11

- the SS shall not receive on the PRACH resources specified in the BCH message SIB 5 after that the physical random access procedure is terminated.

#### 7.1.2.3.2 Correct Selection of RACH parameters (3.84 Mcps TDD option)

(FFS)

#### 7.1.2.3.3 Correct Selection of RACH parameters (1.28 Mcps TDD option)

##### 7.1.2.3.3.1 Definition and applicability

All TDD 1.28 Mcps UE

7.1.2.3.3.2 Conformance requirement

That the UE selects UpPCH codes and UpPCH sub-channels that are defined for the ASC that the UE should adopt based on its AC (when the RACH message to be transmitted is an 'RRC Connection Request'). Parameters are defined in the SIB 5 messages received by the UE.

Reference(s)

TS25.224 clauses 4.7.1 and 5.6.

TS25.321 clause 11.2.3.

7.1.2.3.3.3 Test Purpose

To verify that the UE selects UpPCH codes and sub-channels that are allocated to the ASC that the UE should adopt based on its AC.

7.1.2.3.3.4 Method of test

Initial conditions

The UE is attached to the network and in idle mode. The Sim card should be configured so that the UE can adopt a known ASC based on its AC. The SS will broadcast SIB 5 messages that allocate to each ASC subsets of the total UpPCH codes and sub-channels.

Related ICS/IXT Statement(s)

TBD

Foreseen Final State of the UE

The same as the initial condition.

Test procedure

The test procedure is similar to that specified for test 7.1.2.1.3. In place of power level the test monitors the UpPCH codes that are used for the UE's UpPCH transmissions and the sub-channels in which they are made.

- a) The SS pages the UE to initiate the RACH access procedure;
- b) The SS does not respond to UpPCH transmissions received from the UE;
- c) The SS identifies the UpPCH codes on which the UE transmits;
- d) The SS identifies the system frame numbers of the frames in which the UE's UpPCH transmissions are received;
- e) The procedure is continued until the maximum permitted power ramping cycles, and within each power ramping cycle, the maximum number of UpPCH transmissions have been made.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	PAGE	
2		->	UpPCH	Code and sub-channel should be valid.
3		->	UpPCH	Code and sub-channel should be valid.
4			.....	
5		->	UpPCH	Code and sub-channel should be valid.
6		->	UpPCH	Code and sub-channel should be valid.
7		->	UpPCH	Code and sub-channel should be valid.
8			.....	
9		->	UpPCH	Code and sub-channel should be valid.

#### 7.1.2.3.3.5 Test Requirements

The UpPCH transmissions should be made in sub-channels and using codes that are allocated to the ASC that the UE should adopt based on its AC.

### 7.1.2.4 Correct Detection and Response to FPACH (1.28 Mcps TDD option)

#### 7.1.2.4.1 Definition and applicability

All TDD 1,28 Mcps UE.

#### 7.1.2.4.2 Conformance requirement

That the UE:

1. Receives and acts upon an FPACH message transmitted within WT sub-frames of the UE transmitting a UpPCH code, provided that:
  - The FPACH was transmitted in the FPACH resource associated with the UpPCH code used by the UE; and
  - The FPACH message correctly identifies the UpPCH codes identity and the number of sub-frames between the UpPCH and the FPACH transmissions.
2. Responds to the valid FPACH by transmitting an 'RRC Connection Request' message in the PRACH resources associated with the FPACH. The transmission should:
  - Occupy the PRACH resource associated with the FPACH and the sub-channel in which the FPACH was received for the duration of the TTI;
  - Be made with a timing correction and a transmission power that are based on information received in the FPACH.
3. Does not respond to FPACH messages that are transmitted, within WT sub-frames of the UE UpPCH transmission, in FPACH resources that are not associated with the UpPCH code that the UE used. Nor should it respond to FPACH messages that are received on the correct FPACH resources within WT sub-frames but which contain the incorrect UpPCH code identifier or an incorrect indication of the number of sub-frames elapsed between the UpPCH and FPACH transmissions.

#### Reference(s)

TS 25.224 clauses 4.7.1, 5.2.3, 5.6.

TS 25.331 clause 8.5.7.

TS 25.321 clause 11.2.3.

#### 7.1.2.4.3 Test Purpose

To verify that:

- The UE does not respond to FPACH transmissions that are either, received on incorrect FPACH resources, or are received on correct resources and within WT sub-frames of the UpPCH transmission, but which do not contain the correct UpPCH identity or elapsed sub-frames.
- The UE does respond to an FPACH transmission that is received, within WT sub-frames of the UpPCH transmission, on the correct FPACH resources for the UpPCH code that was used, provided that the FPACH contains the identity of the UpPCH code and the number of sub-frames elapsed between the UpPCH and the FPACH transmissions.
- The UE response is to transmit an 'RRC Connection Request' message on the PRACH resources that are associated with the FPACH taking account of the timing correction and power adjustment parameters received in the FPACH.

## 7.1.2.4.4 Method of test

## Initial conditions

The UE is attached to the network and in idle mode. The SS BCH SIB 5 message will specify that there are two or more FPACH associated with the UpPCH code set in a single PRACH system information. The UpPCH code set must include one or more odd and one or more even numbered codes.

## Related ICS/IXT Statement(s)

TBD

## Foreseen Final State of the UE

The same as the initial condition.

## Test procedure

The test procedure consists of a number of stages:

- a) The SS pages the UE to initiate RACH access.
- b) When UpPCH transmissions are received from the UE the SS should transmit FPACH responses within WT sub-frames of each UpPCH transmission but on an incorrect FPACH resource for the UpPCH code used. It is noted that the UE may change the code used for each UpPCH transmission randomly amongst those available to its ASC.
- c) The PRACH resources associated with all of the FPACH should be monitored for a transmission from the UE.
- d) The SS pages the UE to initiate RACH access.
- e) When UpPCH transmissions are received from the UE the SS should transmit FPACH responses within WT sub-frames of each UpPCH transmission on the correct FPACH resource for the UpPCH code used. The FPACH transmission should contain a signature reference number that is different from that of the UpPCH code that was used by the UE.
- f) The PRACH resources associated with all of the FPACH should be monitored for a transmission from the UE.
- g) The SS pages the UE to initiate RACH access.
- h) When UpPCH transmissions are received from the UE the SS should transmit FPACH responses within WT sub-frames of each UpPCH transmission on the correct FPACH resource for the UpPCH code used. The FPACH transmission should contain a relative sub-frame number that is different from that defined by the elapsed number of frames between the UpPCH and the FPACH transmissions.
- i) The PRACH resources associated with all of the FPACH should be monitored for a transmission from the UE.
- j) The SS pages the UE to initiate RACH access.
- k) When UpPCH transmissions are received from the UE the SS should transmit an FPACH response on the correct FPACH resources for the UpPCH code that was used by the UE. The FPACH response should include correct values for the signature reference and relative sub-frame number fields. The FPACH should also include known entries for the Received starting position of the UpPCH ( $UpPCH_{POS}$ ) and the Transmit Power Level Command for RACH ( $PRX_{PRACHdes}$ ) fields.
- l) The SS should monitor the PRACH resources associated with the FPACH commencing two or three sub-frames (depending upon the sub-frame in which the FPACH was transmitted and the length of the TTI) following the sub-frame in which the FPACH was transmitted and continuing for the number of sub-frames in the RACH TTI. The power level of the PRACH transmissions and the time of arrival of their mid-ambles should be measured. The SS should continue to monitor the UpPCH slot to ensure that the UE has ceased UpPCH transmissions.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	PAGE	
2		->	UpPCH	
3		<-	FPACH	Incorrect FPACH resources
4		->	UpPCH	
5			.....	
6		->	PAGE	
7		->	UpPCH	
8		<-	FPACH	Incorrect signature reference
9		->	UpPCH	
10			.....	
11		<-	PAGE	
12		->	UpPCH	
13		<-	FPACH	Incorrect relative sub-frame number
14		->	UpPCH	
15			.....	
16		<-	PAGE	
17		->	UpPCH	
18		<-	FPACH	Correct resources and information fields
19		->	RRC Connection Request	$P_{PRACH} = L_{PCCPCH} + PRX_{PRACHdes} + i * P_{wramp}$ , $UpPCH_{RX-offset} - UpPCH_{POS}$

7.1.2.4.5 Test Requirements

The UE should not respond to FPACH transmissions, which are made on the incorrect FPACH resources for the UpPCH code that the UE uses. The UE should continue to transmit UpPCH until the permitted maximum number of power ramping cycles is complete.

The UE should not respond to FPACH transmissions which are made within WT sub-frames of a UpPCH transmission and on the correct FPACH resources for the UpPCH code that it used if the FPACH contains either an incorrect signature reference number or an incorrect relative sub-frame number. The UE should continue to transmit UpPCH until the permitted maximum number of power ramping cycles is complete.

The UE should respond to an FPACH received within WT sub-frames of a UpPCH transmission if the FPACH is received on the correct FPACH resources for the UpPCH code used and if it contains valid information fields. The UE should cease transmitting UpPCH bursts and transmit an RRC Connection Request message using the PRACH resources that are associated with the FPACH and the sub-frame in which the FPACH was received. The transmission should commence two or three sub-frames after that containing the FPACH (dependent upon the sub-frame in which the FPACH was transmitted and the length of the TTI) and is made in all sub-frames within the TTI. Each PRACH burst should be made using the transmission power:

$$P_{PRACH} = L_{PCCPCH} + PRX_{PRACHdes} + i * P_{wramp}$$

When the power used by the UE for the UpPCH transmission acknowledged by the FPACH was:

$$P_{UpPCH} = L_{PCCPCH} + PRX_{UpPCHdes} + i * P_{wramp}$$

And transmission timing should be such that the start of each PRACH burst is offset from the beginning of the PRACH slot by:

$$UpPCH_{RX-offset} - UpPCH_{POS} \text{ chips, to an accuracy of } 1/8 \text{ chip.}$$

Where  $UpPCH_{RX-offset}$  denotes the offset from the start of the UpPCH slot of the UE's transmission measured by SS and  $UpPCH_{POS}$  is the timing correction signalled to the UE in the FPACH.

7.1.2.4a Access Service class selection for RACH transmission

7.1.2.4a.1 Definition and applicability

All UE.

#### 7.1.2.4a.2 Conformance requirement

The following ASC selection scheme shall be applied, where NumASC is the highest available ASC number and MinMLP the highest logical channel priority assigned to one logical channel:

- In case all TBs in the TB set have the same MLP, select  $ASC = \min(\text{NumASC}, \text{MLP})$ .
- In case TBs in a TB set have different priority, determine the highest priority level MinMLP and select  $ASC = \min(\text{NumASC}, \text{MinMLP})$ .

#### Reference(s)

TS 25.321 clause 11.2.1.

#### 7.1.2.4a.3 Test purpose

To verify that MAC selects ASC correctly.

#### 7.1.2.4a.4 Method of test

#### Initial conditions

System Simulator:

- 1 cell, default parameters, Ciphering Off.

User Equipment:

- The UE shall operate under normal test conditions, Ciphering Off.
- The Test-USIM shall be inserted

The SS starts broadcasting the System Information as specified in TS 34.108 clause 6.1, using the configuration for the PRACH and SCCPCH (signalled in SYSTEM INFORMATION BLOCK types 5 and 6) as follows:

1. The SCCPCH is configured as specified in TS 34.108 clause 6.10.2.4.3.3 (Interactive/Background 32 kbps RAB + SRB for PCCH + SRB for CCCH + SRB for DCCH + SRB for BCCH).
2. The PRACH is configured as specified in TS 34.108 clause 6.10.2.4.4.1.

The SS follows the procedure in TS 34.108 clause 7.4.2.6 (initiated by Mobile Terminated connection) so that the UE shall be in state BGP 6-11 (PS-DCCH+DTCH\_FACH) with the following exception:

1. The MAC Logical channel Priority (MLP) of the user RB is set to 8.

The user RB is placed into loop-back mode 1 each with the UL SDU size set to 39 bytes.

#### Related ICS/IXIT Statement(s)

TBD

#### Foreseen Final State of the UE

#### Test procedure

- a) The SS sends 1 RLC SDU of size 10 bytes on the downlink user RB.

The SS waits to receive uplink data on RACH TrCH via the user RB, then checks that the access slots and preamble signatures used correspond to a valid ASC as transmitted in system information.

- b) The SS reconfigures the transmitted system information as follows:

Only one ASC setting (ASC#0) is defined, with default parameters, except that the parameter "Assigned sub channel number" is set as follows:

ASC#0 Assigned sub channel number = '0010'B

The available sub-channel number defined in system information is set to '1111 1111 1111'B (default parameter setting). Note: this value allows RACH transmission on any sub-channel defined by "Assigned sub channel number" above.

The SS then updates System Information Block 6, sends a SYSTEM INFORMATION CHANGE INDICATION message to the UE and waits 10 s for the UE to take the system information change into account.

- c) The SS sends 1 RLC SDU of size 10 bytes on the downlink user RB.
- d) The SS waits to receive uplink data on RACH TrCH via the user RB, then checks that the access slots and preamble signatures used correspond to ASC#0, i.e. the access slot selected for the first access preamble can be any of the shaded table entries given below for ASC#0, depending on SFN (Note: the table entries which are not shaded are not allowed for ASC#0):

SFN modulo 8 of corresponding P-CCPCH frame	Sub-channel number											
	0	1	2	3	4	5	6	7	8	9	10	11
0	0	1	2	3	4	5	6	7				
1	12	13	14						8	9	10	11
2				0	1	2	3	4	5	6	7	
3	9	10	11	12	13	14						8
4	6	7					0	1	2	3	4	5
5			8	9	10	11	12	13	14			
6	3	4	5	6	7					0	1	2
7						8	9	10	11	12	13	14

- e) The SS reconfigures the transmitted system information as follows:

Four ASC settings (ASC#0 to ASC#3) are defined (with default parameters), except that the parameter assigned sub channel number is set as follows:

ASC#0 Assigned sub channel number = '0100'B

ASC#1 Assigned sub channel number = '0001'B

ASC#2 Assigned sub channel number = '0010'B

ASC#3 Assigned sub channel number = '0000'B (i.e. no sub channel is assigned)

The available sub-channel number defined in system information is set to '1111 1111 1111'B (default parameter setting). Note: this value allows RACH transmission on all sub-channels defined by "Assigned sub channel number" above.

The SS then updates System Information Block 6, sends a SYSTEM INFORMATION CHANGE INDICATION message to the UE and waits 10 s for the UE to take the system information change into account.

- f) The SS sends 1 RLC SDU of size 10 bytes on the downlink user RB.
- g) The SS waits 10 s to ensure no uplink data is received on RACH TrCH via the user RB.
- h) The SS then reconfigures the uplink user RB to have a MAC Logical channel Priority of 1.
- i) The SS sends 1 RLC SDU of size 10 bytes on the downlink user RB.
- j) The SS waits to receive uplink data on RACH TrCH via the user RB, then checks that the access slots and preamble signatures used correspond to ASC#1, i.e. the access slot selected for the first access preamble can be any of the shaded table entries given below for ASC#1, depending on SFN (Note: the table entries which are not shaded are not allowed for ASC#1):

SFN modulo 8 of corresponding P-CCPCH frame	Sub-channel number											
	0	1	2	3	4	5	6	7	8	9	10	11
0	0	1	2	3	4	5	6	7	8	9	10	11
1	12	13	14						8	9	10	11
2				0	1	2	3	4	5	6	7	
3	9	10	11	12	13	14						8
4	6	7					0	1	2	3	4	5
5			8	9	10	11	12	13	14			
6	3	4	5	6	7					0	1	2
7						8	9	10	11	12	13	14

k) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		RLC PDU	
1a	→		RLC PDU	SS checks ASC parameters
2	←		SYSTEM INFORMATION CHANGE INDICATION	Modified system information
3	←		RLC PDU	
4	→		RLC PDU	SS checks ASC parameters (ASC#0)
5	←		SYSTEM INFORMATION CHANGE INDICATION	Modified system information
6	←		RLC PDU	
6a				SS waits to check no RLC PDUs are received
7	↔		RB RECONFIGURATION	User RB MLP = 1
8	←		RLC PDU	
9	→		RLC PDU	SS checks ASC parameters (ASC#1)
10	↔		RB RELEASE	optional

7.1.2.4a.5 Test requirements

In step 1, the access slots and preamble signatures used on the PRACH TrCH on which the RLC PDU was received shall correspond to configured legal values for the allowed ASCs on the PRACH.

In step 4, the access slots and preamble signatures used on the PRACH TrCH on which the RLC PDU was received shall correspond to configured legal values for the allowed ASC#0.

In step 6a, no PDUs shall be received on PRACH.

In step 9, the access slots and preamble signatures used on the PRACH TrCH on which the RLC PDU was received shall correspond to configured legal values for the allowed ASC#1.

7.1.2.5 Void

NOTE Test case "Control of RACH transmissions for FDD mode" has been removed as the test purpose is implicitly tested by radio resource management test case in TS 34.121 clause 8.4.2.3.

## 7.1.3 Priority handling between data flows of one UE

### 7.1.3.1 Priority handling between data flows of one UE

#### 7.1.3.1.1 Definition and applicability

#### 7.1.3.1.2 Conformance requirement

When selecting between the Transport Format Combinations in the given Transport FormatCombination Set, priorities of the data flows to be mapped onto the corresponding Transport Channels can be taken into account.

The chosen TFC shall be selected from within the set of valid TFCs and shall satisfy the following criteria in the order in which they are listed below:

1. No other TFC shall allow the transmission of more highest priority data than the chosen TFC.
2. No other TFC shall allow the transmission of more data from the next lower priority logical channels. Apply this criterion recursively for the remaining priority levels.
3. No other TFC shall have a lower bit rate than the chosen TFC.

The above rules for TFC selection in the UE shall apply to DCH, and the same rules shall apply for TF selection on RACH and CPCH.

#### Reference(s)

TS 25.301 clause 5.3.1.2.

TS 25.321, clause 11.4.

#### 7.1.3.1.3 Test purpose

To verify that the priority between data flows of one UE was correctly handled.

#### 7.1.3.1.4 Method of test

#### Initial conditions

#### System Simulator:

- 1 cell, default parameters, Ciphering Off.

#### User Equipment:

- The UE shall operate under normal test conditions, Ciphering Off.
- The Test-USIM shall be inserted.

The UE is in Connected mode and a connection is established as described in the TS 34.123-1, 7.3.1.2.1.1 PDCP testing, clause "Setup a UE terminated PS session using IP Header compression in AM RLC (using Loop back test mode 1)", but for two Radio Bearer entities user (RAB#0 and RAB#1). Both user RABs shall be initially configured with a MAC logical priority of 3. The allowed TFCs shall be limited in the UE such that it's not possible to simultaneously transmit at the highest possible data rate on the DCH for each user RAB. Simultaneous transmission at lower data rates shall be possible.

The RABs are placed into loop-back mode 1 each with the UL SDU size set to 39 bytes.

#### Related ICS/IXIT Statement(s)

TBD

## Foreseen Final State of the UE

## Test procedure

- a) The SS simultaneously sends 40 RLC SDUs of size 9 bytes each on each user RAB. The SDUs are concatenated, 4 to each PDU.
- b) After having received the PDUs via configured mapped channels, the UE forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its MAC configuration to the SS.
- c) The SS receives the returned data and reads each TFCI which indicates the Transport Format.
- d) The SS checks, that high data rate RBs have a high bit rate Transport Format.
- e) Repeat step a) to d) with different MAC logical channel priority (MAC priority of RAB#0 set as 3, MAC priority of RAB#1 set as 1).

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				SS sends CRLC_CONFIG_REQ with RLC mode as "Transparent Mode".
2		←	DATA BLOCKS (Simultaneous PDUs on RAB#0 and RAB#1)	
3		→	LOOP BACK DATA BLOCKS (Order of received PDUs on RAB#0 and RAB#1 depends on configured MAC Logical Priority)	Read the Transfer Format of loop back data blocks, the high bit transfer format apply to the Radio Bearer with high MAC logical channel priority.
4				The step 1 to 3 shall be repeated with different MAC logical channel priority.

## 7.1.3.1.5 Test requirements

## Iteration1:

The high bit rate TF is applied to the high MAC logical channel priority Radio Bearer. That is, the bit rate of TF used in user RAB#1 should be the same as that used in user RAB#0. Note: UE and SS timing issues may produce a slightly biased result.

NOTE: Measurements shall be taken over the 5<sup>th</sup> to 35<sup>th</sup> RLC PDUs received.

## Iteration2:

The high bit rate TF is applied to the high MAC logical channel priority Radio Bearer. That is, the bit rate of TF used in user RAB#1 should be not less than that used in user RAB#0.

NOTE: Measurements shall be taken over the 5<sup>th</sup> to 35<sup>th</sup> RLC PDUs received.

## 7.1.4 Control of CPCH transmissions.

## 7.1.4.1 Control of CPCH transmissions for FDD

## 7.1.4.1.1 Definition and applicability

All UEs which support CPCH.

## 7.1.4.1.2 Conformance requirement

1. If counter M is not less than N\_access\_fails, the UE shall execute an access failure error procedure and the CPCH access procedure ends.

2. If the sum of the Frame Count Transmitted counter plus the number of frames in the next TTI is larger than  $NF_{max}$ , the UE shall exit the CPCH transmission procedure.
3. If the CSICH information indicates no PCPCH is available, the UE shall not attempt CPCH access.
4. If the CPCH Persistency levels are all set to 8, the UE shall not attempt CPCH access.
5. If the SS issues an immediate Emergency Stop command in the DL-DPCCH for CPCH, the UE shall abort CPCH access.

#### Reference(s)

TS 25.321 clause 11.3

TS 25.214 clause 6.

TS 25.211 clause 5.3.3.11.

#### 7.1.4.1.3 Test purpose

To verify that the MAC entity control CPCH transmission correctly.

#### 7.1.4.1.4 Method of test

#### Initial conditions

##### System Simulator:

- 1 cell, default parameters, Ciphering Off.

##### User Equipment:

- The UE shall operate under normal test conditions, Ciphering Off.
- The Test-USIM shall be inserted.

The UE is in Connected mode and a connection is established as described in the TS 34.123-1, clause 7.3 PDCP testing, clause "Setup a UE originated PS session using IP Header compression in AM RLC (using Loop back test mode 1).

#### Related ICS/IXIT Statement(s)

TBD

#### Foreseen Final State of the UE

The same as the initial conditions.

#### Test procedure

- a) The SS ends SIBs 7, 8 and 9, sends CSICH information and waits 30 s.
- b) The SS configures its RLC entity for "Transparent Mode".
- c) The SS sends certain DATA BLOCKS to UE with UE-Id type and UE-Id field.
- d) After having received the data block via configured mapped channels, the UE forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its MAC configuration to the SS.
- e) The SS receives returned DATA BLOCKS.
- f) The SS configures its RLC entity for "AM mode".
- g) The SS starts the RB reconfiguration procedure by sending the RADIO BEARER RECONFIGURATION message.

- h) After having received the UE confirmation for the reconfiguration procedure, the SS configures its RLC entity for "Transparent Mode".
- i) The SS sends SIB 8 on BCH with parameter :  $N_{\text{access\_fails}} = 0$  and waits 30 s.
- j) The SS sends certain DATA BLOCKS.
- k) The SS shall not receive any LOOP BACK DATA BLOCKS within 30 s.
- l) The SS configures its RLC entity for "AM mode".
- m) The SS starts the RB reconfiguration procedure by sending the RADIO BEARER RECONFIGURATION message.
- n) The SS receives RADIO BEARER RECONFIGURE COMPLETE.
- o) After having received the UE confirmation for the reconfiguration procedure, the SS configures its RLC entity for "Transparent Mode".
- p) The SS sends SIB 8 on BCH with parameter :  $NF_{\text{max}} = 0$  and waits 30 s.
- q) The SS sends certain DATA BLOCKS.
- r) The SS shall not receive any returned DATA BLOCKS within 30 s.
- s) The SS configures its RLC entity for "AM mode".
- t) The SS starts the RB reconfiguration procedure by sending the RADIO BEARER RECONFIGURATION message.
- u) The SS receives RADIO BEARER RECONFIGURE COMPLETE.
- v) After having received the UE confirmation for the reconfiguration procedure, the SS configures its RLC entity for "Transparent Mode".
- w) The SS sends SIB 8 on BCH and waits 30 s.
- x) The SS continuously sends CSICH information with  $PCA1=PCA2= \text{NOT AVAILABLE}$ .
- y) The SS sends certain DATA BLOCKS.
- z) The SS shall not receive any returned DATA BLOCKS within 30 s.
- aa) The SS configures its RLC entity for "AM mode".
- bb) The SS starts the RB reconfiguration procedure by sending the RADIO BEARER RECONFIGURATION message.
- cc) The SS receives RADIO BEARER RECONFIGURE COMPLETE.
- dd) After having received the UE confirmation for the reconfiguration procedure, the SS configures its RLC entity for "Transparent Mode".
- ee) The SS sends CSICH information with  $PCA1=PCA2= \text{AVAILABLE}$  and the SS PHY is configured to send CPCH Emergency Stop message in all DL DPCHs for CPCH after  $N_{\text{start\_message}}$  frames.
- ff) The SS sends certain DATA BLOCKS.
- gg) The SS shall not receive any returned DATA BLOCKS within 30 s.
- hh) The SS configures its RLC entity for "AM mode".
- ii) The SS starts the RB reconfiguration procedure by sending the RADIO BEARER RECONFIGURATION message.
- jj) The SS receives RADIO BEARER RECONFIGURE COMPLETE.

- kk) After having received the UE confirmation for the reconfiguration procedure, the SS configures its RLC entity for "Transparent Mode".
- ll) The SS sends SIB 9 on BCH with the CPCH persistence levels set to 8, no access allowed.
- mm) The SS sends certain DATA BLOCKS.
- nn) The SS shall not receive any returned DATA BLOCKS within 30 s.
- oo) The SS configures its RLC entity for "AM mode".
- pp) The SS starts the RB reconfiguration procedure by sending the RADIO BEARER RECONFIGURATION message.
- qq) The SS receives RADIO BEARER RECONFIGURE COMPLETE.
- rr) After having received the UE confirmation for the reconfiguration procedure, the SS configures its RLC entity for "Transparent Mode".
- ss) The SS sends SIB 9 on BCH with the CPCH persistence levels set to 1, immediate access allowed.
- tt) The SS sends certain DATA BLOCKS.
- uu) The SS receives returned DATA BLOCKS.
- vv) The SS configures its RLC entity for "AM mode".

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		SIBs 7, 8 and 9 and CSICH information	Containing default settings for CPCH
2				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as "Transparent mode".
3	←		DATA BLOCKS	
4	→		LOOP BACK DATA BLOCKS	
5				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as "AM mode".
6	←		RADIO BEARER RECONFIGURATION	
7	→		RADIO BEARER RECONFIGURATION COMPLETE	
8				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as "Transparent mode".
9	←		SIB 8	N_access_fails = 0
10	←		DATA BLOCK	
11				The SS can't receive loop back data blocks from UE in 30s.
12				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as "AM mode".
13	←		RADIO BEARER RECONFIGURATION	
14	→		RADIO BEARER RECONFIGURATION COMPLETE	
15				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as "Transparent mode".
16	←		SIB 8	NF_max = 0
17	←		DATA BLOCK	UE was triggered to send data block.
18				The SS can't receive data from UE in 30s
19				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as "AM mode".
20	←		RADIO BEARER RECONFIGURATION	
21	→		RADIO BEARER RECONFIGURATION COMPLETE	
22				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as "Transparent mode".
23	←		SIB 8 and CSICH information	PCA1=PCA2= NOT AVAILABLE
24	←		DATA BLOCK	
25				The SS can't receive data from UE in 30s
26				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as "AM mode".
27	←		RADIO BEARER RECONFIGURATION	
28	→		RADIO BEARER RECONFIGURATION COMPLETE	
29				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as "Transparent mode".

Step	Direction		Message	Comments
	UE	SS		
30	←		SIB 8 and CSICH information	PCA1=PCA2=AVAILABLE
31				SS sends a CPCH-Estop command in all DLDPCCCHs for CPCH after N_start_message frames
32	←		DATA BLOCK	
33				The SS can't receive data from UE in 30s
34				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as "AM mode".
35	←		RADIO BEARER RECONFIGURATION	
36	→		RADIO BEARER RECONFIGURATION COMPLETE	
37				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as "Transparent mode".
38	←		SIB 9	CPCH Persistence levels set to 8; no access allowed
39	←		DATA BLOCK	
40				The SS can't receive data from UE in 30s
41				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as "AM mode".
42	←		RADIO BEARER RECONFIGURATION	
43	→		RADIO BEARER RECONFIGURATION COMPLETE	
44				SS sends CMAC_MAC_HEADER_REQ with disable_mac_header and CRLC_CONFIG_REQ with RLC mode as "Transparent mode".
45	←		SIB 9	CPCH Persistence levels set to 1; immediate access allowed
46	←		DATA BLOCK	
47	→		LOOP BACK DATA BLOCKS	
48				SS sends CMAC_MAC_HEADER_REQ with enable_mac_header and CRLC_CONFIG_REQ with RLC mode as "AM mode".

## Specific Message Contents

## RADIO BEARER SET UP:

Information Element	Value/remark
RLC info - RLC mode	AM RLC
RB mapping info -Downlink - Number of logical channels - Downlink transport channel type	1 FACH
-Uplink - Number of logical channels - Uplink transport channel type	1 CPCH

## PRACH persistence level info in System Information Block type 7

Information Element	Value/Remark
PRACHs listed in SIB 5 - Dynamic persistence level	All set to 8, which maps to minimum persistence value, no access allowed
PRACHs listed in SIB 6 - Dynamic persistence level	
	All set to 8, which maps to minimum persistence value, no access allowed

## CPCH parameters in System Information Block type 8

Information Element	Value/Remark
Back off control parameters	
- N_ap_retrans_max	15
- N_access_fails	15
- NF_bo_no_aich	15
- NS_bo_busy	15
- NF_bo_all_busy	15
- NF_bo_mismatch	15
- T_CPCH	0
Power Control Algorithm	algorithm 1
TPC step size	1
DL DPCCH BER	15

## CPCH set info in System Information Block type 8

Information Element	Value/Remark
AP preamble scrambling code	16
AP-AICH channelisation code	15
CD preamble scrambling code	17
CD/CA-ICH channelisation code	16
DeltaPp-m	0
UL DPCCH Slot Format	1
N_start_message	8
CPCH status indication mode	PA mode
PCPCH Channel #1 info	
- UL scrambling code	18
- DL channelisation code	15
- PCP length	8
- UCSM info	
- Minimum spreading factor	64
- NF_max	64
- AP signature	15
PCPCH Channel #2 info	
- UL scrambling code	19
- DL channelisation code	14
- PCP length	8
- UCSM info	
- Minimum spreading factor	64
- NF_max	64
- AP signature	14

PCPCH persistence level info in System Information Block type 9

Information Element	Value/Remark
CPCH set persistence levels - PCPCH persistence level	Both set to 1, immediate access allowed

CSICH Information broadcast by SS PHY

Information Element	Value/Remark
PCPCH Channel Availability (PCA) : -PCA1 -PCA2	Available Available

#### 7.1.4.1.5 Test requirements

The SS can't receives data blocks from UE when N\_access\_fails or NF\_max set as 0.

The SS can't receives data blocks from UE when NF\_max set as 0.

The SS can't receives data blocks from UE when CSICH info indicates channels not available.

The SS can't receives data blocks from UE when CPCH Persistency level set to 8.

The SS can't receives data blocks from UE when Emergency Stop message terminates access.

## 7.2 RLC testing

### 7.2.1 Transparent mode

#### 7.2.1.1 Segmentation and reassembly

Transparent mode segmentation and reassembly are not tested in this release of the specification.

### 7.2.2 Unacknowledged mode

#### 7.2.2.1 General information for UM tests

Two generic Radio Access Bearers are provided for UM tests.

The UM test RAB is set up using the Generic Procedure described in clause 7.1.3 of 3GPP TS 34.108, and with the default RAB replaced as follows:

- For UM 7-bit "Length Indicator" tests: the RB configuration described in 3GPP TS 34.108 clause 6.11.1 is used. For these tests, let UM\_7\_PayloadSize denote the RAB payload size in octets.
- For UM 15-bit "Length Indicator" tests: the RB configuration described in 3GPP TS 34.108 clause 6.11.2 is used. For these tests, let UM\_15\_PayloadSize denote the RAB payload size in octets.

The UM test RABs are used in all tests with the following exception:

- Tests that explicitly specify a different Radio Bearer configuration.

All other settings are the same.

The special "Length Indicator" indicating that an SDU begins in the first octet of a PDU, described in clause 9.2.2.8 in 3GPP TS 25.322 is not used in uplink or downlink except when explicitly stated in the corresponding test case.

## 7.2.2.2 Segmentation and reassembly / Selection of 7 or 15 bit "Length Indicators"

### 7.2.2.2.1 Definition

The RLC segments and concatenates SDUs into UMD PDUs according to the PDU size requested by MAC. "Length Indicators" are added to allow correct reconstruction of SDUs. The selection of the size of the "Length Indicator" fields used must follow the specified rules. Incorrect operation of segmentation, concatenation, or coding of "Length Indicators" will result in failure of the UE to communicate.

### 7.2.2.2.2 Conformance requirement

Except for the predefined values reserved for special purposes and listed in TS 25.322 section 9.2.2.8 the "Length Indicator" shall:

- be set to the number of octets between the end of the RLC header and up to and including the last octet of an RLC SDU segment;
- be included in the PDUs that they refer to.

The size of the Length Indicator may be either 7 bits or 15 bits.

[...]

For UM:

- if the "largest UMD PDU size" is  $\leq 125$  octets:
  - 7-bit "Length Indicators" shall be used.
- else:
  - 15-bit "Length Indicators" shall be used.
- between modifications of the "largest UMD PDU size", the size of the "Length Indicator" is the same for all UMD PDUs.

### Reference(s)

TS 25.322 clauses 9.2.2.8 and 9.2.2.9.

### 7.2.2.2.3 Test purpose

To test that if the size of the largest PDU is  $\leq 125$  octets, 7 bit indicators are used, otherwise, 15 bit indicators are used.

### 7.2.2.2.4 Method of test

#### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 7-bit "Length Indicator" tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to 10 bytes.

### Test procedure

- a) The SS transmits an RLC SDU of size 10 bytes.
- b) The SS checks the "Length Indicator" values and SDU size and contents in the RLC PDU returned on the uplink (assuming a 7-bit "Length Indicator" size).
- c) The SS releases the RB, and performs the Radio Bearer establishment procedure (clause 7.1.3 of TS 34.108) with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 15-bit "Length Indicator" tests in clause 7.2.2.1.

All other settings the same.

- d) The SS transmits an RLC SDU of size 10 bytes.
- e) The SS checks the "Length Indicator" values and SDU size and contents in the RLC PDU returned on the uplink (assuming a 15-bit "Length Indicator" size).
- f) The SS may optionally release the radio bearer.

### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures for UM 7 bit LIs 10 byte SDU + padding 10 byte SDU + padding
2		←	DOWNLINK RLC PDU	
3		→	UPLINK RLC PDU	
4		←	RB RELEASE	See generic procedures for UM 15 bit LIs (largest UMD PDU size > 125 bytes) 10 byte SDU + padding 10 byte SDU + padding Optional step
5			RB ESTABLISHMENT	
6		←	DOWNLINK RLC PDU	
7		→	UPLINK RLC PDU	
8			RB RELEASE	
NOTE 1: The Expected Sequence shown is informative. The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity. Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.				

#### 7.2.2.2.5 Test requirements

1. The UE shall send 7 bit "Length Indicators" with values that correctly indicate the end of the SDU received in step 3.
2. The UE shall send 15 bit "Length Indicators" with values that correctly indicate the end of the SDU received in step 7.

#### 7.2.2.3 Segmentation and reassembly / 7-bit "Length Indicators" / Padding

##### 7.2.2.3.1 Definition

The RLC segments and concatenates SDUs into UMD PDUs according to the PDU size requested by MAC. "Length Indicators" are added to allow correct reconstruction of SDUs. Incorrect operation of segmentation, concatenation, or coding of "Length Indicators" will result in failure of the UE to communicate.

##### 7.2.2.3.2 Conformance requirement

A "Length Indicator" is used to indicate the last octet of each RLC SDU ending within the PDU.

Except for the predefined values reserved for special purposes and listed in the tables below, the "Length Indicator" shall:

- be set to the number of octets between the end of the RLC header and up to and including the last octet of an RLC SDU segment;

- be included in the PDUs that they refer to.

[...]

For UM and AM RLC:

- if a 7 bit "Length Indicator" is used in a RLC PDU and one or more padding octets are present in the RLC PDU after the end of the last RLC SDU:
- indicate the presence of padding by including a "Length Indicator" with value "1111111" as the last "Length Indicator" in the PDU.

NOTE: After the "Length Indicator" indicating the presence of padding has been included in the RLC PDU, the length of the padding may be zero.

## Reference(s)

TS 25.322 clauses 9.2.2.8 and 11.2.2.1.

### 7.2.2.3.3 Test purpose

1. To test that the UE correctly segments a large SDU, includes a "Length Indicator" indicating padding in the RLC PDU carrying the last SDU segment, and adds padding at the end.
2. To test that the UE correctly deals with a 7-bit padding "Length Indicator" when present in a received PDU.

### 7.2.2.3.4 Method of test

#### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 7-bit "Length Indicator" tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to UM\_7\_PayloadSize + 1 bytes.

#### Test procedure

- a) The SS transmits an RLC SDU of size UM\_7\_PayloadSize + 1 bytes. The second of the 2 PDUs sent shall contain a "Length Indicator" indicating the end of the SDU and the "Length Indicator" indicating that padding is present.
- b) The SS checks the "Length Indicator" values in the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU (assuming a 7-bit "Length Indicator" size).
- c) The SS may optionally release the radio bearer.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU	SDU 1
3		←	DOWNLINK RLC PDU	SDU 1 & Padding
4		→	UPLINK RLC PDU	No LI
5		→	UPLINK RLC PDU	Check LIs and re-assembled SDU
6			RB RELEASE	Optional step
NOTE 1: The Expected Sequence shown is informative. The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity. Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.				

#### 7.2.2.3.5 Test requirements

1. The UE shall return two RLC PDUs. The first shall not include "Length Indicators". The second shall have a "Length Indicator" indicating the PDU contains an SDU boundary after octet 1 of the data field, and the second shall indicate that the remainder of the PDU contains padding.
2. The length and data content of the received SDU shall be the same as the transmitted SDU.

#### 7.2.2.4 Segmentation and Reassembly / 7-bit "Length Indicators" / LI = 0

##### 7.2.2.4.1 Definition

The RLC segments and concatenates SDUs into UMD PDUs according to the PDU size requested by MAC. A predefined "Length Indicator" value is used to indicate when a SDU ends coincident with the end of the previous PDU. Incorrect operation of segmentation, concatenation, or coding of "Length Indicators" will result in failure of the UE to communicate.

##### 7.2.2.4.2 Conformance requirement

A "Length Indicator" is used to indicate the last octet of each RLC SDU ending within the PDU.

Except for the predefined values reserved for special purposes and listed in TS 25.322 subclause 9.2.2.8, the "Length Indicator" shall:

- be set to the number of octets between the end of the RLC header and up to and including the last octet of an RLC SDU segment;
- be included in the PDUs that they refer to.

[...]

In the case where the end of the last segment of an RLC SDU exactly ends at the end of a PDU and there is no "Length Indicator" that indicates the end of the RLC SDU:

- if 7-bit "Length Indicator" is used:
  - a "Length Indicator" with value "000 0000" shall be placed as the first "Length Indicator" in the following PDU;

[...]

For UM and AM RLC:

- if a 7 bit "Length Indicator" is used in a RLC PDU and one or more padding octets are present in the RLC PDU after the end of the last RLC SDU:
- indicate the presence of padding by including a "Length Indicator" with value "1111111" as the last "Length Indicator" in the PDU.

##### Reference(s)

TS 25.322 clause 9.2.2.8 and 11.2.2.1.

##### 7.2.2.4.3 Test purpose

1. To test that where a SDU exactly fills a PDU, a "Length Indicator" of all 0's is placed by the transmitter as the first "Length Indicator" in the next PDU.
2. To test that where a SDU exactly fills a PDU, the receiver accepts a "Length Indicator" of all 0's, placed as the first "Length Indicator" in the next PDU.

#### 7.2.2.4.4 Method of test

##### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 7-bit "Length Indicator" tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to UM\_7\_PayloadSize bytes.

##### Test procedure

- a) The SS transmits an RLC SDU of size  $2 * \text{UM\_7\_PayloadSize}$  bytes.
- b) The SS checks the "Length Indicator" values in the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU (assuming a 7-bit "Length Indicator" size).
- c) The SS may optionally release the radio bearer.

##### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU	SDU 1
3		←	DOWNLINK RLC PDU	SDU 1
4		←	DOWNLINK RLC PDU	LI=0 and padding
5		→	UPLINK RLC PDU	No LIs
6		→	UPLINK RLC PDU	Check Lis and re-assembled SDU
7			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

#### 7.2.2.4.5 Test requirements

The UE shall return two RLC PDUs. The first shall not include "Length Indicators". The second shall have a "Length Indicator" indicating that the SDU exactly filled the previous UMD PDU, and a "Length Indicator" indicating that the remainder of the PDU contains padding.

The length of the received SDU shall be UM\_7\_PayloadSize bytes, and the data content shall be the same as the first UM\_7\_PayloadSize bytes of the transmitted SDU.

#### 7.2.2.5 Reassembly / 7-bit "Length Indicators" / Invalid LI value

##### 7.2.2.5.1 Definition

The RLC segments and concatenates SDUs into UMD PDU according to the PDU size requested by MAC. "Length Indicators" are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of an invalid "Length Indicator" value has been specified. Incorrect operation of segmentation, concatenation, or coding of "Length Indicators" will result in failure of the UE to communicate.

##### 7.2.2.5.2 Conformance requirement

Upon delivery by the lower layer of an UMD PDU that contains a "Length Indicator" value specified to be reserved for UMD PDUs in this version of the protocol, the Receiver shall:

- ignore that UMD PDU.

[...]

Length: 7 bits

Bit	Description
1111101	Reserved (PDUs with this coding will be discarded by this version of the protocol).
1111110	AMD PDU: The rest of the RLC PDU includes a piggybacked STATUS PDU. UMD PDU: Reserved (PDUs with this coding will be discarded by this version of the protocol).

Reference(s)

TS 25.322 clause 9.2.2.8 and 11.2.4.1.

7.2.2.5.3 Test purpose

To test that PDUs with invalid "Length indicator" '111 1110' are discarded by the receiving RLC.

7.2.2.5.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 7-bit "Length Indicator" tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to UM\_7\_PayloadSize + 1 bytes.

Test procedure

- a) The SS transmits two RLC SDUs of size UM\_7\_PayloadSize + 1 bytes. In the third PDU for transmission, the SS sets the value of the second (padding) LI to 1111110.
- b) The SS checks the "Length Indicator" sizes and values of any RLC PDUs returned on the uplink, and checks for the presence of any received RLC SDUs.
- c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1 & SDU 2
4	←		DOWNLINK RLC PDU	SDU 2 and invalid LI (=11111110)
5		→	UPLINK RLC PDU	SDU 1
6		→	UPLINK RLC PDU	SDU 1: Check Lis and re-assembled SDU
7			RB RELEASE	Optional step
NOTE 1: The Expected Sequence shown is informative. The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity. Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.				

7.2.2.5.5 Test requirements

The UE shall return two RLC PDUs. The first shall not include any "Length Indicators". The second shall have a "Length Indicator" indicating the end of the SDU, and a padding "Length Indicator".

The length and data content of the received SDU shall be the same as the first transmitted SDU. The second SDU shall not be returned.

## 7.2.2.6 Reassembly / 7-bit "Length Indicators" / LI value > PDU size

### 7.2.2.6.1 Definition

The RLC segments and concatenates SDUs into UMD PDUs according to the PDU size requested by MAC. "Length Indicators" are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of an invalid "Length Indicator" value has been specified. Incorrect operation of segmentation, concatenation, or coding of "Length Indicators" will result in failure of the UE to communicate.

### 7.2.2.6.2 Conformance requirement

If the "Length Indicator" of an UMD PDU has a value that is larger than the PDU size – RLC header size and is not one of the predefined values listed in the table of TS 25.322 subclause 9.2.2.8, the Receiver shall:

- ignore the UMD PDU.

[...]

Upon delivery of a set of UMD PDUs from the lower layer, the Receiver shall:

- update VR(US) according to each received UMD PDU (see TS 25.322 subclause 9.4);
- if the updating step of VR(US) is not equal to one (i.e. one or more UMD PDUs are missing):
  - discard the SDUs that have segments in the missing UMD PDUs.

### Reference(s)

TS 25.322 clauses 11.2.4.2 and 11.2.3.

### 7.2.2.6.3 Test purpose

To test that PDUs with "Length Indicators" that point beyond the end of the PDU are ignored by the receiving RLC entity.

### 7.2.2.6.4 Method of test

#### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 7-bit "Length Indicator" tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to UM\_7\_PayloadSize + 1 bytes.

#### Test procedure

- a) The SS transmits three RLC SDUs of size UM 7 PayloadSize + 1 bytes. All the SDUs are concatenated or segmented over successive RLC PDUs. In the third PDU for transmission, the SS sets value of the "Length Indicator" to be UM\_7\_PayloadSize (decimal).
- b) The SS checks the "Length Indicator" values in the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDUs (assuming a 7-bit "Length Indicator" size).
- c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU	SDU 1
3		←	DOWNLINK RLC PDU	SDU 1 & SDU 2
4		←	DOWNLINK RLC PDU	SDU 2 & SDU 3, with bad LI
5		←	DOWNLINK RLC PDU	SDU 3 and padding
6		→	UPLINK RLC PDU	SDU 1
7		→	UPLINK RLC PDU	SDU 1 and padding: Check LIs and re-assembled SDU
8			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

#### 7.2.2.6.5 Test requirements

The UE shall return two RLC PDUs. The first shall not include "Length Indicators". The second shall have a LI indicating the end of an SDU and an "Length Indicator" indicating that the remainder of the PDU contains padding.

The length and data content of the received SDU should be the same as the first transmitted SDU. No further SDUs or PDUs should be received.

#### 7.2.2.7 Reassembly / 7-bit "Length Indicators" / First data octet LI

##### 7.2.2.7.1 Definition

The RLC segments and concatenates SDUs into UMD PDUs according to the PDU size requested by MAC. "Length indicators" are added to allow correct reconstruction of SDUs. A special "Length Indicator" is defined to indicate that the start of an SDU is coincident with the start of the PDU. The special "Length Indicator" is needed to avoid discarding of an SDU when the first received PDU has a sequence number different from zero. Incorrect operation of segmentation, concatenation, or coding of "Length Indicators" will result in failure of the UE to communicate.

##### 7.2.2.7.2 Conformance requirement

- "Length Indicator" = 1111100, UMD PDU: The first data octet in this RLC PDU is the first octet of a RLC SDU.
- Upon delivery of a set of UMD PDUs from the lower layer, the Receiver shall:
  - ...
  - if the special "Length Indicator" "1111 100" or "1111 1111 1111 100" is the first "Length Indicator" of a UMD PDU received on the downlink:
    - consider the first data octet in this UMD PDU as the first octet of an RLC SDU.

##### Reference(s)

- TS 25.322 clause 9.2.2.8.
- TS 25.322 clause 11.2.3.

##### 7.2.2.7.3 Test purpose

To test that a UE in unacknowledged mode correctly handles a received RLC PDU with a 7-bit "Length Indicator" having its value equal to the special "Length Indicator" value 1111100 when the sequence number of the first received PDU is different from zero.

#### 7.2.2.7.4 Method of test

##### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 7-bit "Length Indicator" tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to 12 bytes.

##### Test procedure

- a) The SS transmits a RLC SDU of size 12 bytes in a PDU which has the 'First Data Octet LI' as the first "Length Indicator" in the PDU.
- b) The SS waits until the SDU has been received back from the UE, and then transmits another SDU of 12 bytes in a PDU which has the 'First Data Octet LI' as the first "Length Indicator" in the PDU.
- c) The SS waits until this SDU has been received back from the UE.
- c) The SS may optionally release the radio bearer.

Note: The SS sends PDUs in downlink starting at sequence number 10.

##### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU, SN 10	SDU 1 with LI = 1111100
3			...	Wait for loopback
4		→	UPLINK RLC PDU	SDU 1
5		←	DOWNLINK RLC PDU, SN 11	SDU 2 with LI = 1111100
6		→	UPLINK RLC PDU	SDU 2
7			RB RELEASE	Optional step
NOTE 1: The Expected Sequence shown is informative. The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity. Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.				

#### 7.2.2.7.5 Test requirements

1. The UE shall return two RLC PDUs.
2. The length and data content of each received SDU shall be the same as the transmitted SDU.

#### 7.2.2.8 Segmentation and reassembly / 15-bit "Length Indicators" / Padding

##### 7.2.2.8.1 Definition

The RLC segments and concatenates SDUs into UMD PDU according to the PDU size requested by MAC. "Length Indicators" are added to allow correct reconstruction of SDUs. Incorrect operation of segmentation, concatenation, or coding of "Length Indicators" will result in failure of the UE to communicate.

##### 7.2.2.8.2 Conformance requirement

A PDU that has unused space, to be referred to as padding, shall use a "Length Indicator" to indicate that this space is used as padding unless the padding size is one octet for PDUs with 15-bit "Length Indicators". A padding "Length Indicator" must be placed after any "Length Indicators" for a PU.

One "Length Indicator" field shall be included for each end of a SDU that the PDU includes. The "Length Indicator" shall be set equal to the number of octets between the end of the header fields and the end of the segment. If padding is needed, another "Length Indicator" field set to only 1's shall be added unless the padding size is one octet for PDUs with 15-bit "Length Indicators".

#### Reference(s)

TS 25.322 clauses 9.2.2.8 and 11.2.2.1.

#### 7.2.2.8.3 Test purpose

1. To test that the UE correctly segments a large SDU and padding is added at the end.
2. To test that the UE correctly deals with a 15-bit padding "Length Indicator" when present in a received PDU.

#### 7.2.2.8.4 Method of test

##### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 15-bit "Length Indicator" tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to UM\_15\_PayloadSize + 1 bytes.

##### Test procedure

- a) The SS transmits an RLC SDU of size UM\_15\_PayloadSize + 1 bytes. The second of the 2 PDUs sent shall contain a "Length Indicator" indicating the end of the SDU and the "Length Indicator" indicating that padding is present.
- b) The SS checks the "Length Indicator" values in the RLC PDU returned on the uplink, and checks the length and content of the received RLC SDU (assuming a 15-bit "Length Indicator" size).
- c) The SS may optionally release the radio bearer.

##### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU	SDU 1
3		←	DOWNLINK RLC PDU	SDU 1 & Padding
4		→	UPLINK RLC PDU	No LI
5		→	UPLINK RLC PDU	Check LIs and re-assembled SDU
6			RB RELEASE	Optional step
NOTE 1: The Expected Sequence shown is informative. The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity. Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.				

#### 7.2.2.8.5 Test requirements

1. The UE shall return two RLC PDUs. The first shall not include "Length Indicators". The second shall have a "Length Indicator" indicating the PDU contains a SDU boundary after octet 1 of the data field, and the second shall indicate that the remainder of the PDU contains padding.
2. The length and data content of the received SDU shall be the same as the transmitted SDU.

## 7.2.2.9 Segmentation and Reassembly / 15-bit "Length Indicators" / LI = 0

### 7.2.2.9.1 Definition

The RLC segments and concatenates SDUs into UMD PDUs according to the PDU size requested by MAC. A pre-defined "Length Indicator" value is used to indicate when an SDUs ends coincident with the end of the previous PU. Incorrect operation of segmentation, concatenation, or coding of "Length Indicators" will result in failure of the UE to communicate.

### 7.2.2.9.2 Conformance requirement

If the PDU is exactly filled with the last segment of a SDU and there is no room for an "Length Indicator" field, a "Length Indicator" field set to all 0's shall be included as the first "Length Indicator" in the following PDU.

### Reference(s)

TS 25.322 clause 11.2.2.1.

### 7.2.2.9.3 Test purpose

1. To test that where a SDU exactly fills a PDU, a "Length Indicator" of all 0's is placed by the transmitter as the first "Length Indicator" in the next PDU.
2. To test that where an SDU exactly fills a PDU, and an "Length Indicator" of all 0's is the first "Length Indicator" in the next PDU, the receiver correctly reassembles the PDU.

### 7.2.2.9.4 Method of test

#### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 15-bit "Length Indicator" tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to UM\_15\_PayloadSize bytes.

#### Test procedure

- a) The SS transmits an RLC SDU of size 2 \* UM\_15\_PayloadSize bytes.
- b) The SS checks the "Length Indicator" values in the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU (assuming a 15-bit "Length Indicator" size).
- c) The SS may optionally release the radio bearer.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU	SDU 1
3		←	DOWNLINK RLC PDU	SDU 1
4		←	DOWNLINK RLC PDU	LI=0 and padding
5		→	UPLINK RLC PDU	No Lis
6		→	UPLINK RLC PDU	Check Lis and re-assembled SDU
7			RB RELEASE	Optional step
NOTE 1: The Expected Sequence shown is informative. The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity. Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.				

#### 7.2.2.9.5 Test requirements

The UE shall return two RLC PDUs. The first shall not include "Length Indicators". The second shall have an "Length Indicators" indicating that the SDU exactly filled the previous UMD PDU, and a "Length Indicators" indicating that the remainder of the PDU contains padding.

The length of the received SDU shall be UM\_15\_PayloadSize bytes, and the data content shall be the same as the first UM\_15\_PayloadSize bytes of the transmitted SDU.

### 7.2.2.10 Segmentation and reassembly / 15-bit "Length Indicators" / One octet short LI

#### 7.2.2.10.1 Definition

The RLC segments and concatenates SDUs into UMD PDUs according to the PDU size requested by MAC. A pre-defined "Length Indicator" value is used to indicate when an SDUs ends one octet short of the end of the previous PDU. Incorrect operation of segmentation, concatenation, or coding of "Length Indicators" will result in failure of the UE to communicate.

#### 7.2.2.10.2 Conformance requirement

In the case where the last segment of an RLC SDU is one octet short of exactly filling the last RLC PDU, and 15-bit "Length Indicators" are used, the next "Length Indicator" shall be placed as the first "Length Indicator" in the next PDU and have value "Length Indicator"=111 1111 1111 1011.

In the case where a PDU contains a 15-bit "Length Indicator" indicating that an SDU ends with one octet left in the PDU, the last octet of this PDU shall be ignored and shall not be filled with the first octet of the next SDU data.

#### Reference(s)

TS 25.322 clause 9.2.2.8.

#### 7.2.2.10.3 Test purpose

1. To test that where the UE transmits an SDU, which is one byte short of filling a PDU, an "Length Indicator" indicating one byte short is placed as the first "Length Indicator" in the next PDU.
2. To test that where the UE correctly handles a received PDU containing an "Length Indicator" indicating that an SDU ended one byte short of the end of the previous PDU.

#### 7.2.2.10.4 Method of test

##### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 15-bit "Length Indicator" tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to UM\_15\_PayloadSize - 1bytes.

##### Test procedure

- a) The SS transmits an RLC SDU of size  $(2 * \text{UM\_15\_PayloadSize}) - 1$  bytes.
- b) The SS checks the "Length Indicator" sizes and values in the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU (assuming a 15-bit "Length Indicator" size).
- c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU	SDU 1
3		←	DOWNLINK RLC PDU	SDU 1
4		←	DOWNLINK RLC PDU	LI=111 1111 1111 1011 and padding
5		→	UPLINK RLC PDU	No LIs
6		→	UPLINK RLC PDU	Check LIs and re-assembled SDU
7			RB RELEASE	Optional step
NOTE 1: The Expected Sequence shown is informative. The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity. Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.				

#### 7.2.2.10.5 Test requirements

1. The UE shall return two RLC PDUs. The first shall have no "Length Indicators". The second shall have 2 "Length Indicators". The first "Length Indicator" shall be a "Length Indicator" indicating that the SDU was one byte short of filling the previous PDU, and the second shall be a "Length Indicator" indicating that the remainder of the PDU contains padding.
2. The length of the received SDU shall be UM\_15\_PayloadSize - 1 bytes, and the data content shall be the same as the first UM\_15\_PayloadSize - 1 bytes of the transmitted SDU.

#### 7.2.2.11 Reassembly / 15-bit "Length Indicators" / Invalid LI value

##### 7.2.2.11.1 Definition

The RLC segments and concatenates SDUs into UMD PDUs according to the PDU size requested by MAC. "Length Indicators" are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of an invalid "Length Indicator" value has been specified. Incorrect operation of segmentation, concatenation, or coding of "Length Indicator" will result in failure of the UE to communicate.

##### 7.2.2.11.2 Conformance requirement

Upon reception of an UMD PDU that contains "Length Indicator" value 11111111111110 ("piggybacked STATUS PDU") the receiver shall discard that UMD PDU.

##### Reference(s)

TS 25.322 clause 11.2.4.1.

##### 7.2.2.11.3 Test purpose

To test that PDUs with invalid "Length Indicators" are discarded by the receiving RLC.

##### 7.2.2.11.4 Method of test

##### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 15-bit "Length Indicator" tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to UM\_15\_PayloadSize + 1 bytes.

Test procedure

- a) The SS transmits two RLC SDUs of size UM\_15\_PayloadSize + 1 bytes. In the third PDU for transmission, the SS sets the value of the second (padding) LI to 11111111111110.
- b) The SS checks the "Length Indicator" sizes and values of any RLC PDUs returned on the uplink, and checks for the presence of any received RLC SDUs.
- c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU	SDU 1
3		←	DOWNLINK RLC PDU	SDU 1 & SDU 2
4		←	DOWNLINK RLC PDU	SDU 2 and invalid LI (=11111111111110)
5		→	UPLINK RLC PDU	SDU 1
6		→	UPLINK RLC PDU	SDU 1: Check Lis and re-assembled SDU
7			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is infomative.  
 The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
 Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

7.2.2.11.5 Test requirements

The UE shall return two RLC PDUs. The first shall not include any "Length Indicators". The second shall have a "Length Indicator" indicating the end of the SDU, and a padding "Length Indicator".

The length and data content of the received SDU shall be the same as the first transmitted SDU. The second SDU shall not be returned.

7.2.2.12 Reassembly / 15-bit "Length Indicators" / LI value > PDU size

7.2.2.12.1 Definition

The RLC segments and concatenates SDUs into UMD PDUs according to the PDU size requested by MAC. "Length Indicators" are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of an invalid "Length Indicator" value has been specified. Incorrect operation of segmentation, concatenation, or coding of "Length Indicators" will result in failure of the UE to communicate.

7.2.2.12.2 Conformance requirement

If the "Length Indicator" of a PDU has a value that is larger than the PDU size – the number of octets containing "Length Indicators" in the PDU – 1 and is not one of the predefined values listed in the table of 3GPP TS 25.322 clause 9.2.2.8, the PDU shall be discarded and treated as a missing PDU.

If a PDU with sequence number < VR(US) is missing then all SDUs that have segments in this PDU shall be discarded.

Reference(s)

TS 25.322 clauses 11.2.4.2 and 11.2.3.

7.2.2.12.3 Test purpose

To test that PDUs with "Length Indicators" that point beyond the end of the PDU are ignored by the receiving RLC entity.

## 7.2.2.12.4 Method of test

## Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 15-bit "Length Indicator" tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into loop-back mode 1 with the UL SDU size set to UM\_15\_PayloadSize + 1 bytes.

## Test procedure

- a) The SS transmits three RLC SDUs of size UM\_15\_PayloadSize + 1 bytes. All the SDUs are concatenated or segmented over successive RLC PDUs. In the third PDU for transmission, the SS sets value of the "Length Indicator" to be UM\_15\_PayloadSize + 1 (decimal).
- b) The SS checks the "Length Indicator" values in the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDUs (assuming a 15-bit "Length Indicator" size).
- c) The SS may optionally release the radio bearer.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU	SDU 1
3		←	DOWNLINK RLC PDU	SDU 1 & SDU 2
4		←	DOWNLINK RLC PDU	SDU 2 & SDU 3, with bad LI
5		←	DOWNLINK RLC PDU	SDU 3 and padding
6		→	UPLINK RLC PDU	SDU 1
7		→	UPLINK RLC PDU	SDU 1 and padding: Check LIs and re-assembled SDU
8			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

## 7.2.2.12.5 Test requirements

The UE shall return two RLC PDUs. The first shall not include any "Length Indicators". The second shall have a "Length Indicator" indicating the end of an SDU and a "Length Indicator" indicating that the remainder of the PDU contains padding.

The length and data content of the received SDU shall be the same as the first transmitted SDU. No further SDUs or PDUs shall be received.

## 7.2.2.13 Reassembly / 15-bit "Length Indicators" / First data octet LI

## 7.2.2.13.1 Definition

The RLC segments and concatenates SDUs into UMD PDUs according to the PDU size requested by MAC. "Length Indicators" are added to allow correct reconstruction of SDUs. A special LI is defined to indicate that the start of an SDU is coincident with the start of the PDU. The special LI is needed to avoid discarding of an SDU when the first received PDU has a sequence number different from zero. Incorrect operation of segmentation, concatenation, or coding of "Length Indicators" will result in failure of the UE to communicate.

## 7.2.2.13.2 Conformance requirement

"Length Indicators" = 111111111111100, UMD PDU: The first data octet in this RLC PDU is the first octet of a RLC SDU.

## Reference(s)

TS 25.322 clause 9.2.2.8.

## 7.2.2.13.3 Test purpose

To test that a UE in unacknowledged mode correctly handles a received RLC PDU with a 15-bit "Length Indicator" having its value equal to the special LI value 111111111111100 when the sequence number of the first received PDU is different from zero.

## 7.2.2.13.4 Method of test

## Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for UM 15-bit "Length Indicator" tests in clause 7.2.2.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to 150 bytes.

## Test procedure

- a) The SS transmits a RLC SDU of size 150 bytes in a PDU which has the 'First Data Octet LI' as the first "Length Indicator" in the PDU.
- b) The SS waits until the SDU has been received back from the UE, and then transmits another SDU of 150 bytes in a PDU which has the 'First Data Octet LI' as the first "Length Indicator" in the PDU.
- c) The SS waits until this SDU has been received back from the UE.
- c) The SS may optionally release the radio bearer.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU	SDU 1 with LI = 111111111111100
3			...	Wait for loopback
4		→	UPLINK RLC PDU	SDU 1
5		←	DOWNLINK RLC PDU	SDU 2 with LI = 111111111111100
6		→	UPLINK RLC PDU	SDU 2
7			RB RELEASE	Optional step
NOTE 1: The Expected Sequence shown is informative. The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity. Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.				

## 7.2.2.13.5 Test requirements

1. The UE shall return two RLC PDUs.
2. The length and data content of each received SDU shall be the same as the transmitted SDU.

## 7.2.3 Acknowledged mode

### 7.2.3.1 General information for AM tests

Two generic Radio Access Bearers are provided for AM tests.

The AM test RAB is set up using the Generic Procedure described in clause 7.1.3 of TS 34.108, and with the default RAB replaced as follows:

- For AM 7-bit "Length Indicator" tests: the RB configuration described in 3G TS 34.108 clause 6.11.3 is used. For these tests, let AM\_7\_PayloadSize denote the RAB payload size in octets.
- For AM 15-bit "Length Indicator" tests: the RB configuration described in 3G TS 34.108 clause 6.11.4 is used. For these tests, let AM\_15\_PayloadSize denote the RAB payload size in octets.

Unless specified in individual test cases, the default RLC settings are given in table 7.2/1.

**Table 7.2/1: RLC Parameters for AM testing**

Uplink RLC	
Transmission RLC discard	
Max DAT retransmissions	
Max_DAT	4
Transmission window size	128
Timer_RST	500
Max_RST	4
Polling info	
Timer_poll_prohibit	disabled
Timer_poll	disabled
Poll_PU	disabled
Poll_SDU	disabled
Last transmission PDU poll	TRUE
Last retransmission PDU poll	TRUE
Poll_Window	disabled
Timer_poll_periodic	disabled
Downlink RLC	
In-sequence delivery	TRUE
Receiving window size	128
Timer_Status_Prohibit	disabled
Timer_EPC	disabled
Missing PDU Indicator	TRUE
Timer_STATUS_periodic	disabled

The AM test RABs are used in all tests with the following exception:

- Tests that explicitly specify a different Radio Bearer configuration.

All other settings are the same.

### 7.2.3.2 Segmentation and reassembly / Selection of 7 or 15 bit Length Indicators

#### 7.2.3.2.1 Definition

The RLC segments and concatenates SDUs into PDUs according to the PDU size configured by RRC. "Length Indicators" are added to allow correct reconstruction of SDUs. The selection of the size of the "Length Indicator" fields used must follow the specified rules. Incorrect operation of segmentation, concatenation, or coding of "Length Indicators" will result in failure of the UE to communicate.

#### 7.2.3.2.2 Conformance requirement

Except for the predefined values reserved for special purposes and listed in TS 25.322 section 9.2.2.8 the "Length Indicator" shall:

- be set to the number of octets between the end of the RLC header and up to and including the last octet of an RLC SDU segment;
- be included in the PDUs that they refer to.

[...]

The size of the Length Indicator may be either 7 bits or 15 bits.

[...]

For AM:

- if the "AMD PDU size" is  $\leq 126$  octets:
  - 7-bit "Length Indicators" shall be used.
- else:
  - 15-bit "Length Indicators" shall be used.
- the size of the "Length Indicator" is always the same for all AMD PDUs, for one RLC entity.

Reference(s)

TS 25.322 clauses 9.2.2.8 and 9.2.2.9.

#### 7.2.3.2.3 Test purpose

To test that if the configured AMD PDU size is  $\leq 126$  octets, 7 bit "Length Indicators" are used in transmitted AMD PDUs, otherwise, 15 bit "Length Indicators" are used.

#### 7.2.3.2.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to 10 bytes.

Test procedure

- a) The SS transmits an RLC SDU of size 10 bytes. The PDU carrying this SDU is transmitted with a poll for status.
- b) The SS checks the "Length Indicator" values and SDU size and contents in the RLC PDU returned on the uplink (assuming a 7-bit "Length Indicator" size).
- c) The SS releases the RB, and performs the Radio Bearer establishment procedure (clause 7.1.3 of TS 34.108) with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 15-bit "Length Indicator" tests in clause 7.2.3.1.

All other settings the same.

- d) The SS transmits an RLC SDUs of size 10 bytes. The PDU carrying this SDU is transmitted with a poll for status.
- e) The SS checks the "Length Indicator" values and SDU size and contents in the RLC PDU returned on the uplink (assuming a 15-bit "Length Indicator" size).
- f) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures for AM 7 bit LIs 10 byte SDU + padding + poll 10 byte SDU + piggy-backed status + poll <i>If piggy-backed status is not used in 3</i>
2	←		DOWNLINK RLC PDU	
3		→	UPLINK RLC PDU	
3a		→	STATUS PDU	
4	←		STATUS PDU	
5	←		RB RELEASE	
6			RB ESTABLISHMENT	See generic procedures for AM 15 bit LIs (AMD PDU size > 126 bytes) 10 byte SDU + padding + poll 10 byte SDU + piggy-backed status + poll <i>If piggy-backed status is not used in 7</i>
7	←		DOWNLINK RLC PDU	
8		→	UPLINK RLC PDU	
8a		→	STATUS PDU	
9	←		STATUS PDU	
10			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

### 7.2.3.2.5 Test requirements

The UE shall send 7 bit "Length Indicators" with values that correctly indicate the end of SDU in step b).

The UE shall send 15 bit "Length Indicators" with values that correctly indicate the end of SDU in step e).

## 7.2.3.3 Segmentation and Reassembly / 7-bit "Length Indicators" / Padding or Piggy-backed Status

### 7.2.3.3.1 Definition

The RLC segments and concatenates SDUs into AMD PDUs according to the PDU size configured by RRC. "Length Indicators" are added to allow correct reconstruction of SDUs. Incorrect operation of segmentation, concatenation, or coding of length indicators will result in failure of the UE to communicate.

### 7.2.3.3.2 Conformance requirement

A "Length Indicator" is used to indicate the last octet of each RLC SDU ending within the PDU.

Except for the predefined values reserved for special purposes and listed in the tables below, the "Length Indicator" shall:

- be set to the number of octets between the end of the RLC header and up to and including the last octet of an RLC SDU segment;
- be included in the PDUs that they refer to.

Predefined values of the "Length Indicator" are used to indicate padding. The values that are reserved for special purposes are listed in the tables below depending on the size of the "Length Indicator". Only predefined "Length Indicator" values can refer to the padding space. These values shall only be placed after all other "Length Indicators" for a PDU.

STATUS PDUs can be piggybacked on the AMD PDU by using part or all of the padding space. A predefined "Length Indicator" shall be used to indicate the presence of a piggybacked STATUS PDU. This "Length Indicator" replaces the padding "Length Indicator". The piggybacked STATUS PDU shall be appended immediately following the PDU data. When only part of the padding space is used, the end of the piggybacked STATUS PDU is indicated by one of the SUFI fields NO\_MORE or ACK. Thus no additional "Length Indicator" is required to show that there is still padding in the AMD PDU.

[...]

Sender shall:

- when RLC SDUs are received from upper layers:
  - segment the RLC SDUs into AMD PDUs where the fixed PDU size is configured by upper layer;
  - set a "Length Indicator" field for each SDU that ends in the AMD PDU according to subclause 9.2.2.8;

[...]

The Receiver may:

- if STATUS PDU(s) to be sent fit into padding octets in AMD PDU(s) to be sent:
  - piggyback a STATUS PDU on the AMD PDU to be sent.

Submission of a piggybacked STATUS PDU in an AMD PDU to the lower layer follows the same rules as an ordinary STATUS PDU.

#### Reference(s)

TS 25.322 clauses 9.2.2.8, 11.3.2 and 11.5.2.1.

#### 7.2.3.3.3 Test purpose

1. To test that a large SDU is correctly segmented and padding added at the end.
2. To test that a large SDU is received correctly, whether or not it has piggy-backed status at the end.

#### 7.2.3.3.4 Method of test

##### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to  $AM\_7\_PayloadSize + 1$  bytes.

##### Test procedure

- a) The SS transmits an RLC SDU (SDU1) of size  $AM\_7\_PayloadSize + 1$  bytes, and polls the receiver for status.
- b) The SS checks the "Length Indicator" values in the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU (assuming a 7-bit "Length Indicator" size).
- c) The SS transmits another RLC SDU (SDU2) of size  $AM\_7\_PayloadSize + 1$  bytes, and includes piggy-backed status in the second of the 2 PDUs sent. The SS also polls the receiver for status.
- d) The SS checks the "Length Indicator" values in the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU (assuming a 7-bit "Length Indicator" size).
- e) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU	SDU 1
3		←	DOWNLINK RLC PDU	SDU 1 +poll + Padding
4		→	UPLINK RLC PDU	No LI
5		→	UPLINK RLC PDU	Poll, Check LIs and re-assembled SDU
5a		→	STATUS PDU	If piggy-backed status is not used in 5
6		←	DOWNLINK RLC PDU	SDU 2
7		←	DOWNLINK RLC PDU	SDU 2 + poll + piggy-backed status
8		→	UPLINK RLC PDU	No LI
9		→	UPLINK RLC PDU	Poll, Check LIs and re-assembled SDU
9a		→	STATUS PDU	If piggy-backed status is not used in 9
10		←	STATUS PDU	
11			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

#### 7.2.3.3.5 Test requirements

1. In steps 4 and 5, the UE shall return two RLC PDUs. The first shall have no "Length Indicators". The second shall have a "Length Indicator" indicating the PDU contains an SDU boundary after octet 1 of the data field, and the second shall indicate either that the remainder of the PDU contains padding, or that it contains a piggy-backed status PDU.
2. In steps 8 and 9, the UE shall return two RLC PDUs. The first shall have no "Length Indicators". The second shall have a "Length Indicator" indicating the PDU contains an SDU boundary after octet 1 of the data field, and the second shall indicate either that the remainder of the PDU contains padding, or that it contains a piggy-backed status PDU.
3. The length and data content of all received SDUs shall be the same as the transmitted SDUs.

#### 7.2.3.4 Segmentation and Reassembly / 7-bit "Length Indicators" / LI = 0

##### 7.2.3.4.1 Definition

The RLC segments and concatenates SDUs into AMD PDUs according to the PDU size configured by RRC. A predefined "Length Indicator" value is used to indicate when an SDUs ends coincident with the end of the previous PDU. Incorrect operation of segmentation, concatenation, or coding of "Length Indicators" will result in failure of the UE to communicate.

##### 7.2.3.4.2 Conformance requirement

Except for the predefined values reserved for special purposes and listed in TS 25.322 section 9.2.2.8 the "Length Indicator" shall:

- be set to the number of octets between the end of the RLC header and up to and including the last octet of an RLC SDU segment;
- be included in the PDUs that they refer to.

[...]

In the case where the end of the last segment of an RLC SDU exactly ends at the end of a PDU and there is no "Length Indicator" that indicates the end of the RLC SDU:

- if 7-bit "Length Indicator" is used:

- a "Length Indicator" with value "000 0000" shall be placed as the first "Length Indicator" in the following PDU;

[...]

For UM and AM RLC:

- if a 7 bit "Length Indicator" is used in a RLC PDU and one or more padding octets are present in the RLC PDU after the end of the last RLC SDU:
- indicate the presence of padding by including a "Length Indicator" with value "1111111" as the last "Length Indicator" in the PDU.

[...]

STATUS PDUs can be piggybacked on the AMD PDU by using part or all of the padding space. A predefined "Length Indicator" shall be used to indicate the presence of a piggybacked STATUS PDU. This "Length Indicator" replaces the padding "Length Indicator". The piggybacked STATUS PDU shall be appended immediately following the PDU data. When only part of the padding space is used, the end of the piggybacked STATUS PDU is indicated by one of the SUFI fields NO\_MORE or ACK. Thus no additional "Length Indicator" is required to show that there is still padding in the AMD PDU.

#### Reference(s)

TS 25.322 clause 9.2.2.8 and 11.3.2.1.

#### 7.2.3.4.3 Test purpose

1. To test that where an SDU exactly fills a PDU, an "Length Indicator" of all 0's is placed by the transmitter as the first "Length Indicator" in the next PDU.
2. To test that where an SDU exactly fills a PDU, and an "Length Indicator" of all 0's is the first "Length Indicator" in the next PDU, the receiver correctly reassembles the SDU.

#### 7.2.3.4.4 Method of test

##### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to AM\_7\_PayloadSize bytes.

##### Test procedure

- a) The SS transmits an RLC SDU of size  $2 * AM\_7\_PayloadSize$  bytes. The SS polls the receiver for status in the last RLC PDU sent.
- b) The SS checks the "Length Indicator" sizes and values in the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU (assuming a 7-bit "Length Indicator" size).
- c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU	SDU 1
3		←	DOWNLINK RLC PDU	SDU 1
4		←	DOWNLINK RLC PDU	LI=0, poll and padding
5		→	UPLINK RLC PDU	No Lis
6		→	UPLINK RLC PDU	(Poll) Check Lis and re-assembled SDU
6a		→	STATUS PDU	<i>If piggy-backed status is not used in 6</i>
7		←	STATUS PDU	
8			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

#### 7.2.3.4.5 Test requirements

The UE shall return two RLC PDUs. The first shall not include any "Length Indicators". The second shall have a "Length Indicator" indicating that the SDU exactly filled the previous PDU, and a "Length Indicator" indicating either that the remainder of the PDU contains padding, or that it contains a piggy-backed STATUS PDU.

The length of the received SDU shall be AM\_7\_PayloadSize bytes, and the data content shall be the same as the first AM\_7\_PayloadSize bytes of the transmitted SDU.

#### 7.2.3.5 Reassembly / 7-bit "Length Indicators" / Reserved LI value

##### 7.2.3.5.1 Definition

The RLC segments and concatenates SDUs into AMD PDUs according to the PDU size configured by RRC. "Length Indicators" are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of a reserved "Length Indicator" value is specified in the conformance requirement below. Incorrect operation of segmentation, concatenation, or coding of "Length Indicators" will result in failure of the UE to communicate.

##### 7.2.3.5.2 Conformance requirement

Upon delivery by the lower layer of an AMD PDU that contains a "Length Indicator" value specified to be reserved for AMD PDUs in this version of the protocol, the Receiver shall:

- ignore that AMD PDU.

[...]

Length: 7 bits

Bit	Description
<b>1111100</b>	UMD PDU: The first data octet in this RLC PDU is the first octet of an RLC SDU. AMD PDU: Reserved (PDUs with this coding will be discarded by this version of the protocol).
<b>1111101</b>	Reserved (PDUs with this coding will be discarded by this version of the protocol).

Reference(s)

TS 25.322 clause 9.2.2.8 and 11.3.4.6.

##### 7.2.3.5.3 Test purpose

To test that PDUs with reserved "Length Indicators" are discarded by the receiving RLC.

## 7.2.3.5.4 Method of test

## Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicators" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Downlink RLC Missing PDU Indicator	FALSE
---------------------------------------	-------

These settings apply to both the uplink and downlink DTCH.

## Test procedure

- a) The SS transmits three concatenated RLC SDUs of size  $AM\_7\_PayloadSize + 1$  bytes. In the second PDU, the SS sets the value of the first "Length Indicator" to correctly indicate the end of SDU1 and adds a second erroneous "Length Indicator" with value 1111100. In the third PDU for transmission, the SS sets the value of the "Length Indicator" to 1111101.
- b) The SS waits to receive a status report from the UE.
- c) The SS may optionally release the radio bearer.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU #0	SDU 1
3		←	DOWNLINK RLC PDU #1	SDU 1 + SDU 2, good LI, LI = 1111100
4		←	DOWNLINK RLC PDU #2	SDU 2 + SDU 3, LI = 1111101
5		←	DOWNLINK RLC PDU #3	SDU 3 + poll
6		→	STATUS PDU	Nack PDUs 1 and 2
7			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

## 7.2.3.5.5 Test requirements

1. The UE shall return a STATUS PDU indicating that PDUs with sequence numbers 1 and 2 were not received.

## 7.2.3.6 Reassembly / 7-bit "Length Indicators" / LI value &gt; PDU size

## 7.2.3.6.1 Definition

The RLC segments and concatenates SDUs into AMD PDUs according to the PDU size configured by RRC. "Length Indicators" are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of an invalid "Length Indicator" value where the value is too large is specified in the conformance requirement below. Incorrect operation of segmentation, concatenation, or coding of "Length Indicator" will result in failure of the UE to communicate.

## 7.2.3.6.2 Conformance requirement

If the "Length Indicator" of an AMD PDU has a value that is larger than the PDU size – RLC header size and is not one of the predefined values listed in the table of subclause 9.2.2.8, the Sender shall:

- ignore that AMD PDU.

Reference(s)

TS 25.322 clause 11.3.4.5.

7.2.3.6.3 Test purpose

To test that PDUs with "Length Indicators" that point beyond the end of the PDU are discarded by the receiving RLC.

7.2.3.6.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Downlink RLC Missing PDU Indicator	FALSE
---------------------------------------	-------

These settings apply to both the uplink and downlink DTCH.

Test procedure

- The SS transmits three RLC SDUs of size AM\_7\_PayloadSize + 1bytes. All the SDUs are concatenated or segmented over successive RLC PDUs. In the third PDU for transmission, the SS sets value of the "Length Indicator" to be AM\_7\_PayloadSize (decimal).
- The SS checks the "Length Indicator" values in the RLC PDUs returned on the uplink, and checks the content of the received STATUS PDU (assuming a 7-bit "Length Indicator" size).
- The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures SDU 1 SDU 1 & SDU 2 SDU 2 & SDU 3, with bad LI SDU 3, poll and padding Nack PDU #2 Optional step
2	←		DOWNLINK RLC PDU #0	
3	←		DOWNLINK RLC PDU #1	
4	←		DOWNLINK RLC PDU #2	
5	←		DOWNLINK RLC PDU #3	
6	→		STATUS PDU	
7			RB RELEASE	
NOTE 1: The Expected Sequence shown is informative. The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity. Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.				

7.2.3.6.5 Test requirements

The UE shall return a STATUS PDU indicating that the PDU with sequence number 2 was not received.

### 7.2.3.7 Segmentation and Reassembly / 15-bit "Length Indicators" / Padding or Piggy-backed Status

#### 7.2.3.7.1 Definition

The RLC segments and concatenates SDUs into AMD PDUs according to the PDU size configured by RRC. "Length Indicators" are added to allow correct reconstruction of SDUs. Incorrect operation of segmentation, concatenation, or coding of "Length Indicators" will result in failure of the UE to communicate.

#### 7.2.3.7.2 Conformance requirement

The "Length Indicator" is used to indicate, each time, the end of an SDU occurs in the PU. The "Length Indicator" points out the number of octets between the end of the last "Length Indicator" field and up to and including the octet at the end of an SDU segment

A PDU that has unused space, to be referred to as padding, shall use a "Length Indicator" to indicate that this space is used as padding unless the padding size is one octet for PDUs with 15-bit LIs. A padding "Length Indicator" must be placed after any "Length Indicators" for a PDU.

Upon reception of a SDU, RLC shall segment the SDU to fit into the fixed size of a PDU. The segments are inserted in the data field of a PDU. A "Length Indicator" shall be added to each PDU that includes a border of an SDU, i.e. if a PDU does not contain a "Length Indicator", the SDU continues in the next PDU. The length indicator indicates where the border occurs in the PDU. The data after the indicated border can be either a new SDU, padding or piggybacked information. If padding or piggybacking is added another "Length Indicator" shall be added unless the padding size is one octet for PDUs with 15-bit "Length Indicators", see clauses 9.2.2.8 and 9.2.2.9.

#### Reference(s)

TS 25.322 clauses 9.2.2.8 and 11.3.2.1.2.

#### 7.2.3.7.3 Test purpose

1. To test that a large SDU is correctly segmented and padding added at the end.
2. To test that a large SDU is received correctly, whether or not it has piggy-backed status at the end.

#### 7.2.3.7.4 Method of test

##### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 15-bit "Length Indicator" tests in clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to AM\_15\_PayloadSize + 1bytes.

##### Test procedure

- a) The SS transmits an RLC SDU (SDU1) of size AM\_15\_PayloadSize + 1 bytes, and polls the receiver for status.
- b) The SS checks the "Length Indicator" values in the RLC PDU returned on the uplink, and checks the length and content of the received RLC SDU (assuming a 15-bit "Length Indicator" size).
- c) The SS transmits another RLC SDU (SDU2) of size AM\_15\_PayloadSize + 1 bytes, and includes piggy-backed status in the second of the 2 PDUs sent. The SS also polls the receiver for status.
- d) The SS checks the "Length Indicator" sizes and values in the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU (assuming a 15-bit "Length Indicator" size).
- e) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU	SDU 1
3		←	DOWNLINK RLC PDU	SDU 1 +poll + Padding
4		→	UPLINK RLC PDU	No LI
5		→	UPLINK RLC PDU	Poll, Check LIs and re-assembled SDU
5a		→	STATUS PDU	If piggy-backed status is not used in 5
6		←	DOWNLINK RLC PDU	SDU 2
7		←	DOWNLINK RLC PDU	SDU 2 + poll + piggy-backed status
8		→	UPLINK RLC PDU	No LI
9		→	UPLINK RLC PDU	Poll, Check LIs and re-assembled SDU
9a		→	STATUS PDU	If piggy-backed status is not used in 9
10		←	STATUS PDU	
11			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

### 7.2.3.7.5 Test requirements

1. In steps 4 and 5, the UE shall return two RLC PDUs. The first shall not include any "Length Indicators". The second shall have a "Length Indicator" indicating the PDU contains an SDU boundary after octet 1 of the data field, and the second shall indicate either that the remainder of the PDU contains padding, or that it contains a piggy-backed status PDU.
2. In steps 8 and 9, the UE shall return two RLC PDUs. The first shall not include any "Length Indicators". The second shall have a "Length Indicator" indicating the PDU contains an SDU boundary after octet 1 of the data field, and the second shall indicate either that the remainder of the PDU contains padding, or that it contains a piggy-backed status PDU.
3. The length and data content of all received SDUs shall be the same as the transmitted SDUs.

### 7.2.3.8 Segmentation and Reassembly / 15-bit "Length Indicators" / LI = 0

#### 7.2.3.8.1 Definition

The RLC segments and concatenates SDUs into AMD PDUs according to the PDU size configured by RRC. A pre-defined "Length Indicator" value is used to indicate when an SDUs ends coincident with the end of the previous PU. Incorrect operation of segmentation, concatenation, or coding of "Length Indicators" will result in failure of the UE to communicate.

#### 7.2.3.8.2 Conformance requirement

If the PDU is exactly filled with the last segment of a SDU and there is no room for a "Length Indicator" field, a "Length Indicator" field set to only 0's shall be included as the first "Length Indicator" in the following PDU.

#### Reference(s)

TS 25.322 clause 11.3.2.1.

#### 7.2.3.8.3 Test purpose

1. To test that where an SDU exactly fills a PDU, a "Length Indicator" of all 0's is placed by the transmitter as the first "Length Indicator" in the next PDU.
2. To test that where an SDU exactly fills a PDU, and a "Length Indicator" of all 0's is the first "Length Indicator" in the next PDU, the receiver correctly reassembles the SDU.

#### 7.2.3.8.4 Method of test

##### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 15-bit "Length Indicator" tests in clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to AM\_15\_PayloadSize bytes.

##### Test procedure

- a) The SS transmits an RLC SDU of size  $2 * AM\_15\_PayloadSize$  bytes. The SS polls the receiver for status in the last RLC PDU sent.
- b) The SS checks the "Length Indicator" values in the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU (assuming a 15-bit "Length Indicator" size).
- c) The SS may optionally release the radio bearer.

##### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU	SDU 1
3		←	DOWNLINK RLC PDU	SDU 1
4		←	DOWNLINK RLC PDU	LI=0, poll and padding
5		→	UPLINK RLC PDU	No Lis
6		→	UPLINK RLC PDU	(Poll) Check Lis and re-assembled SDU
6a		→	STATUS PDU	<i>If piggy-backed status is not used in 6</i>
7		←	STATUS PDU	
8			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is infomative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

#### 7.2.3.8.5 Test requirements

The UE shall return two RLC PDUs. The first shall have no "Length Indicators". The second shall have a "Length Indicator" indicating that the SDU exactly filled the previous PDU, and a "Length Indicator" indicating either that the remainder of the PDU contains padding, or that it contains a piggy-backed STATUS PDU.

The length of the received SDU shall be AM\_15\_PayloadSize bytes, and the data content shall be the same as the first AM\_15\_PayloadSize bytes of the transmitted SDU.

#### 7.2.3.9 Segmentation and reassembly / 15-bit "Length Indicators" / One octet short LI

##### 7.2.3.9.1 Definition

The RLC segments and concatenates SDUs into AMD PDUs according to the PDU size configured by RRC. A pre-defined "Length Indicator" value is used to indicate when an SDUs ends one octet short of the end of the previous PU. Incorrect operation of segmentation, concatenation, or coding of "Length Indicators" will result in failure of the UE to communicate.

7.2.3.9.2 Conformance requirement

In the case where the last segment of an RLC SDU is one octet short of exactly filling the last RLC PU, and 15-bit "Length Indicators" are used, the next "Length Indicator" shall be placed as the first "Length Indicator" in the next PDU and have value "Length Indicator"=111 1111 1111 1011.

In the case where a PDU contains a 15-bit "Length Indicator" indicating that an SDU ends with one octet left in the PDU, the last octet of this PDU shall be ignored and shall not be filled with the first octet of the next SDU data.

Reference(s)

TS 25.322 clause 9.2.2.8.

7.2.3.9.3 Test purpose

1. To test that where the UE transmits an SDU, which is one byte short of filling a PDU, a "Length Indicator" indicating one byte short is placed as the first "Length Indicator" in the next PDU.
2. To test that where the UE correctly handles a received PDU containing a "Length Indicator" indicating that an SDU ended one byte short of the end of the previous PDU.

7.2.3.9.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 15-bit "Length Indicator" tests in clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

The radio bearer is placed into UE test loop mode 1 with the UL SDU size set to AM\_15\_PayloadSize – 1bytes.

Test procedure

- a) The SS transmits an RLC SDU of size (2 \* AM\_15\_PayloadSize) - 1 bytes. The SS polls the receiver for status in the last RLC PDU sent.
- b) The SS checks the "Length Indicator" values of the RLC PDUs returned on the uplink, and checks the length and content of the received RLC SDU (assuming a 15-bit "Length Indicator" size).
- c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 1
4	←		DOWNLINK RLC PDU	LI=111 1111 1111 1011, poll and padding
5	→		UPLINK RLC PDU	No LIs
6	→		UPLINK RLC PDU	(Poll) Check LIs and re-assembled SDU
6a	→		STATUS PDU	If piggy-backed status is not used in 6
7	←		STATUS PDU	
8			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative. The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity. Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

### 7.2.3.9.5 Test requirements

1. The UE shall return two RLC PDUs. The first shall have no "Length Indicators". The second shall have 2 "Length Indicators". The first "Length Indicator" shall be an "Length Indicator" indicating that the SDU was one byte short of filling the previous PDU, and the second shall be a "Length Indicator" indicating that the remainder of the PDU contains padding.
2. The length of the received SDU shall be AM\_15\_PayloadSize - 1 bytes, and the data content shall be the same as the first AM\_15\_PayloadSize - 1 bytes of the transmitted SDU.

### 7.2.3.10 Reassembly / 15-bit "Length Indicators" / Reserved LI value

#### 7.2.3.10.1 Definition

The RLC segments and concatenates SDUs into AMD PDU according to the PDU size configured by RRC. "Length Indicators" are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of a reserved LI value has been specified. Incorrect operation of segmentation, concatenation, or coding of "Length Indicators" will result in failure of the UE to communicate.

#### 7.2.3.10.2 Conformance requirement

Upon reception of an AMD PDU that contains "Length Indicator" value "111111111111100" or "111111111111101": PDUs with this coding will be discarded by this version of the protocol.

#### Reference(s)

TS 25.322 clause 9.2.2.8.

#### 7.2.3.10.3 Test purpose

To test that PDUs with reserved "Length Indicators" are discarded by the receiving RLC.

#### 7.2.3.10.4 Method of test

##### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 15-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Downlink RLC Missing PDU Indicator	FALSE
---------------------------------------	-------

These settings apply to both the uplink and downlink DTCH.

##### Test procedure

- a) The SS transmits three RLC SDUs of size AM\_15\_PayloadSize + 1 bytes. In the second PDU, the SS sets the value of the "Length Indicator" to 111111111111100. In the third PDU for transmission, the SS sets the value of the second (padding) "Length Indicator" to 111111111111101.
- b) The SS waits to receive a status report from the UE.
- c) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU #0	SDU 1
3		←	DOWNLINK RLC PDU #1	SDU 1 + SDU 2, LI = 11111111111100
4		←	DOWNLINK RLC PDU #2	SDU 2+ SDU 3, LI = 11111111111101
5		←	DOWNLINK RLC PDU #3	SDU 3 + poll
6		→	STATUS PDU	Nack PDUs 1 and 2
7			RB RELEASE	Optional step
NOTE 1: The Expected Sequence shown is informative. The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity. Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.				

#### 7.2.3.10.5 Test requirements

1. The UE shall return a STATUS PDU indicating that PDUs with sequence numbers 1 and 2 were incorrectly received.
2. No uplink SDUs shall be received.

#### 7.2.3.11 Reassembly / 15-bit "Length Indicators" / LI value > PDU size

##### 7.2.3.11.1 Definition

The RLC segments and concatenates SDUs into PDUs according to the PDU size configured by RRC. "Length Indicators" are added to allow correct reconstruction of SDUs. The behaviour of the RLC on reception of an invalid LI value has been specified. Incorrect operation of segmentation, concatenation, or coding of "Length Indicators" will result in failure of the UE to communicate.

##### 7.2.3.11.2 Conformance requirement

If the "Length Indicator" of a PDU has a value that is larger than the PDU size – the number of octets containing "Length Indicators" in the PDU – 1 and is not one of the predefined values listed in the table of 3GPP TS 25.322 clause 9.2.2.8, the PDU shall be discarded and treated as a missing PDU.

##### Reference(s)

TS 25.322 clause 11.3.4.5.

##### 7.2.3.11.3 Test purpose

To test that PDUs with "Length Indicators" that point beyond the end of the PDU are discarded by the receiving RLC.

##### 7.2.3.11.4 Method of test

##### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 15-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Downlink RLC Missing PDU Indicator	FALSE
---------------------------------------	-------

These settings apply to both the uplink and downlink DTCH.

## Test procedure

- a) The SS transmits three RLC SDUs of size  $AM\_15\_PayloadSize + 1$  bytes. All the SDUs are concatenated or segmented over successive RLC PDUs. In the third PDU for transmission, the SS sets value of the "Length Indicators" to be  $AM\_15\_PayloadSize + 1$  (decimal).
- b) The SS checks the "Length Indicator" values of the RLC PDUs returned on the uplink, and checks the content of the received STATUS PDUs (assuming a 15-bit "Length Indicator" size).
- c) The SS may optionally release the radio bearer.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU #0	SDU 1
3		←	DOWNLINK RLC PDU #1	SDU 1 & SDU 2
4		←	DOWNLINK RLC PDU #2	SDU 2 & SDU 3, with bad LI
5		←	DOWNLINK RLC PDU #4	SDU 3, poll and padding
6		→	STATUS PDU	Nack PDU #2
7			RB RELEASE	Optional step

## 7.2.3.11.5 Test requirements

The UE shall indicate that the PDU with sequence number 2 was not received.

## 7.2.3.12 Correct use of Sequence Numbering

## 7.2.3.12.1 Definition

Peer RLC entities use sequence numbering to detect missing PDUs, and for flow control purposes. Incorrect operation of sequence numbering will result in failure of the UE to communicate.

## 7.2.3.12.2 Conformance requirement

This sub-clause describes the state variables used in AM and UM in order to specify the peer-to-peer protocol. All state variables are non-negative integers. UMD and AMD PDUs are numbered by modulo integer sequence numbers (SN) cycling through the field: 0 to  $2^{12} - 1$  for AM ... . All arithmetic operations contained in the present document on VT(S), VT(A), VT(MS), VR(R), VR(H) and VR(MR) are affected by the AM modulus. ... . When performing arithmetic comparisons of state variables or Sequence number values a modulus base shall be used. This modulus base is subtracted (within the appropriate field) from all the values involved and then an absolute comparison is performed. At the Sender, VT(A) ... shall be assumed to be the modulus base in AM ... . At the Receiver, VR(R) ... shall be assumed to be the modulus base in AM ... .

The RLC shall maintain the following state variables in the Sender.

- a) VT(S) - Send state variable.

This state variable contains the "Sequence Number" of the next AMD PDU to be transmitted for the first time (i.e. excluding retransmitted PDUs). It shall be updated after the aforementioned AMD PDU is transmitted or after transmission of a MRW SUFI which includes  $SN\_MRW_{LENGTH} > VT(S)$  (see subclause 11.6). The initial value of this variable is 0.

[...]

If the AMD PDU is transmitted for the first time, the Sender shall:

- set the "Sequence Number" field equal to VT(S);

## Reference(s)

TS 25.322, clauses 9.4 and 11.3.2.1.

## 7.2.3.12.3 Test purpose

1. To verify that the UE transmits the first PDU with the Sequence Number field equal to 0.
2. To verify that the UE increments the Sequence Number field according to the number of PDUs transmitted.
3. To verify that the UE wraps the Sequence Number after transmitting the  $2^{12}$ -1th PDU.
4. To verify that the UE receiver accepts PDUs with SNs that wrap around every  $2^{12}$ -1th PDU.

## 7.2.3.12.4 Method of test

## Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC Transmission window size	2047
Downlink RLC Receiving window size	2047

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to  $(2 * AM\_7\_PayloadSize) - 1$  bytes.

## Test procedure

- a) The SS sends 2049 RLC SDUs to the UE, each of  $(2 * AM\_7\_PayloadSize) - 1$  bytes. The SS polls for status on each 128<sup>th</sup> RLC PDU and the last PDU transmitted
- b) When the SS received an uplink PDU with the P bit set to 1, the SS transmits a STATUS PDU acknowledging all the RLC PDUs received so far.
- c) The SS checks the sequence numbers of the RLC PDUs it receives in the uplink
- d) The SS checks the content of the SDUs it receives from the UE.
- e) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU #0	
3		←	DOWNLINK RLC PDU #1	
			...	Transmission of DOWNLINK PDUs continues
4		→	UPLINK RLC PDU	SN should be set to 0
5		→	UPLINK RLC PDU	SN should be set to 1
		←	...	Transmission of DOWNLINK PDUs continues to SN = 127
6		←	DOWNLINK RLC PDU #127	Poll
7		→	UPLINK STATUS PDU	
		←	...	Transmission of DOWNLINK PDUs continues, polling every 128 <sup>th</sup> PDU, to SN = 4095
8		←	DOWNLINK RLC PDU #4095	
9		←	DOWNLINK RLC PDU #4096	SN=0
10		←	DOWNLINK RLC PDU #4097	SN=1, Poll
10a		→	UPLINK RLC PDUs	Transfer of RLC PDUs continues to SN = 2046, poll
10b		←	STATUS PDU	ACK SN 0 to 2046
10c		→	UPLINK RLC PDUs...	Transfer of RLC PDUs continues to SN = 4093, Poll
10d		←	STATUS PDU	ACK SN 2047 to 4093
10e		→	UPLINK RLC PDU	SN should be set to 4094
11		→	UPLINK RLC PDU	SN should be set to 4095
12		→	UPLINK RLC PDU	SN should be set to 0
13		→	UPLINK RLC PDU	SN should be set to 1, Poll
14		←	DOWNLINK STATUS PDU	
15			RB RELEASE	Optional step
<p>NOTE: The Expected Sequence shown is infomative.  The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.</p>				

### 7.2.3.12.5 Test requirements

1. The first PDU received shall have the SN field set to 0. The second PDU shall have the SN field set to 1, and the 4 097<sup>th</sup> PDU shall have the SN field set to 0.
2. The size and data content of the received SDUs shall match those of the transmitted SDUs.

### 7.2.3.13 Control of Transmit Window

#### 7.2.3.13.1 Definition

This test is to check that the UE is able to correctly control its RLC transmission window. Correct operation of RLC windowing is critical for acknowledged mode operation.

#### 7.2.3.13.2 Conformance requirement

VT(MS) - Maximum Send state variable.

This state variable contains the "Sequence Number" of the first AMD PDU that can be rejected by the peer Receiver,  $VT(MS) = VT(A) + VT(WS)$ . This value represents the upper edge of the transmission window. The transmitter shall not transmit AMD PDUs with "Sequence Number"  $\geq VT(MS)$  unless  $VT(S) \geq VT(MS)$ . In that case, the AMD PDU with "Sequence Number" =  $VT(S) - 1$  can also be transmitted.  $VT(MS)$  shall be updated when  $VT(A)$  or  $VT(WS)$  is updated.

The initial value of this variable is Configured\_Tx\_Window\_size.

... The receiver is always allowed to change the Tx window size of the peer entity during a connection, but the minimum and the maximum allowed value is given by RRC configuration. The Rx window of the receiver is not changed.

#### Reference(s)

TS 25.322, clauses 9.2.2.11.3 and 9.4.

#### 7.2.3.13.3 Test purpose

To verify that the UE does not transmit PDUs with sequence numbers outside of the transmit window, except the PDU with  $SN=VT(S)-1$ , even when the transmit window size is changed by the receiver.

#### 7.2.3.13.4 Method of test

#### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC Transmission window size	8
--	---

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to  $AM\_7\_PayloadSize - 1$  bytes.

#### Test procedure

Let  $W$  be the size of the transmit window.

The length of all transmitted SDUs is set to  $AM\_7\_PayloadSize - 1$  bytes.

- a) The SS transmits  $3*W$  RLC SDUs to the UE.
- b) The SS checks the RLC SDUs received on the uplink, but does not reply to poll requests from the UE, or transmit STATUS PDUs for any other reason.
- c) After confirming that the UE has stopped transmitting new RLC SDUs for at least  $(2*W*TTI)$  ms, the SS transmits a STATUS PDU acknowledging all the RLC PDUs received so far.
- d) The SS again checks the RLC SDUs received on the uplink, but does not reply to poll requests from the UE, or transmit further STATUS PDUs for any other reason.
- e) After confirming that the UE has again stopped transmitting new RLC SDUs for at least  $(2*W*TTI)$  ms, the SS transmits a STATUS PDU acknowledging all the RLC PDUs received so far, and containing a WINDOW command to reduce the UE transmit window size ( $W$ ) to half its initial size.
- f) The SS checks the RLC SDUs received on the uplink, but does not reply to poll requests from the UE, or transmit STATUS PDUs for any other reason.
- g) After confirming that the UE has stopped transmitting new RLC SDUs for at least  $(2*W*TTI)$  ms, the SS transmits a STATUS PDU acknowledging all the RLC PDUs received so far.
- h) The SS checks the RLC SDUs received on the uplink.
- i) The SS may optionally release the radio bearer.

NOTE: Window arithmetic is carried out modulo 4096.

The test procedure is run with the window transmit window size set to the default (8), and the repeated with the transmit window size set to 1536.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU	SDU 1
3		←	DOWNLINK RLC PDU	SDU 2
4		←	DOWNLINK RLC PDU	SDU 3
5		←	DOWNLINK RLC PDU	SDU 4
6		←	...	SS continues to transmit RLC SDUs
7		←	DOWNLINK RLC PDU	SDU 3W
8		→	UPLINK RLC PDU	SDU 1
9		→	UPLINK RLC PDU	SDU 2
10		→	...	SS continues to receive RLC SDUs
11		→	UPLINK RLC PDU	SDU W + poll
12				No new transmissions from UE
13		←	STATUS PDU	
14		→	UPLINK RLC PDU	SDU W+1
15		→	UPLINK RLC PDU	SDU W+2
16		→	...	SS continues to receive RLC SDUs
17		→	UPLINK RLC PDU	SDU 2W + poll
18				No new transmissions from UE
19		←	STATUS PDU	WINDOW = W/2
20		→	UPLINK RLC PDU	SDU 2W+1
21		→	UPLINK RLC PDU	SDU 2W+2
22		←	...	SS continues to receive RLC SDUs
23		→	UPLINK RLC PDU	SDU 2W + W/2 + poll
24				No new transmissions from UE
25		←	STATUS PDU	
26		→	UPLINK RLC PDU	SDU 2W+W/2+1
27		→	UPLINK RLC PDU	SDU 2W+W/2+2
28		←	...	SS continues to receive RLC SDUs
29		→	UPLINK RLC PDU	SDU 3W + poll
30			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

NOTE 2: The polls in step 11, 17, 23 and 29 are transmitted as the last PDU in buffer trigger is set to TRUE and the transmitted PDU is the last PDU in the transmitter window, see TS 25.322 clause 9.7.1.

### 7.2.3.13.5 Test requirements

From steps 8 to 11, the SDU contents reassembled from the uplink shall match those of the first W transmitted SDUs.

At step 12 there shall be no further transmission on the uplink DTCH whilst the SS is waiting, except for any repeats of PDUs with sequence numbers from 0 to W-1.

After step 13, the UE shall resume transmission of the next W SDUs. The contents of these SDUs shall match those of SDUs W+1 to 2\*W sent on the downlink.

At step 18 there shall be no further transmission on the uplink DTCH whilst the SS is waiting, except for any repeats of PDUs with sequence numbers from W to 2W-1.

After step 19, the UE shall resume transmission of the next W/2 SDUs. The contents of these SDUs shall match those of SDUs 2\*W+1 to 2\*W+W/2 sent on the downlink.

At step 24 there shall be no further transmission on the uplink DTCH whilst the SS is waiting, except for any repeats of PDUs with sequence number from 2W to W/2-1.

After step 25, the UE shall resume transmission of the next W/2 SDUs. The contents of these SDUs shall match those of SDUs 2\*W+W/2+1 to 3\*W sent on the downlink.

### 7.2.3.14 Control of Receive Window

#### 7.2.3.14.1 Definition

This test is to check that the UE is able to correctly control its RLC receive window. Correct operation of RLC windowing is critical for acknowledged mode operation.

This test applies to all UE.

#### 7.2.3.14.2 Conformance requirement

Upon reception of an AMD PDU with "Sequence Number" outside the interval  $VR(R) \leq SN < VR(MR)$ , the Receiver shall:

- discard the AMD PDU;
- if the "polling bit" in the discarded AMD PDU is set to "1":
  - initiate the STATUS PDU transfer procedure.

#### Reference(s)

TS 25.322, clause 11.3.4.2.

#### 7.2.3.14.3 Test purpose

To verify that the UE discards PDUs with sequence numbers outside the upper boundary of the receive window.

#### 7.2.3.14.4 Method of test

##### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC Transmission window size	8
Downlink RLC Missing PDU Indicator Receiving window size	FALSE 8

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to  $AM\_7\_PayloadSize - 1$  bytes.

### Test procedure

Let  $W$  be the size of the receive window.

The length of all transmitted SDUs is set to  $AM\_7\_PayloadSize - 1$  bytes.

- a) The SS transmits  $W$  RLC SDUs to the UE, polling only on the last RLC PDU.
- b) The SS checks the RLC SDUs received on the uplink, responding to poll requests with acknowledgements. Then after receiving the STATUS PDU from the UE it transmits a further RLC SDU with the poll bit set. The SS sets the sequence number for the associated RLC PDU above the top of the receive window, for example,  $2*W$ .
- c) The SS receives a STATUS PDU from the UE.
- d) The SS transmits a further RLC SDU with the sequence number set to the value of the next sequence number within the receive window.
- e) The SS checks the RLC SDUs received on the uplink.
- f) The SS may optionally release the radio bearer.

This test case is run once for the default receive window size (8) and again with the receive window size set to 1536.

### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2	←		DOWNLINK RLC PDU	SDU 1, SN = 0
3	←		DOWNLINK RLC PDU	SDU 2, SN = 1
4	←		...	SS continues to transmit RLC SDUs
5	←		DOWNLINK RLC PDU	SDU $W + Poll$ , SN = $W-1$
6	→		STATUS PDU	
7	→		UPLINK RLC PDU	SDU 1
8	→		UPLINK RLC PDU	SDU 2
9			...	UE continues to transmit RLC SDUs
10	→		UPLINK RLC PDU	SDU $W$ , Poll
10a	←		STATUS PDU	
11	←		DOWNLINK RLC PDU	SDU $W+1$ , SN = $2W$ , Poll
11a	→		STATUS PDU	
12	←		DOWNLINK RLC PDU	SDU $W+2$ , SN = $W$
13	→		UPLINK RLC PDU	SDU $W+2$
14			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

### 7.2.3.14.5 Test requirements

1. The SS shall receive back SDUs 1 to  $W$ , and SDU  $W + 2$  only. No other SDUs shall be looped back.
2. The SS shall receive a STATUS PDU in step 11a. SN= $2W$  shall not be indicated as received in the STATUS PDU. Negative acknowledgements shall not be indicated for SN= $W$  to  $2W-1$  either.

### 7.2.3.15 Polling for status / Last PDU in transmission queue

#### 7.2.3.15.1 Definition

This case tests that the UE will poll for a status request on the last PDU in its transmission queue when that mode is enabled. Incorrect operation of polling will cause degradation of service, or at worst service failure.

#### 7.2.3.15.2 Conformance requirement

Last PDU in buffer.

When an AMD PDU to be transmitted for the first time is submitted to lower layer, the Sender shall:

- if the AMD PDU is the last AMD PDU scheduled for transmission according to subclause 11.3.2 (i.e. no data received from upper layer remains to be segmented into AMD PDUs); or
- if the AMD PDU is the last AMD PDU that is allowed to transmit according to subclause 11.3.2.2:
  - trigger a poll for this AMD PDU

....

- AMD PDUs are only allowed to transmit:
  - if the AMD PDU has a "Sequence Number" < VT(MS); or
  - if the AMD PDU has a "Sequence Number" equal to VT(S)-1; and
  - if the AMD PDU is not restricted to be transmitted by the local suspend function, see 3GPP TS 25.322 subclause 9.7.5.

...

The Sender shall:

- if a poll has been triggered by one or several poll triggers (see 3GPP TS 25.322 subclause 9.7.1):
  - if polling is not prohibited, see subclause 9.5:
    - set the "Polling bit" in the AMD PDU header to "1";
- otherwise:
  - set the "Polling bit" in the AMD PDU header to "0".

#### Reference

TS 25.322 clause 11.3.2.1.1, 9.7.1 and 11.3.2.

#### 7.2.3.15.3 Test purpose

1. To verify that a poll is performed when only one PDU is available for transmission, and the poll prohibit timer function is not used.
2. To verify that a poll is performed when only one PDU is available for transmission, and the poll prohibit timer function is used, but inactive.

#### 7.2.3.15.4 Method of test

#### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC Polling info	First run	Second run
Timer_poll_prohibit	disabled	200
Last transmission PDU poll	TRUE	TRUE
Last retransmission PDU poll	FALSE	FALSE

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to  $(2 * AM\_7\_PayloadSize) - 1$  bytes.

#### Test procedure

- The SS transmits an RLC SDU of length  $(4 * AM\_7\_PayloadSize) - 1$  bytes to the UE.
- The SS checks the uplink RLC PDUs for a poll for status flag.
- The SS may optionally release the radio bearer.

The test is repeated using the RLC parameters given in the Second run column of the configuration table for the initial conditions.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU	SDU 1
3		←	DOWNLINK RLC PDU	SDU 1
4		←	DOWNLINK RLC PDU	SDU 1
5		←	DOWNLINK RLC PDU	SDU 1 + Poll
6		→	STATUS PDU	
7		→	UPLINK RLC PDU	SDU 1
8		→	UPLINK RLC PDU	SDU 1 + Poll
9		←	STATUS PDU	
10			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

#### 7.2.3.15.5 Test requirements

The Poll bit shall be set in the AMD PDU header of the PDU returned in step 8. The poll bit shall not be set in the AMD PDU header of other PDUs.

#### 7.2.3.16 Polling for status / Last PDU in retransmission queue

##### 7.2.3.16.1 Definition

This case tests that the UE will poll for a status request on the last PDU in its retransmission queue when that mode is enabled. Incorrect operation of polling will cause degradation of service, or at worst service failure.

##### 7.2.3.16.2 Conformance requirement

Last PDU in Retransmission buffer.

When a retransmitted AMD PDU is submitted to lower layer, the Sender shall:

- if the AMD PDU is the last AMD PDU scheduled for retransmission according to subclause 11.3.2; or

- if the AMD PDU is the last of the AMD PDUs scheduled for retransmission that are allowed to transmit according to subclause 11.3.2.2:
  - trigger a poll for this AMD PDU

....

- AMD PDUs are only allowed to transmit:
  - if the AMD PDU has a "Sequence Number" < VT(MS); or
  - if the AMD PDU has a "Sequence Number" equal to VT(S)-1; and
  - if the AMD PDU is not restricted to be transmitted by the local suspend function, see 3GPP TS 25.322 subclause 9.7.5.

...

The Sender shall:

- if a poll has been triggered by one or several poll triggers (see 3GPP TS 25.322 subclause 9.7.1):
  - if polling is not prohibited, see subclause 9.5:
    - set the "Polling bit" in the AMD PDU header to "1";
  - otherwise:
- set the "Polling bit" in the AMD PDU header to "0".

## Reference

25.322 clause 11.3.2.1.1, 9.7.1 and 11.3.2.

### 7.2.3.16.3 Test purpose

1. To verify that a poll is performed when only one PDU is available for retransmission, and the poll prohibit timer function is not used.
2. To verify that a poll is performed when only one PDU is available for retransmission, and the poll prohibit timer function is used, but inactive.

### 7.2.3.16.4 Method of test

#### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC Polling info	First run	Second run
Timer_poll_prohibit	disabled	200
Last transmission PDU poll	FALSE	FALSE
Last retransmission PDU poll	TRUE	TRUE

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to (2 \* AM\_7\_PayloadSize) - 1 bytes.

### Test procedure

- a) The SS transmits an RLC SDU of length  $(4 * AM\_7\_PayloadSize) - 1$  bytes to the UE.
- b) The SS checks the uplink RLC PDUs for a poll for status flag.
- c) The SS transmits a STATUS PDU negatively acknowledging the first uplink RLC PDU as missing.
- d) The SS waits for the RLC PDU to be retransmitted and then checks the uplink RLC PDU for a poll for status flag.
- e) The SS may optionally release the radio bearer.

The test is repeated using the RLC parameters given in the Second run column of the configuration table for the initial conditions.

### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			RB ESTABLISHMENT	See generic procedures
2		←	DOWNLINK RLC PDU	SDU 1
3		←	DOWNLINK RLC PDU	SDU 1
4		←	DOWNLINK RLC PDU	SDU 1
5		←	DOWNLINK RLC PDU	SDU 1 + Poll
6		→	STATUS PDU	
7		→	UPLINK RLC PDU	SDU 1, SN=0
8		→	UPLINK RLC PDU	SDU 1, SN=1
9		←	STATUS PDU	NAK: SN=0
10		...		Wait for retransmission
11		→	UPLINK RLC PDU	SDU 1, SN=0 + Poll
12		←	STATUS PDU	
13			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is infomative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

#### 7.2.3.16.5 Test requirements

The Poll bit shall be set in the AMD PDU header of the PDU returned in step 11. The poll bit shall not be set in the AMD PDU header of other PDUs.

#### 7.2.3.17 Polling for status / Poll every Poll\_PDU PDUs

##### 7.2.3.17.1 Definition

This case tests that the UE will poll for a status request every Poll\_PDU PDUs when that mode is enabled. Incorrect operation of polling will cause degradation of service, or at worst service failure.

##### 7.2.3.17.2 Conformance requirement

VT(PDU).

This state variable is used when the "poll every Poll\_PDU PDU" polling trigger is configured. It shall be incremented by 1 for each AMD PDU that is transmitted including both new and retransmitted AMD PDUs. When it becomes equal to the value Poll\_PDU, a new poll shall be transmitted and the state variable shall be set to zero.

The initial value of this variable is 0.

Poll\_PDU.

This protocol parameter indicates how often the transmitter shall poll the Receiver in the case where "polling every Poll\_PDU PDU" is configured by upper layers. It represents the upper limit for the state variable VT(PDU). When VT(PDU) equals the value Poll\_PDU a poll shall be transmitted to the peer entity.

Every Poll\_PDU PDU.

The Sender triggers the Polling function for every Poll\_PDU PDU. Both retransmitted and new AMD PDUs shall be counted.

The Sender shall:

- if a poll has been triggered by one or several poll triggers (see subclause 9.7.1):
  - if polling is not prohibited, see subclause 9.5:
    - set the "Polling bit" in the AMD PDU header to "1";
  - otherwise:
    - set the "Polling bit" in the AMD PDU header to "0".

## Reference

TS 25.322 clauses 9.4, 9.6, 11.3.2.1.1 and 9.7.1.

### 7.2.3.17.3 Test purpose

1. To verify that a poll is performed when VT(PDU) reaches Poll\_PDU.
2. To verify VT(PDU) is incremented for both new and retransmitted PDUs.

### 7.2.3.17.4 Method of test

#### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC Polling info	
Poll_PDU	4
Last transmission PDU poll	FALSE
Last retransmission PDU poll	FALSE

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to AM\_7\_PayloadSize - 1 bytes.

#### Test procedure

Let the value of Poll\_PDU be P:

- a) The SS sends  $3 * P - 2$  RLC SDUs of size AM\_7\_PayloadSize - 1 bytes to the UE in PDUs with sequence numbers that are contiguous, starting from zero.
- b) The SS checks the sequence numbers and polling bits of the RLC PDUs returned on the uplink.
- c) The SS sends a STATUS PDU negatively acknowledging two RLC PDUs with a sequence numbers of already received PDUs. The other PDUs are acknowledged as received correctly.
- d) The SS checks the sequence numbers and polling bits of the RLC SDUs returned on the uplink.

e) The SS terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	DOWNLINK RLC PDU	SDU 1
2		←	DOWNLINK RLC PDU	SDU 2
3		←	...	SS continues to transmit RLC SDUs
4		←	DOWNLINK RLC PDU	SDU 3P – 2
5		→	UPLINK RLC PDU	SDU 1, SN=0
6		→	UPLINK RLC PDU	SDU 2, SN=1
7		→	...	SS continues to receive RLC SDUs
8		→	UPLINK RLC PDU	SDU P, Poll
9		←	STATUS PDU	NAK SN=0 and SN=1
10		→	UPLINK RLC PDU	SDU 1, SN=0
11		→	UPLINK RLC PDU	SDU 2, SN=1
12		→	UPLINK RLC PDU	SDU P+1
13		→	...	SS continues to receive RLC SDUs
14		→	UPLINK RLC PDU	SDU 2P – 2, Poll
15		→	...	SS continues to receive RLC SDUs
16		→	UPLINK RLC PDU	SDU 3P – 2, Poll
17			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

NOTE 2: Due to retransmissions it is not possible to determine the the exact PDU that a poll is received on. i.e. A poll may be received on a retransmitted PDU or a PDU transmitted for the first time.

7.2.3.17.5 Test requirements

The SS shall receive a poll for status every Poll\_PDU RLC PDUs sent on the uplink.

7.2.3.18 Polling for status / Poll every Poll\_SDU SDUs

7.2.3.18.1 Definition

This case tests that the UE will poll for a status request every Poll\_SDU SDUs when that mode is enabled. Incorrect operation of polling will cause degradation of service, or at worst service failure.

7.2.3.18.2 Conformance requirement

VT(SDU).

This state variable is used when the "poll every Poll\_SDU SDU" polling trigger is configured. It shall be incremented by 1 for a given SDU when all the AMD PDUs carrying a part of this SDU have been transmitted at least once. When it becomes equal to the value Poll\_SDU a new poll shall be transmitted and the state variable shall be set to zero. The "Polling bit" shall be set to "1" in the first transmission of the AMD PDU that contains the last segment of the SDU.

The initial value of this variable is 0.

Poll\_SDU.

This protocol parameter indicates how often the transmitter shall poll the Receiver in the case where "polling every Poll\_SDU SDU" is configured by upper layers. It represents the upper limit for state variable VT(SDU). When VT(SDU) equals the value Poll\_SDU a poll shall be transmitted to the peer entity.

Every Poll\_SDU SDU.

The Sender triggers the Polling function for every Poll\_SDU SDU. The poll shall be triggered for the first transmission of the last AMD PDU that contains segments of the RLC SDU.

The Sender shall:

- if a poll has been triggered by one or several poll triggers (see TS 25.322 subclause 9.7.1):
  - if polling is not prohibited, see TS 25.322 subclause 9.5:
    - set the "Polling bit" in the AMD PDU header to "1";
  - otherwise:
    - set the "Polling bit" in the AMD PDU header to "0".

## Reference

TS 25.322 clauses 9. 4, 9.6, 9.7.1 and 11.3.2.1.1.

### 7.2.3.18.3 Test purpose

1. To verify that a poll is performed when VT(SDU) reaches Poll\_SDU.
2. To verify that the poll is sent in the last PDU of the SDU.

### 7.2.3.18.4 Method of test

#### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC Polling info Last transmission PDU poll Poll_SDU	FALSE 1
--	------------

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to (4 \* AM\_7\_PayloadSize) - 1 bytes.

Let the value of Poll\_SDU be P.

- a) The SS sends 2 \* P RLC SDUs of size AM\_7\_PayloadSize - 1 bytes to the UE in PDUs with sequence numbers that are contiguous, starting from zero.
- b) The SS checks the sequence numbers and polling bits of the RLC SDUs returned on the uplink.
- c) The SS terminates the connection.

The test is repeated with Poll\_SDU set to 64 and the txWindow Size set to 256.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		DOWNLINK RLC PDU	SDU 2
3	←		...	SS continues to transmit RLC SDUs
4	←		DOWNLINK RLC PDU	SDU 2P
5	→		UPLINK RLC PDU	SDU 1 Expanded to (4 * AM_7_PayloadSize) - 1 bytes by test function
6	→		UPLINK RLC PDU	
7	→		...	SS continues to receive RLC SDUs
8	→		UPLINK RLC PDU	SDU P, Poll
9	←		STATUS PDU	
10	→		UPLINK RLC PDU	SDU P+1 Expanded to (4 * AM_7_PayloadSize) - 1 bytes by test function
11	→		UPLINK RLC PDU	
12	→		...	SS continues to receive RLC SDUs
13	→		UPLINK RLC PDU	SDU 2P, Poll
14			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

#### 7.2.3.18.5 Test requirements

The UE shall return uplink PDUs that contain polls for status in sequence numbers  $4 * P - 1$  and  $8 * P - 1$ . No other PDUs shall poll for status.

#### 7.2.3.19 Polling for status / Timer triggered polling (Timer\_Poll\_Periodic)

##### 7.2.3.19.1 Definition

This case tests that the UE will poll for a status request every Timer\_Poll\_Periodic ms when that mode is enabled. Incorrect operation of polling will cause degradation of service, or at worst service failure.

##### 7.2.3.19.2 Conformance requirement

This timer shall only be used when "timer based polling" is configured by upper layers. The value of the timer is signalled by upper layers. The timer shall be started when the RLC entity is created. When the timer expires, the RLC entity shall:

- restart the timer;
- if AMD PDUs are available for transmission or retransmission (not yet acknowledged):
  - trigger a poll.

[...]

The Sender shall:

- if a poll has been triggered by one or several poll triggers (see TS 25.322 subclause 9.7.1):
- if polling is not prohibited, see TS 25.322 subclause 9.5:

- set the "Polling bit" in the AMD PDU header to "1";
- otherwise:
  - set the "Polling bit" in the AMD PDU header to "0".

## Reference

TS 25.322 clauses 9.5, 9.7.1 and 11.3.2.1.1.

### 7.2.3.19.3 Test purpose

1. To verify that the UE polls the SS in the next PDU to be transmitted or retransmitted each time the Timer\_Poll\_Periodic timer expires.
2. To verify that if there is no PDU to be transmitted, and all the PDUs have already been acknowledged, the timer is restarted, but no poll is sent.

### 7.2.3.19.4 Method of test

#### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC Polling info	First run	Second run
Last retransmission PDU poll	FALSE	FALSE
Last transmission PDU poll	FALSE	FALSE
Timer_poll_periodic	100	2000

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to AM\_7\_PayloadSize - 1 bytes.

#### Test procedure

Let T be the value of Timer\_Poll\_Periodic:

- a) The SS waits for at least  $2 \cdot T$  ms before starting any transmissions, and monitors the uplink.
- b) The SS sends  $4 \cdot (T/TTI)$  RLC SDUs of size  $(AM\_7\_PayloadSize/2) - 1$  bytes to the UE. The SDUs are packed 2 SDUs to one PDU.
- c) The SS waits for the first PDU to be received with the P bit set, records the arrival time ( $T_1$ ) and responds with a STATUS PDU normally.
- d) The SS waits for the reception of the next PDU with the P bit set, records the arrival time ( $T_2$ ), and then transmits a STATUS PDU reporting that none of the uplink PDUs were correctly received, except for the last PDU containing the poll bit which is acknowledged.
- e) The SS waits for the next PDU received with the P bit set, and records the arrival time ( $T_3$ ).
- f) The SS waits for the reception of the next PDU with the P bit set and records the arrival time ( $T_4$ ).
- g) The SS may optionally release the radio bearer.

The Test is repeated using the parameters specified for the second run.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1, SDU2
2	←		...	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	SDU 4*(T/TTI)-1SDU 4*(T/TTI)
4	→		UPLINK RLC PDU	SDU 1, SN=0
5	→		UPLINK RLC PDU	SDU 2, SN=1
6	→		...	SS continues to receive RLC PDUs
7	→		UPLINK RLC PDU	SN = x, Poll: Note T <sub>1</sub>
8	←		STATUS PDU	ACK SN 0 to SN x
9	→		UPLINK RLC PDU	SN = x+1
10	→		...	SS continues to receive RLC PDUs
11	→		UPLINK RLC PDU	SN = x + ceil(T/TTI), Poll: Note T <sub>2</sub>
12	←		STATUS PDU	NAK SN x+1 to SN x + ceil(T/TTI)-1
13	→		UPLINK RLC PDU	PDUs including some retransmissions
14	→		UPLINK RLC PDU	
15	→		...	SS continues to receive RLC PDUs
16	→		UPLINK RLC PDU	Poll: Note T <sub>3</sub>
17	←		STATUS PDU	Normal
18	→		...	SS continues to receive RLC PDUs
19	→		UPLINK RLC PDU	Poll: Note T <sub>4</sub>
20			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is infomative. The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity. Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

NOTE 2: The value of x may be different for each iteration.

7.2.3.19.5 Test requirements

No PDUs shall be received from the UE for 2\*T ms before step 1.

$x \leq \text{ceil}(T/TTI)$ .

Time T<sub>2</sub> – T<sub>1</sub> shall be T.

Time T<sub>3</sub> – T<sub>2</sub> shall be T.

Time T<sub>4</sub> – T<sub>3</sub> shall be T.

7.2.3.20 Polling for status / Polling on Poll\_Window% of transmission window

7.2.3.20.1 Definition

This case tests that the UE will poll for a status request when it has reached Poll\_Window% of the transmission window, when that mode is enabled. Incorrect operation of polling will cause degradation of service, or at worst service failure.

This test applies to all UE.

## 7.2.3.20.2 Conformance requirement

1. A poll is triggered for each AMD PDU when  $J \geq \text{Poll\_Window}$ , where J is the window transmission percentage defined by

$$J = \frac{(4096 + \text{VT}(S) + 1 - \text{VT}(A)) \bmod 4096}{\text{VT}(WS)} * 100 ,$$

where the constant 4096 is the modulus for AM described in 3GPP TS 25.322 subclause 9.4 and VT(S) is the value of the variable before the AMD PDU is submitted to lower layer.

2. The Polling function is used by the Sender to request the peer RLC entity for a status report. The "Polling bit" in the AMD PDU indicates the poll request. There are several triggers for initiating the Polling function. Which of the triggers shall be used is configured by upper layers for each RLC entity. The following triggers can be configured:

.....

- 6) Window based.

The Sender triggers the Polling function when the condition described in subclause 9.6 d) ("Poll\_Window") is fulfilled.

3. The Sender shall:

- if a poll has been triggered by one or several poll triggers (see subclause 9.7.1):
  - if polling is not prohibited, see subclause 9.5:
    - set the "Polling bit" in the AMD PDU header to "1".

## Reference

25.322 clauses 9.6, 9.7.1 and 11.3.2.1.1.

## 7.2.3.20.3 Test purpose

To verify that the UE polls the SS when the window based polling condition  $J \geq \text{Poll\_Window}$  is fulfilled.

## 7.2.3.20.4 Method of test

## Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC	
Polling info	
Last transmission PDU poll	FALSE
Poll_Window	50
Transmission window size	8
Downlink RLC	
Receiving window size	8

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to AM\_7\_PayloadSize - 1 bytes.

Test procedure

Let W be the size of the transmission window.

- a) The SS transmits  $(W/2) + 2$  RLC SDUs of size  $AM\_7\_PayloadSize - 1$  bytes.
- b) The SS checks the sequence number of the first three uplink PDUs received with the P bit set.
- c) The SS sends another RLC SDU of size  $AM\_7\_PayloadSize - 1$  bytes.
- d) The SS checks the sequence number of the next uplink PDU received with the P bit set.
- e) The SS waits until no more new PDUs are received.
- f) The SS sends a STATUS PDU acknowledging the received RLC PDUs with SN = 0 through  $W/2$ , followed by two further RLC SDUs.
- g) The SS checks the sequence number of the next uplink PDU received with the P bit set.
- h) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	DOWNLINK RLC PDU	SDU 1
2		←	...	SS continues to transmit RLC SDUs
3		←	DOWNLINK RLC PDU	SDU $W/2+2$
4		→	UPLINK RLC PDU	SDU 1, SN=0
5		→	UPLINK RLC PDU	SDU 2, SN=1
6		→	...	SS continues to receive RLC PDUs
7		→	UPLINK RLC PDU	SN = $W/2-1$ , Poll
7a		→	UPLINK RLC PDU	SN = $W/2$ , Poll
7b		→	UPLINK RLC PDU	SN = $W/2 + 1$ , Poll
8		←	DOWNLINK RLC PDU	SDU $W/2 + 3$
9		→	UPLINK RLC PDU	SN = $W/2 + 2$ , Poll
9a				SS waits 10 TTI periods to ensure no more new PDUs are received
10		←	STATUS PDU	ACK SN 0 to $W/2$ (UE sets VT(A) to $W/2+1$ )
11		←	DOWNLINK RLC PDU	SDU $W/2 + 4$
12		←	DOWNLINK RLC PDU	SDU $W/2 + 5$
13		→	UPLINK RLC PDU	SN = $W/2+3$
14		→	UPLINK RLC PDU	SN = $W/2+4$ , Poll
15			RB RELEASE	Optional step
<p>NOTE: The Expected Sequence shown is informative.                      The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.                      Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.</p>				

7.2.3.20.5 Test requirements

The SS shall receive RLC PDUs with the P bit set in PDUs with sequence numbers of 3, 4, 5, 6 and 8. No other PDUs shall have their P bits set.

### 7.2.3.21 Polling for status / Operation of Timer\_Poll timer / Timer expiry

#### 7.2.3.21.1 Definition

This case tests that the UE will retransmit a poll for status if it does not receive a STATUS PDU within Timer\_Poll ms after a poll for status is transmitted. Incorrect operation of polling will cause degradation of service, or possible service failure.

#### 7.2.3.21.2 Conformance requirement

##### Timer\_Poll.

This timer shall only be used when so configured by upper layers. The value of the timer is signalled by upper layers. In the UE this timer shall be started when the successful or unsuccessful transmission of an AMD PDU containing a poll is indicated by lower layer. In UTRAN it should be started when an AMD PDU containing a poll is submitted to lower layer. If  $x$  is the value of the state variable VT(S) after the poll was submitted to lower layer, the timer shall be stopped upon receiving:

- positive acknowledgements for all the AMD PDUs with "Sequence Number" up to and including  $x - 1$ ; or
- a negative acknowledgement for the AMD PDU with "Sequence Number" =  $x - 1$ .

If the timer expires and no STATUS PDU fulfilling the criteria above has been received:

- the Receiver shall be polled once more;
- the timer shall be restarted; and
- the new value of VT(S) shall be saved.

If a new poll is sent when the timer is active, the timer shall be restarted at the time specified above, and the value of VT(S) shall be saved.

[...]

The Sender shall:

- if a poll has been triggered by one or several poll triggers (see subclause 9.7.1):
  - if polling is not prohibited, see subclause 9.5:
    - set the "Polling bit" in the AMD PDU header to "1";
- otherwise:
  - set the "Polling bit" in the AMD PDU header to "0".

#### Reference

TS 25.322 clauses 11.3.2.1.1 and 11.3.4.1.

#### 7.2.3.21.3 Test purpose

To verify that if the timer expires and no STATUS PDU containing an acknowledgement or negative acknowledgement of the AMD PDUs up to that which triggered the timer has been received, the receiver is polled once more.

#### 7.2.3.21.4 Method of test

##### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC Polling info	First run	Second run
Last transmission PDU poll	FALSE	FALSE
Timer_poll	500	1000
Timer_Poll_Periodic	2000	2000

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to AM\_7\_PayloadSize - 1 bytes.

**Test procedure**

Let T be the value of the Timer\_Poll\_Periodic timer.

- a) The SS transmits at least  $2 * T / TTI$  SDUs of size AM\_7\_PayloadSize - 1 bytes.
- b) The SS receives PDUs from the UE, and notes the time on receiving the first PDU with the P bit set, but does not respond. This time will be recorded as  $T_1$ .
- c) The SS continues to receive PDUs from the UE and notes the time on receipt of the next PDU with the P bit set. This time will be recorded as  $T_2$ .
- d) The SS may optionally release the radio bearer.

The test case is run once for each set of initial RLC parameters.

**Expected sequence**

Step	Direction		Message	Comments
	UE	SS		
1		←	DOWNLINK RLC PDU	SDU 1
2		←	...	SS continues to transmit RLC SDUs
3		←	DOWNLINK RLC PDU	SDU $\text{ceil}(2T/TTI)$
4		→	UPLINK RLC PDU	SDU 1
5		→	UPLINK RLC PDU	SDU 2
6		→	...	SS continues to receive RLC PDUs
7		→	UPLINK RLC PDU	SN = $\text{ceil}(T/TTI)$ , Poll: Note $T_1$
8		→	UPLINK RLC PDU	SN = $\text{ceil}(T/TTI)+1$
9		→	...	SS continues to receive RLC PDUs
10		→	UPLINK RLC PDU	Poll: Note $T_2$
11			RB RELEASE	Optional step

NOTE: The Expected Sequence shown is informative. The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity. Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

**7.2.3.21.5 Test requirements**

For the first run, the measured time  $T_2 - T_1$  shall be 500 ms.

For the second run, the measured time  $T_2 - T_1$  shall be 1000 ms.

## 7.2.3.22 Polling for status / Operation of Timer\_Poll timer / Stopping Timer\_Poll timer

### 7.2.3.22.1 Definition

This case tests that the UE will stop the Timer\_Poll timer if it receives a STATUS PDU within Timer\_Poll ms after a poll for status is transmitted. Incorrect operation of polling will cause degradation of service, or possible service failure.

### 7.2.3.22.2 Conformance requirement

#### Timer\_Poll.

This timer shall only be used when so configured by upper layers. The value of the timer is signalled by upper layers. In the UE this timer shall be started when the successful or unsuccessful transmission of an AMD PDU containing a poll is indicated by lower layer. In UTRAN it should be started when an AMD PDU containing a poll is submitted to lower layer. If  $x$  is the value of the state variable VT(S) after the poll was submitted to lower layer, the timer shall be stopped upon receiving:

- positive acknowledgements for all the AMD PDUs with "Sequence Number" up to and including  $x - 1$ ; or
- a negative acknowledgement for the AMD PDU with "Sequence Number" =  $x - 1$ .

If the timer expires and no STATUS PDU fulfilling the criteria above has been received:

- the Receiver shall be polled once more;
- the timer shall be restarted; and
- the new value of VT(S) shall be saved.

If a new poll is sent when the timer is active, the timer shall be restarted at the time specified above, and the value of VT(S) shall be saved.

[...]

The Sender shall:

- if a poll has been triggered by one or several poll triggers (see subclause 9.7.1):
  - if polling is not prohibited, see subclause 9.5:
    - set the "Polling bit" in the AMD PDU header to "1";
- otherwise:
  - set the "Polling bit" in the AMD PDU header to "0".

#### Reference

TS 25.322 clause 9.5.

### 7.2.3.22.3 Test purpose

To verify that the Timer\_Poll timer is stopped when receiving a STATUS PDU that acknowledges all AMD PDUs with SN up to and including VT(S)-1 at the time the poll was transmitted.

### 7.2.3.22.4 Method of test

#### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC Polling info	First run	Second run
Last transmission PDU poll	FALSE	FALSE
Timer_poll	500	1000
Timer_Poll_Periodic	2000	2000

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to AM\_7\_PayloadSize - 1 bytes.

### Test procedure

Let T be the value of the Timer\_Poll\_Periodic timer.

- The SS transmits at least  $2 * T / TTI$  SDUs of size AM\_7\_PayloadSize - 1 bytes.
- The SS receives PDUs from the UE, and notes the time on receiving the first PDU with the P bit set. This time will be recorded as  $T_1$ .
- The SS sends a STATUS PDU acknowledging all the PDUs up to and including the PDU carrying the poll request.
- The SS continues to receive PDUs from the UE and notes the time on receipt of the next PDU with the P bit set. This time will be recorded as  $T_2$ .
- The SS may optionally release the radio bearer.

The test case is run once for each set of initial RLC parameters.

### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	DOWNLINK RLC PDU	SDU 1
2		←	...	SS continues to transmit RLC SDUs
3		←	DOWNLINK RLC PDU	SDU $\text{ceil}(2T/TTI)$
4		→	UPLINK RLC PDU	SDU 1
5		→	UPLINK RLC PDU	SDU 2
6		→	...	SS continues to receive RLC PDUs
7		→	UPLINK RLC PDU	SN = $\text{ceil}(T/TTI)$ , Poll: Note $T_1$
8		←	STATUS PDU	ACK SN 0 to SN $\text{ceil}(T/TTI)$
9		→	UPLINK RLC PDU	SN = $\text{ceil}(T/TTI)+1$
10		→	...	SS continues to receive RLC PDUs
11		→	UPLINK RLC PDU	SN = $\text{ceil}(2T/TTI)$ , Poll: Note $T_2$
12			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

### 7.2.3.22.5 Test requirements

For both execution runs, the measured time  $T_2 - T_1$  shall be 2000 ms.

### 7.2.3.23 Polling for status / Operation of Timer\_Poll timer / Restart of the Timer\_Poll timer

#### 7.2.3.23.1 Definition

This case tests that the UE will restart the Timer\_Poll timer if another poll request is transmitted whilst the timer is running. Incorrect operation of polling will cause degradation of service, or possible service failure.

This test applies to all UE.

#### 7.2.3.23.2 Conformance requirement

##### Timer\_Poll.

This timer shall only be used when so configured by upper layers. The value of the timer is signalled by upper layers. In the UE this timer shall be started when the successful or unsuccessful transmission of an AMD PDU containing a poll is indicated by lower layer. In UTRAN it should be started when an AMD PDU containing a poll is submitted to lower layer. If  $x$  is the value of the state variable VT(S) after the poll was submitted to lower layer, the timer shall be stopped upon receiving:

- positive acknowledgements for all the AMD PDUs with "Sequence Number" up to and including  $x - 1$ ; or
- a negative acknowledgement for the AMD PDU with "Sequence Number" =  $x - 1$ .

If the timer expires and no STATUS PDU fulfilling the criteria above has been received:

- the Receiver shall be polled once more;
- the timer shall be restarted; and
- the new value of VT(S) shall be saved.

If a new poll is sent when the timer is active, the timer shall be restarted at the time specified above, and the value of VT(S) shall be saved.

[...]

The Sender shall:

- if a poll has been triggered by one or several poll triggers (see subclause 9.7.1):
  - if polling is not prohibited, see subclause 9.5:
    - set the "Polling bit" in the AMD PDU header to "1";
- otherwise:
  - set the "Polling bit" in the AMD PDU header to "0".

#### Reference

TS 25.322 clause 9.5.

#### 7.2.3.23.3 Test purpose

To verify that if a new poll is sent when the timer is running it is restarted.

#### 7.2.3.23.4 Method of test

##### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC	
Polling info	
Last transmission PDU poll	FALSE
Timer_poll	200
Poll_Window	60
Poll_PDU	16
Transmit window size	32

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to AM\_7\_PayloadSize - 1 bytes.

#### Test procedure

Let T be the value of the Timer\_Poll timer.

- a) The SS starts transmission of  $2 * \text{Poll\_PDU} + \text{ceil}(T / \text{TTI})$  numbers of SDUs of size AM\_7\_PayloadSize - 1 bytes.
- b) Whilst transmitting, the SS receives PDUs from the UE, until it receives the second PDU with the P bit set. (Note: poll due to Poll\_Window).
- c) The SS sends a STATUS PDU acknowledging all the PDUs received so far.
- d) The SS continues to receive consecutive PDUs with the poll bit set until a PDU is received without the poll bit set. The time the last PDU with the poll bit set was received is recorded as  $T_1$ .
- e) The SS continues to receive PDUs from the UE and notes the time on reception of the next PDU with the P bit set. This time will be recorded as  $T_2$ .
- f) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		...	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	2* Poll_PDU + ceil(T / TTI) numbers of SDUs are sent.
4	→		UPLINK RLC PDU	SDU 1
5	→		UPLINK RLC PDU	SDU 2
6	→		...	SS continues to receive RLC PDUs
7	→		UPLINK RLC PDU	SN = poll_PDU - 1, 1 <sup>st</sup> Poll, Timer_Poll started
8	→		Void	
9	→		Void	
10	→		UPLINK RLC PDU	SS continues to receive RLC PDUs
11	→		UPLINK RLC PDU	SN= ceil(Tx_Window_Size * 60%)-1, 2 <sup>nd</sup> Poll, Timer_Poll restarted: Note T1
12	←		STATUS PDU	ACK SN 0 to SN = ceil(Tx_Window_Size * 60%)-1
13	→		UPLINK RLC PDU	SN = ceil(Tx_Window_Size * 60%), Poll, Timer_Poll restarted: Note T1
14	→		...	SS continues to receive RLC PDUs. If poll bit is set in consecutive PDUs then note new value of T1 until a PDU without a poll bit set is received.
15	→		UPLINK RLC PDU	SN = ceil(Tx_Window_Size * 60%) + ceil(T / TTI) -1, 3 <sup>rd</sup> Poll, Timer_Poll expired: Note T2
16			RB RELEASE	Optional step
<p>NOTE: The Expected Sequence shown is informative.  The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.</p>				

#### 7.2.3.23.5 Test requirements

The measured time  $T_2 - T_1$  shall be 200 ms.

#### 7.2.3.24 Polling for status / Operation of timer Timer\_Poll\_Prohibit

##### 7.2.3.24.1 Definition

This case tests that the UE will not send a poll request within Timer\_Poll\_Prohibit ms of a previous poll request when this mode of operation is enabled. Incorrect operation of polling will cause degradation of service, or possible service failure.

##### 7.2.3.24.2 Conformance requirement

The timers defined in this subclause are normative. The timers shall be considered active from the time they are started until the time they either expire or are stopped.

##### b) Timer\_Poll\_Prohibit.

This timer shall only be used when so configured by upper layers. It is used to prohibit transmission of polls within a certain period. The value of the timer is signalled by upper layers.

In the UE this timer shall be started when the successful or unsuccessful transmission of an AMD PDU containing a poll is indicated by lower layer. In UTRAN it should be started when an AMD PDU containing a poll is submitted to lower layer.

From the time a poll is triggered until the timer expires, polling is prohibited. If another poll is triggered while polling is prohibited, its transmission shall be delayed until the timer expires (see subclause 9.7.1). Only one poll shall be transmitted when Timer\_Poll\_Prohibit expires even if several polls were triggered in the meantime. This timer shall not be affected by the reception of STATUS PDUs.

When Timer\_Poll\_Prohibit is not configured by upper layers, polling is never prohibited.

The Sender shall:

- if a poll has been triggered by one or several poll triggers (see subclause 9.7.1):
  - if polling is not prohibited, see subclause 9.5:
    - set the "Polling bit" in the AMD PDU header to "1";
- otherwise:
  - set the "Polling bit" in the AMD PDU header to "0".

## Reference

TS 25.322 clauses 9.5, 9.7.1 and 11.3.2.1.1.

### 7.2.3.24.3 Test purpose

1. To verify that no poll is transmitted if one or several polls are triggered when the Timer\_Poll\_Prohibit timer is active and has not expired.
2. To verify that the UE polls only once after Timer\_Poll\_Prohibit expires even though triggered several times during the prohibit time.

### 7.2.3.24.4 Method of test

#### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC	
Polling info	
Timer_poll_prohibit	500
Last transmission PDU poll	FALSE
Poll_PDU	4
Poll_Window	50
Transmission window size	32
Downlink RLC	
Receiving window size	128

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to AM\_7\_PayloadSize - 1 bytes.

#### Test procedure

Let T be the value of the Timer\_Poll\_Prohibit timer.

- a) The SS starts transmission of at least  $(2 * \text{Poll\_PDU}) + \text{ceil}(T / \text{TTI})$  SDUs of size AM\_7\_PayloadSize - 1 bytes.

- b) Whilst transmitting, the SS receives PDUs from the UE, and notes the time on receiving the first PDU with the P bit set. This time will be recorded as  $T_1$ .
- c) The SS does not respond to the poll request.
- d) The SS continues to receive PDUs from the UE and notes the time on receipt of the next PDU with the P bit set. This time will be recorded as  $T_2$ .
- e) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	DOWNLINK RLC PDU	SDU 1
2		←	...	SS continues to transmit RLC SDUs
3		←	DOWNLINK RLC PDU	SDU (2*Poll_PDU)+ ceil(T/TTI)
4		→	UPLINK RLC PDU	SDU 1
5		→	UPLINK RLC PDU	SDU 2
6		→	...	SS continues to receive RLC PDUs
7		→	UPLINK RLC PDU	SN = Poll_PDU - 1, Poll: Note $T_1$
8		→	...	SS continues to receive RLC PDUs
9			Void	
10		→	UPLINK RLC PDU	SN = (Transmission Window Size / 2) - 1, No Poll
11		→	...	SS continues to receive RLC PDUs
12		→	UPLINK RLC PDU	SN = Poll_PDU + ceil(T/TTI) - 1, Poll: Note $T_2$
12a		→	...	SS continues to receive RLC PDUs
13			RB RELEASE	Optional step

NOTE: The Expected Sequence shown is informative. The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity. Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

7.2.3.24.5 Test requirements

1. The measured time  $T_2 - T_1$  shall be Timer\_poll\_prohibit ms.
2. Only one poll shall be received from the UE after step 7, the poll in step 12.
3. After step 12 no further poll shall be received from the UE for the next Timer\_poll\_prohibit ms.

7.2.3.25 Receiver Status Triggers / Detection of missing PDUs

7.2.3.25.1 Definition

This case tests that the UE transmits a status report whenever it detects that a PDU is missing, if this mode of operation is enabled. Incorrect operation of status reporting will cause degradation of service, or possible service failure.

7.2.3.25.2 Conformance requirement

Detection of missing PDU(s).

If the Receiver detects one or several missing AMD PDUs it shall trigger the transmission of a status report to the Sender.

Reference

TS 25.322 clause 9.7.2.

7.2.3.25.3 Test purpose

To verify that a status report is transmitted if there are one or more missing PDUs.

7.2.3.25.4 Method of test

Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

Test procedure

- a) The SS transmits 7 SDUs, each of size  $AM\_7\_PayloadSize - 1$  bytes, in PDUs with consecutive sequence numbers starting from 0, followed by 5 SDUs in PDUs with consecutive sequence numbers starting from 8, followed by an SDU in a PDU with a sequence number of 15.
- b) While transmitting, the SS monitors the uplink for STATUS PDUs.
- c) The SS may optionally release the radio bearer

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	DOWNLINK RLC PDU	SN = 0
2		←	...	SS continues to transmit RLC SDUs
3		←	DOWNLINK RLC PDU	SN = 6
4		←	DOWNLINK RLC PDU	SN = 8
5		→	STATUS PDU	SN = 7 missing
6		←	DOWNLINK RLC PDU	
7		←	...	SS continues to transmit RLC SDUs
8		←	DOWNLINK RLC PDU	SN = 12
9		←	DOWNLINK RLC PDU	SN = 15
10		→	STATUS PDU	SN = 7, 13, 14 missing
11			RB RELEASE	Optional step
<p>NOTE: The Expected Sequence shown is informative. The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity. Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.</p>				

7.2.3.25.5 Test requirements

A STATUS PDU shall be received from the UE after step 4, indicating that the PDU with sequence number 7 was missing.

A STATUS PDU shall be received from the UE after step 9, indicating that the PDUs with sequence numbers 7, 13 and 14 were missing.

### 7.2.3.26 Receiver Status Triggers / Operation of timer Timer\_Status\_Periodic

#### 7.2.3.26.1 Definition

This case tests that the UE transmits a status report every Timer\_Status\_Periodic ms when this mode of operation is enabled. Incorrect operation of status reporting will cause degradation of service, or possible service failure.

#### 7.2.3.26.2 Conformance requirement

This timer shall only be used when timer based status reporting is configured by upper layers.

This timer shall be started when the RLC entity is created. When the timer expires the transmission of a status report shall be triggered and the timer shall be restarted.

#### Reference

TS 25.322 clauses 9.5, 9.7.2 and 11.5.2.

#### 7.2.3.26.3 Test purpose

To verify that a status report is transmitted each time the Timer\_Status\_Periodic timer expires.

#### 7.2.3.26.4 Method of test

##### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Downlink RLC Timer_STATUS_periodic	100
---------------------------------------	-----

These settings apply to both the uplink and downlink DTCH.

##### Test procedure

Let T be the value of the Timer\_STATUS\_periodic timer.

- a) The SS starts transmission of at least  $\text{ceil}(2 * T / \text{TTI})$  SDUs of size AM\_7\_PayloadSize - 1 bytes.
- b) The SS waits to receive a STATUS PDU and notes the time. This time will be recorded as  $T_1$ .
- c) The SS waits to receive a second STATUS PDU and notes the time. This time will be recorded as  $T_2$ .
- d) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		...	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	SDU m
4	→		STATUS PDU	Note T <sub>1</sub>
5	←		DOWNLINK RLC PDU	
6	←		...	SS continues to transmit RLC SDUs
7	←		DOWNLINK RLC PDU	SDU m + ceil(T/TTI)
8	→		STATUS PDU	Note T <sub>2</sub>
9			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

#### 7.2.3.26.5 Test requirements

The measured time  $T_2 - T_1$  shall be 100 ms.

#### 7.2.3.27 Receiver Status Triggers / Operation of timer Timer\_Status\_Prohibit

##### 7.2.3.27.1 Definition

This case tests that the UE does not transmit a status report more often than every Timer\_Status\_Prohibit ms when this mode of operation is enabled. Incorrect operation of status reporting will cause degradation of service, or possible service failure.

##### 7.2.3.27.2 Conformance requirement

In the UE, this timer shall be started when the successful or unsuccessful transmission of the last STATUS PDU of an acknowledgement status report is indicated by lower layer

[...]

When a status report is triggered the Receiver shall:

- if transmission of status reports is not prohibited by any of the functions "STATUS prohibit" or "EPC mechanism":
  - assemble and transmit the status report to the Sender, as specified in subclauses TS 25.322 11.5.2.2 and 11.5.2.3.
- otherwise (if the status report is prohibited by at least one of the functions "STATUS prohibit" or "EPC mechanism"):
  - [...]
  - if ACK, LIST, BITMAP, or RLIST SUFIs are required in the status report:
- delay sending these SUFIs until the prohibit function terminates.

[...]

Upon expiry of the timer Timer\_Status\_Prohibit [...], the Receiver shall:

- if at least one status report was triggered during the time the transmission of a status reports was prohibited that could not be transmitted due to prohibition; and

- if transmission of a status reports is no longer prohibited by any of the functions "STATUS prohibit" or "EPC mechanism":
  - transmit one status report to the Sender, using the procedure described in subclause TS 25.322 11.5.2.3.

## Reference

TS 25.322 clause 9.7.2.

### 7.2.3.27.3 Test purpose

1. To verify that a status report is not transmitted while the Timer\_Status\_Prohibit timer is active.
2. To verify that only one status report is sent on the expiry of the Timer\_Status\_Prohibit timer if several triggers occur while it is active.

### 7.2.3.27.4 Method of test

#### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Downlink RLC	
Timer_Status_Prohibit	500
Timer_STATUS_periodic	200

These settings apply to both the uplink and downlink DTCH.

#### Test procedure

Let  $T_{pro}$  be the value of the Timer\_Status\_Prohibit timer, and  $T_{per}$  be the value of the Timer\_Status\_Periodic timer.

- a) The SS starts transmission of at least  $\text{ceil}(2 * T_{pro} / TTI) + \text{ceil}(T_{per}/TTI)$  SDUs of size  $AM\_7\_PayloadSize - 1$  bytes.
- b) Whilst transmitting, the SS monitors the uplink for a STATUS PDU and notes the time. This time will be recorded as  $T_1$ .
- c) The SS sets the P bit in one of the next  $\text{floor}(T_{pro}/TTI)$  PDUs transmitted on the downlink.
- d) The SS waits to receive a second STATUS PDU and notes the time. This time will be recorded as  $T_2$ .
- e) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		...	SS continues to transmit RLC SDUs
3	←		DOWNLINK RLC PDU	SDU m
4	→		STATUS PDU	Note T <sub>1</sub>
5	←		DOWNLINK RLC PDU	Poll
6	←		...	SS continues to transmit RLC PDUs
7	←		DOWNLINK RLC PDU	SDU m + ceil(T <sub>pro</sub> / TTI)
8	→		STATUS PDU	Note T <sub>2</sub>
9			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative. The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity. Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

7.2.3.27.5 Test requirements

1. The measured time T<sub>2</sub> – T<sub>1</sub> shall be 500 ms.
2. Only one STATUS PDU shall be received in step 8, after Timer\_Status\_Prohibit expiry.

7.2.3.28 Status reporting / Abnormal conditions / Reception of LIST SUFI with Length set to zero

7.2.3.28.1 Definition

Peer RLCs use STATUS PDUs to manage flow control and retransmission. On a STATUS report PDU with an invalid LIST SUFI the RLC must behave as specified. Incorrect behaviour may result in degradation of QoS, or failure of the UE to communicate.

7.2.3.28.2 Conformance requirement

The List super-field

The List Super-Field consists of a type identifier field (LIST), a list length field (LENGTH) and a list of LENGTH number of pairs as shown in figure 9.11 below:

Type = LIST
LENGTH
SN <sub>1</sub>
L <sub>1</sub>
SN <sub>2</sub>
L <sub>2</sub>
...
SN <sub>LENGTH</sub>
L <sub>LENGTH</sub>

Figure 9.11: The List fields in a STATUS PDU

LENGTH

Length: 4 bits

The number of (SN<sub>i</sub>, L<sub>i</sub>)-pairs in the super-field of type LIST. The value "0000" is invalid and the list is discarded.

## Reference

TS 25.322 clause 9.2.2.11.4.

## 7.2.3.28.3 Test purpose

To verify that if a STATUS PDU is received with a LIST SUFI and the LENGTH field is set to "0000" that the list is discarded.

## 7.2.3.28.4 Method of test

## Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC Polling info Poll_PDU	4
--	---

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to  $(3 * \text{Poll\_PDU} * \text{AM\_7\_PayloadSize}) - 1$  bytes.

## Test procedure

- a) The SS sends an SDU of size  $(\text{AM\_7\_PayloadSize}) - 1$ .
- b) The SS monitors the received (looped back) PDUs for a poll request.
- c) The SS responds to the poll request by transmitting a STATUS PDU with a LIST SUFI. The list contains an indication that two PDUs were not received, but has the length field set to "0000".
- d) The SS continues to monitor the received PDUs to verify that none are retransmitted.
- e) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1 (start)
2	←		...	SS continues to transmit RLC PDUs
3	←		DOWNLINK RLC PDU	SDU 1 (end)
4	→		UPLINK RLC PDU	SDU 1 (start)
5	→		UPLINK RLC PDU	
6	→		...	SS continues to receive RLC PDUs
7	→		UPLINK RLC PDU	SN = Poll_PDU - 1, Poll
8	←		STATUS PDU	LIST(LENGTH = "0000", SN = 1, SN = 2)
9	→		...	SS continues to receive RLC PDUs
10	→		UPLINK RLC PDU	Poll
11	←		STATUS PDU	Normal reply
12	→		...	SS continues to receive RLC PDUs
13	→		UPLINK RLC PDU	SDU 1 (end)
14			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

#### 7.2.3.28.5 Test requirements

No RLC PDUs shall be retransmitted by the UE.

#### 7.2.3.29 Timer based discard, with explicit signalling / Expiry of Timer\_Discard

##### 7.2.3.29.1 Definition

This case tests that when the transmission of an SDU exceeds a time limit, the SDU is discarded by the sender, and the discard is signalled to the receiver. SDU discard is used to keep network delays within limits, and incorrect operation will effect the quality of service.

##### 7.2.3.29.2 Conformance requirement

If the transmission time exceeds a predefined value for a SDU in acknowledged mode RLC, this SDU is discarded in the transmitter and a Move Receiving Window (MRW) command is sent to the receiver so that AMD PDUs carrying that SDU are discarded in the receiver and the receiver window is updated accordingly.

This procedure is initiated by the sender when the following conditions are fulfilled ... Timer based SDU discard with explicit signalling is used, and Timer\_Discard expires for an SDU.

This status report is sent even if the 'STATUS prohibit' is used and the timer 'Timer\_Status\_Prohibit' is active.

The STATUS PDUs have higher priority than data PDUs.

#### Reference

TS 25.322 clauses 9.7.3.1, 11.3.4.3.1 and 11.6.

## 7.2.3.29.3 Test purpose

1. To verify that if the transmission time for an SDU exceeds Timer\_Discard, the SDU is discarded in the transmitter and the MRW procedure is invoked.
2. ...

## 7.2.3.29.4 Method of test

## Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC	
Transmission RLC discard	
Timer based with explicit signalling	
Timer_MRW	500
Timer_Discard	1000
MAX_MRW	4

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to AM\_7\_PayloadSize – 1 bytes.

## Test procedure

- a) The SS sends at least 2 RLC SDUs of size AM\_7\_PayloadSize – 1 bytes.
- b) The SS notes the time that the first RLC PDU is received on the uplink. This time will be recorded as T<sub>1</sub>.
- c) The SS checks the RLC PDUs received on the uplink and responds to all poll requests with a STATUS PDU, negatively acknowledging the RLC PDU with sequence number 0, and positively acknowledging all other RLC PDUs received.
- d) The SS monitors received STATUS PDUs for the presence of a MRW SUFI, noting the time it was received. This time will be recorded as T<sub>2</sub>.
- e) The SS responds to the MRW command with a correct MRW\_ACK.
- f) Void.
- g) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		DOWNLINK RLC PDU	SDU 2
3	→		UPLINK RLC PDU	SDU 1: Note T <sub>1</sub>
4	→		...	SS continues to receive RLC PDUs
5	→		UPLINK RLC PDU	SDU 2 + Poll
6	←		STATUS PDU	NAK SN=0
7	→		...	SS continues to receive RLC PDU with SN=0 + Poll
8	←		...	STATUS PDU, SS continues to NAK PDU with SN=0
9	→		STATUS PDU	MRW Command: Note T <sub>2</sub>
10	←		STATUS PDU	MRW_ACK
11			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

#### 7.2.3.29.5 Test requirements

1. The measured time  $T_2 - T_1$  shall be 1000 ms.
2. The STATUS PDU received in step 9 shall contain a MRW SUFI indicating that the first three PDUs shall be discarded, and that the data indicated in the fourth PDU by the first LI shall also be discarded.

#### 7.2.3.29a Timer based discard, with explicit signalling / Expiry of Timer\_Discard when Timer\_STATUS\_prohibit is active

##### 7.2.3.29a.1 Definition

This case tests that when the transmission of an SDU exceeds a time limit, the SDU is discarded by the sender, and the discard is signalled to the receiver while the Timer\_STATUS\_Prohibit is active. SDU discard is used to keep network delays within limits, and incorrect operation will effect the quality of service.

This test applies to all UE.

##### 7.2.3.29a.2 Conformance requirement

If the transmission time exceeds a predefined value for a SDU in acknowledged mode RLC, this SDU is discarded in the transmitter and a Move Receiving Window (MRW) command is sent to the receiver so that AMD PDUs carrying that SDU are discarded in the receiver and the receiver window is updated accordingly.

Upon expiry of Timer\_Discard the sender shall initiate the SDU discard with explicit signalling procedure.

This status report is sent even if the 'STATUS prohibit' is used and the timer 'Timer\_Status\_Prohibit' is active.

The STATUS PDUs have higher priority than data PDUs.

#### Reference

TS 25.322 clauses 9.7.3.1, 11.3.4.3.1 and 11.6.

##### 7.2.3.29a.3 Test purpose

1. ...

2. To verify that the MRW procedure status report is sent even if the 'STATUS prohibit' is used and the timer 'Timer\_Status\_Prohibit' is active.

#### 7.2.3.29a.4 Method of test

TBD

#### 7.2.3.29a.5 Test requirements

TBD

### 7.2.3.30 Timer based discard, with explicit signalling / Obsolete MRW\_ACK

#### 7.2.3.30.1 Definition

This case tests the ability of the receiving AM RLC entity to handle obsolete information that can be received during a failure of the SDU discard procedure. SDU discard is used to keep network delays within limits, and incorrect operation will effect the quality of service.

#### 7.2.3.30.2 Conformance requirement

If Timer\_MRW expires before the discard procedure is terminated, the MRW SUFI shall be retransmitted, VT(MRW) is incremented by one and Timer\_MRW restarted. MRW SUFI shall be exactly the same as previously transmitted even though some new SDUs would have been discarded during the running of the Timer\_MRW.

The received MRW\_ACK shall be discarded in the following cases.

1. ...
2. If the SN\_ACK field in the received MRW\_ACK < SN\_MRW<sub>LENGTH</sub> in the transmitted MRW SUFI.
3. If the SN\_ACK field in the received MRW\_ACK is equal to the SN\_MRW<sub>LENGTH</sub> in the transmitted MRW SUFI and the N field in the received MRW\_ACK is not equal to the N<sub>LENGTH</sub> field in the transmitted MRW SUFI
4. If the SN\_ACK field in the received MRW\_ACK > SN\_MRW<sub>LENGTH</sub> in the transmitted MRW SUFI and the N field in the received MRW\_ACK is not equal to zero.

#### Reference

TS 25.322 clauses 11.6.5 and 11.6.6.3.

#### 7.2.3.30.3 Test purpose

1. To verify that the MRW SUFI is retransmitted if Timer\_MRW expires before a valid MRW\_ACK is received.
2. To verify that the MRW\_ACK is discarded if the SN\_ACK field < SN\_MRW<sub>LENGTH</sub>.
3. To verify that the MRW\_ACK is discarded if the N field is not equal to N<sub>LENGTH</sub> transmitted in the MRW SUFI.
4. To verify that the MRW\_ACK is discarded if the N field is not zero and the SN\_ACK field > SN\_MRW<sub>LENGTH</sub> in the transmitted MRW SUFI.

#### 7.2.3.30.4 Method of test

##### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC	
Transmission RLC discard	
MaxDAT Retransmissions	
MaxDAT	40
Timer_MRW	500
MAX_MRW	4

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to AM\_7\_PayloadSize – 1bytes.

#### Test procedure

- a) The SS sends at least 2 RLC SDUs of size AM\_7\_PayloadSize – 1bytes.
- b) The SS checks the RLC PDUs received on the uplink and responds to all poll requests with a STATUS PDU, negatively acknowledging the RLC PDU with sequence number 0, and positively acknowledging all other RLC PDUs received.
- c) The SS monitors received STATUS PDUs for the presence of a MRW SUFI, noting the time it was received. This time will be recorded as  $T_1$ .
- d) The SS responds to the MRW command with an MRW\_ACK with the SN\_ACK field set to  $SN\_MRW_{LENGTH} - 1$ .
- e) The SS monitors received STATUS PDUs for another MRW SUFI, noting the time it was received. This time will be recorded as  $T_2$ .
- f) The SS responds to the MRW command with an MRW\_ACK with the SN\_ACK field set to  $SN\_MRW_{LENGTH}$ , and the N field set to  $(N_{LENGTH} + 1)$  modulo 4.
- g) The SS monitors received STATUS PDUs for another MRW SUFI, noting the time it was received. This time will be recorded as  $T_3$ .
- h) The SS responds to the MRW command with an MRW\_ACK with the SN\_ACK field set to  $SN\_MRW_{LENGTH} + 1$ , and the N field set to 1.
- i) The SS monitors received STATUS PDUs for another MRW SUFI.
- j) The SS responds to the MRW command with a correct MRW\_ACK.
- k) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		DOWNLINK RLC PDU	SDU 2
3	→		UPLINK RLC PDU	SDU 1
4	→		UPLINK RLC PDU	SDU 2 + Poll
5	←		STATUS PDU	NAK SN=0
6	→		...	SS continues to receive RLC PDU with SN=0 + Poll
7	←		...	STATUS PDU, SS continues to NAK PDU with SN=0
8	→		STATUS PDU	MRW Command: Note T <sub>1</sub>
9	←		STATUS PDU	MRW_ACK, SN_ACK = SN_MRW <sub>LENGTH</sub> - 1
10	→		STATUS PDU	MRW Command: Note T <sub>2</sub>
11	←		STATUS PDU	MRW_ACK, N field = (N <sub>LENGTH</sub> + 1) modulo 4
12	→		STATUS PDU	MRW Command: Note T <sub>3</sub>
13	←		STATUS PDU	MRW_ACK, SN_ACK = SN_MRW <sub>LENGTH</sub> + 1, N field = 1
14	→		STATUS PDU	MRW Command
15	←		STATUS PDU	MRW_ACK
16			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

#### 7.2.3.30.5 Test requirements

1. The measured time  $T_2 - T_1$  shall be 500 ms.
2. The measured time  $T_3 - T_2$  shall be 500 ms.
3. The STATUS PDUs received in steps 8, 10, 12 and 14 shall contain an identical MRW SUFI.

#### 7.2.3.31 Timer based discard, with explicit signalling / Failure of MRW procedure

##### 7.2.3.31.1 Definition

This case tests that if a failure occurs during the signalling of an SDU discard to the receiver, the retransmission protocol operates correctly. SDU discard is used to keep network delays within limits, and incorrect operation will effect the quality of service.

##### 7.2.3.31.2 Conformance requirement

If the number of retransmission of a MRW command (i.e. VT(MRW)) reaches MaxMRW, an error indication shall be passed to RRC and RESET procedure shall be performed.

##### Reference

TS 25.322 clause 11.6.6.2.

##### 7.2.3.31.3 Test purpose

1. To verify that when the number of retransmissions of a MRW command reaches MaxMRW, an error indication is passed to RRC and RESET procedure is initiated.

## 7.2.3.31.4 Method of test

## Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC	
Transmission RLC discard	
Timer based with explicit signalling	
Timer_MRW	500
Timer_Discard	500
Max_MRW	4
Polling info	
Poll_PDU	2

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to  $(2 * AM\_7\_PayloadSize) - 1$  bytes.

## Test procedure

- a) The SS sends 4 RLC SDUs of size  $(2 * AM\_7\_PayloadSize) - 1$  bytes.
- b) The SS checks the RLC PDUs received on the uplink and responds to all poll requests as follows: While the VR(H) is 4 or less, with a STATUS PDU, negatively acknowledging the RLC PDU with sequence number 0, and positively acknowledging all other RLC PDUs received. While the VR(H) is greater than 4, a STATUS PDU negatively acknowledging RLC PDUs with sequence numbers 0 and 4, and positively acknowledging all others.
- c) The SS monitors received STATUS PDUs for the presence of an MRW SUFI, noting the time it was received. This time will be recorded as  $T_1$ .
- d) The SS makes no response, but monitors for the next STATUS PDU containing an MRW SUFI, noting the time it was received. This time will be recorded as  $T_2$ .
- e) The SS sends a STATUS PDU with an MRW\_ACK indicating the discard of SDU 1 moving VR(R) to 4.
- f) The SS monitors for further STATUS PDUs containing an MRW SUFI, or for a RESET PDU. The SS records the number of STATUS PDUs it received with MRW SUFI before it received the RESET PDU.
- g) The SS checks any RLC SDUs reassembled from the uplink.
- h) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 2
4	←		...	SS continues to send RLC PDUs
5	←		DOWNLINK RLC PDU	SDU 4
6	→		UPLINK RLC PDU	SDU 1
7	→		...	SS continues to receive RLC PDUs
8	→		UPLINK RLC PDU	Poll
9	←		STATUS PDU	NAK SN=0
10	→		...	SS continues to receive RLC PDUs
11	→		UPLINK RLC PDU	Poll
12	←		STATUS PDU	NAK SN=0, 4
13	→		...	SS continues to receive RLC PDUs
14	→		STATUS PDU	MRW Command: Note T <sub>1</sub>
15	→		STATUS PDU	MRW Command: Note T <sub>2</sub>
16	←		STATUS PDU	MRW_ACK indicating VR(R) = 4
17	→		STATUS PDU	MRW Command, discard SDU 3
18	→		STATUS PDU	MRW Command
19	→		STATUS PDU	MRW Command
20	→		STATUS PDU	MRW Command
21	→		RESET PDU	
22	←		RESET ACK PDU	
23			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

### 7.2.3.31.5 Test requirements

The measured time  $T_2 - T_1$  shall be 500 ms.

After step 17, the SS shall detect 3 repeats of the MRW command sent in step 17 before a RESET PDU is sent.

### 7.2.3.32 SDU discard after MaxDAT number of retransmissions

#### 7.2.3.32.1 Definition

This case tests that if a PDU is unsuccessfully transmitted MaxDAT times, the SDU it carries, and therefore all other associated PDUs, are discarded by the transmitter and receiver. This mode of SDU discard is used to minimize data loss, and incorrect operation will effect the quality of service.

#### 7.2.3.32.2 Conformance requirement

There is one VT(DAT) for each PDU and it is incremented each time the PDU is transmitted. The initial value of this variable is 0.

If SDU discard after MaxDAT number of retransmission is used and  $VT(DAT) \geq \text{MaxDAT}$  for any PDU, the sender shall initiate the SDU discard with explicit signalling procedure for the SDUs to which the PDU with  $VT(DAT) \geq \text{MaxDAT}$  belongs.

## Reference

TS 25.322 clauses 9.4 and 11.3.4.4.

## 7.2.3.32.3 Test purpose

1. To verify that if  $VT(DAT) \geq MaxDAT$  for any PDU the sender initiates the SDU discard with explicit signalling procedure.

## 7.2.3.32.4 Method of test

## Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to  $(2 * AM\_7\_PayloadSize) - 1$  bytes.

## Test procedure

- a) The SS sends 2 RLC SDUs of size  $(2 * AM\_7\_PayloadSize) - 1$  bytes.
- b) The SS checks the RLC PDUs received on the uplink and responds to all poll requests with a STATUS PDU negatively acknowledging the RLC PDU with sequence number 0, and positively acknowledging all other RLC PDUs received.
- c) The SS monitors received STATUS PDUs for the presence of an MRW SUFI.
- d) The SS responds with a STATUS PDU containing a valid MRW\_ACK SUFI.
- e) The SS checks any RLC SDUs reassembled from the uplink.
- f) The SS may optionally release the radio bearer.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	DOWNLINK RLC PDU	SDU 1
2		←	DOWNLINK RLC PDU	SDU 1
3		←	DOWNLINK RLC PDU	SDU 2
4		←	DOWNLINK RLC PDU	SDU 2
5		→	UPLINK RLC PDU	SDU 1
6		→	...	SS continues to receive RLC PDUs
7		→	UPLINK RLC PDU	SDU 2, Poll
8		←	STATUS PDU	NAK SN=0
9		→	UPLINK RLC PDU	Retransmit SN=0, Poll
10		←	STATUS PDU	NAK SN=0
11		→	UPLINK RLC PDU	Retransmit SN=0, Poll
12		←	STATUS PDU	NAK SN=0
13		→	UPLINK RLC PDU	Retransmit SN=0, Poll
14		←	STATUS PDU	NAK SN=0
15		→	STATUS PDU	MRW Command
16		←	STATUS PDU	MRW_ACK
17			RB RELEASE	Optional step

NOTE 1: The Expected Sequence shown is informative.  
The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity.  
Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

## 7.2.3.32.5 Test requirements

The uplink RLC PDU with sequence number 0 shall be retransmitted three times, then the SS shall detect a STATUS PDU with an MRW command.

## 7.2.3.33 Operation of the RLC Reset procedure / UE Originated

## 7.2.3.33.1 Definition

This case tests that when the maximum number of retransmissions is exceeded, the UE initiates and performs the RLC Reset procedure. Incorrect operation of this procedure may cause loss of service.

## 7.2.3.33.2 Conformance requirement

The Sender shall:

- if one of the following triggers is detected:

- 1) "No\_Discard after MaxDAT number of retransmissions" is configured and VT(DAT) equals the value MaxDAT (see TS 25.322 subclause 9.7.3.4);

...

- stop transmitting any AMD PDU or STATUS PDU;
- increment VT(RST) by 1;
- if  $VT(RST) = MaxRST$ :
  - the Sender may submit to the lower layer a RESET PDU;
  - perform the actions specified in TS 25.322 subclause 11.4.4a.
- else (if  $VT(RST) < MaxRST$ ):
- submit a RESET PDU to the lower layer;
- start the timer Timer\_RST.

NOTE: If the TFC selection exchange has been initiated by sending the RLC Entity Info parameter to MAC, the RLC entity may delay the RLC reset procedure until the end of the next TTI.

When a reset procedure has been initiated it can only be ended upon reception of a RESET ACK PDU with the same RSN value as in the corresponding RESET PDU, or upon request of re-establishment or release from upper layer, a reset procedure is not interrupted by the reception of a RESET PDU from the peer entity.

[...]

The Sender shall:

- set the HFNI field to the currently highest used HFN (DL HFN when the RESET PDU is sent by UTRAN or UL HFN when the RESET PDU is sent by the UE);
- set the RSN field to the sequence number of the RESET PDU. The sequence number of the first RESET PDU after the AM entity is established or re-established shall be "0". This sequence number is incremented every time a new RESET PDU is transmitted, but not when a RESET PDU is retransmitted.

[...]

Upon reception of a RESET ACK PDU, the Sender shall:

- if the Sender has already transmitted a RESET PDU which has not been yet acknowledged by a RESET ACK PDU:
  - if the received RSN value is the same as the one in the corresponding RESET PDU:

- set the HFN value (DL HFN when the RESET ACK PDU is received in UE or UL HFN when the RESET ACK PDU is received in UTRAN) to the HFNI field of the received RESET ACK PDU;
- reset the state variables described in subclause 9.4 to their initial values;
- stop all the timers described in subclause 9.5;
- reset configurable parameters to their configured values;
- discard all RLC PDUs in the receiving side of the AM RLC entity;
- discard all RLC SDUs that were transmitted before the reset in the transmitting side of the AM RLC entity;
- increase with one the UL HFN and DL HFN, and the updated HFN values shall be used for the first transmitted and received AMD PDUs after the reset procedure;
- otherwise (if the received RSN value is not the same as the one in the corresponding RESET PDU):
  - discard the RESET ACK PDU;
- otherwise (if the Sender has not transmitted a RESET PDU which has not been yet acknowledged by a RESET ACK PDU):
  - discard the RESET ACK PDU.

NOTE: If the TFC selection exchange has been initiated by sending the RLC Entity Info parameter to MAC, the RLC entity may delay the RLC SDUs discard in the transmitting side until the end of the next TTI.

If Timer\_RST expires before the reset procedure is terminated, the Sender shall:

- if  $VT(RST) < MaxRST - 1$ :
  - set the RESET PDU as previously transmitted (even if additional SDUs were discarded in the mean-time);
  - transmit RESET PDU;
- increment  $VT(RST)$  by one;
- restart Timer\_RST.

## Reference

TS 25.322 clause 11.4.

### 7.2.3.33.3 Test purpose

1. To verify that the Reset procedure is initiated when the maximum number of retransmissions has been exceeded (Reset trigger condition 1) in subclause 11.4.2 of 3GPP TS 25.322 (R1999).
2. To verify that the sender resets state variables to their initial value and resets configurable parameters to their configured value.
3. To verify that RSN is updated correctly.
4. To verify operation of Timer\_RST.

### 7.2.3.33.4 Method of test

#### Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC Transmission RLC discard No discard Max_DAT	4
---	---

These settings apply to both the uplink and downlink DTCH.

The Radio Bearer is placed in UE test loop mode 1 with the UL SDU size set to  $(2 * AM\_7\_PayloadSize) - 1$  bytes.

#### Test procedure

- a) The SS sends 2 RLC SDUs of size  $(2 * AM\_7\_PayloadSize) - 1$  bytes.
- b) The SS checks the RLC PDUs received on the uplink and responds to all poll requests with a STATUS PDU negatively acknowledging the RLC PDU with sequence number 0, and positively acknowledging all other RLC PDUs received.
- c) The SS notes the time that the RESET PDU is received. This time will be recorded as  $T_1$ . The SS notes the value of the RSN bit.
- d) The SS makes no response, and notes the time that the next RESET PDU is received. This time will be recorded as  $T_2$ . The SS notes the value of the RSN bit.
- e) The SS sends a RESET ACK PDU with the RSN bit set to the same value as received in the RESET PDU received in step d).
- f) The SS sends an RLC SDU of size  $(2 * AM\_7\_PayloadSize) - 1$  bytes.
- g) The SS checks the RLC PDUs received on the uplink and responds to all poll requests with a STATUS PDU negatively acknowledging the RLC PDU with sequence number 0, and positively acknowledging all other RLC PDUs received.
- h) The SS notes the value of the RSN bit of the RESET PDU received.
- i) The SS sends a RESET ACK PDU with the RSN bit set to the value received in the RESET PDU in step c (the incorrect value).
- j) The SS waits to receive another RESET PDU and checks the RSN bit.
- k) The SS sends a RESET ACK PDU with the correct RSN bit.
- l) The SS checks any RLC SDU received on the uplink.
- m) The SS may optionally release the radio bearer.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		DOWNLINK RLC PDU	SDU 1
2	←		DOWNLINK RLC PDU	SDU 1
3	←		DOWNLINK RLC PDU	SDU 2
4	←		DOWNLINK RLC PDU	SDU 2
5	→		UPLINK RLC PDU	SDU 1
6	→		...	SS continues to receive RLC PDUs
7	→		UPLINK RLC PDU	SDU, Poll The Poll may appear in returned PDU for either SDU 1 or 2
8	←		STATUS PDU	NAK SN=0
9	→		UPLINK RLC PDU	Retransmit PDU SN=0, Poll
10	←		STATUS PDU	NAK SN=0
11	→		UPLINK RLC PDU	Retransmit PDU SN=0, Poll
12	←		STATUS PDU	NAK SN=0
13			Void	
14			Void	
15	→		RESET PDU	Note T <sub>1</sub>
16	→		RESET PDU	Note T <sub>2</sub> , check RSN
17	←		RESET ACK PDU	
18	←		DOWNLINK RLC PDU	SDU 3
19	←		DOWNLINK RLC PDU	SDU 3
20	→		UPLINK RLC PDU	SDU 3, check PDU has SN=0
21	→		UPLINK RLC PDU	SDU 3, Poll
22	←		STATUS PDU	NAK SN=0
23	→		UPLINK RLC PDU	Retransmit SN=0, Poll
24	←		STATUS PDU	NAK SN=0
25	→		UPLINK RLC PDU	Retransmit SN=0, Poll
26	←		STATUS PDU	NAK SN=0
27			Void	
28			Void	
29	→		RESET PDU	Check RSN
30	←		RESET ACK PDU	RSN = 0
31	→		RESET PDU	Check RSN
32	←		RESET ACK PDU	RSN = 1
33			RB RELEASE	Optional step

NOTE: The Expected Sequence shown is informative. The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity. Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

7.2.3.33.5 Test requirements

1. The measured time T<sub>2</sub> – T<sub>1</sub> shall be 500 ms.
2. In steps 20 to 21 the SS shall receive an RLC SDU with contents that match the third RLC SDU sent to the UE. The first RLC PDU containing that SDU shall have sequence number 0.
3. The RSN bit of the first and second RESET PDUs received shall be set to 0. The RSN bit of the third and fourth RESET PDU shall be set to 1.

7.2.3.34 Operation of the RLC Reset procedure / UE Terminated

7.2.3.34.1 Definition

This case tests that the UE responds correctly to the RLC Reset procedure initiated by the network. Incorrect operation of this procedure may cause loss of service.

## 7.2.3.34.2 Conformance requirement

Upon reception of a RESET PDU the Receiver shall:

- if the RSN value in the RESET PDU is the same as the RSN value in the last received RESET PDU:
  - either only submit a RESET ACK PDU to the lower layer with the contents set exactly as in the last transmitted RESET ACK PDU (i.e., in this case the RLC entity is not reset); or
  - perform the actions specified below as if the RSN value was different from the RSN value in the last received RESET PDU.
- otherwise, if the RESET PDU is the first RESET PDU received since the entity was (re-)established or the RSN value is different from the RSN value in the last received RESET PDU:
  - submit a RESET ACK PDU to the lower layer with the content set as specified in subclause 11.4.3.1;
  - reset the state variables described in subclause 9.4 except VT(RST) to their initial values;
  - stop all the timers described in subclause 9.5 except Timer\_RST;
  - reset configurable parameters to their configured values;
  - discard all RLC PDUs in the receiving side of the AM RLC entity;
  - discard all RLC SDUs that were transmitted before the reset in the transmitting side of the AM RLC entity;
  - set the HFN (DL HFN when the RESET PDU is received in UE or UL HFN when the RESET PDU is received in UTRAN) equal to the HFNI field in the received RESET PDU;
  - increase with one the UL HFN and DL HFN, and the updated HFN values shall be used for the first transmitted and received AMD PDUs after the reset procedure.

NOTE: If the TFC selection exchange has been initiated by sending the RLC Entity Info parameter to MAC, the RLC entity may delay the RLC SDUs discard in the transmitting side of the AM RLC entity until the end of the next TTI.

## Reference

TS 25.322 clause 11.4.3.

## 7.2.3.34.3 Test purpose

1. To verify that upon reception of a RESET PDU the receiver responds with a RESET ACK PDU.
2. To verify that the receiver resets its state variables to their initial value and resets configurable parameters to their configured value.

## 7.2.3.34.4 Method of test

## Initial conditions

The generic procedure for Radio Bearer establishment (clause 7.1.3 of TS 34.108) is executed, with all the parameters as specified in the procedure, with the exception that the default Radio Access Bearer is replaced with the RAB defined for AM 7-bit "Length Indicator" tests in clause 7.2.3.1.

The following RLC parameter values are used in place of the values in clause 7.2.3.1:

Uplink RLC Transmission RLC discard No discard MaxDAT	4
--	---

These settings apply to both the uplink and downlink DTCH.

## Test procedure

- a) The SS sends 2 RLC SDUs of size  $(2 * AM\_7\_PayloadSize) - 1$  bytes, and polls on the last PDU sent.
- b) The SS checks the STATUS PDUs received on the uplink until both SDUs have been acknowledged.
- c) The SS transmits a RESET PDU.
- d) The SS monitors the uplink for a RESET ACK PDU.
- e) The SS sends an RLC SDU of size  $(2 * AM\_7\_PayloadSize) - 1$  bytes, and polls on the last PDU sent.
- f) The SS checks for STATUS PDUs received on the uplink until the SDU has been acknowledged.
- g) The SS may optionally release the radio bearer.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	DOWNLINK RLC PDU	SDU 1
2		←	DOWNLINK RLC PDU	SDU 1
3		←	DOWNLINK RLC PDU	SDU 2
4		←	DOWNLINK RLC PDU	SDU 2, poll
5		→	STATUS PDU	ACK SN=0, 1, 2 and 3
6		←	RESET PDU	
7		→	RESET ACK PDU	
8		←	DOWNLINK RLC PDU	SDU 3
9		←	DOWNLINK RLC PDU	SDU 3, poll
10		→	STATUS PDU	ACK SN=0 and 1
11			RB RELEASE	Optional step

NOTE: The Expected Sequence shown is informative. The UPLINK and DOWNLINK PDU flows may overlap, but are shown separate for clarity. Information such as SDU, PDU or Sequence numbers given in the comments column shall be considered informative only, for test case development purposes.

### 7.2.3.34.5 Test requirements

1. The SS shall receive a RESET ACK PDU in step 7.
2. The SS shall receive a STATUS PDU in step 10 acknowledging for the third RLC SDU transmitted with PDUs starting at SN=0.

## 7.3 PDCP

### 7.3.1 General

#### 7.3.1.1 General assumptions

If not otherwise mentioned, the same procedures as used in RRC test specification (TS 34.123-1) or in the Generic procedure (TS 34.108) applies to reach Initial conditions for PDCP testing. In this test description, common test sequences for PDCP (clause 7.3.4.1) are defined and are applied either as preamble or post amble to establish or release a Packet Switched (PS) connection for a test case.

If not explicitly described, the same message contents and settings are applied as described in the RRC test description default settings.

Detailed IP header compression coding mechanism as well as mechanism related error recovery and packet reordering described in IETF RFC 2507 are not verified.

For PDCP testing TCP/IP data type and UDP/IP data type as Non-TCP/IP data types are applied for IP data.

The IP data packet size shall be limited to 1500 bytes as defined in 3GPP TS 23.107, clause 6.5.1 and 6.5.2 (range of QoS attributes).

An UE supporting IP Header compression protocol RFC 2507 shall be capable to store a header compression context of at least 512 bytes (Integer).

It shall be possible to reconfigure PDCP settings while UE test loop mode 1. With the applied test method using UE test loop mode 1, the UE as Originator and Receiver of PDCP SDUs (concurrent transmission) is tested.

### 7.3.1.2 Common Test sequences and Default message contents for PDCP

#### General

The settings and parameter used in the "Common Test sequences for PDCP" are described in the "Default PDCP Message Contents". If not explicitly shown there, the message contents are identical with the default contents for the same message type of layer 3 messages for RRC tests, to establish a packet switched session or connection. The contents of test case specific message parameters are described in the test case (Expected Sequence). If not explicitly shown, default settings and parameter are used as message content for all Common Test sequences.

#### 7.3.1.2.1 Common Test sequences for PDCP

##### 7.3.1.2.1.1 Setup a UE terminated PS session using IP Header compression in AM RLC (using UE Test loop test mode 1)

#### Initial Conditions

UE is in Idle mode.

#### Test procedure

After having received the System Information, the SS starts to setup a RRC connection. After connection establishment and Radio Bearer Setup, the UE test loop mode 1 is activated and the UE test loop mode 1 is closed.

#### Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	
2		←	PAGING TYPE 1	CN domain identity: PS domain Paging cause: interactive session
3		→	RRC CONNECTION REQUEST	
4		←	RRC CONNECTION SETUP	Connection Setup message PS sessions in AM RLC used in RRC testing matches here
5		→	RRC CONNECTION SETUP COMPLETE	
6		←	ACTIVATE RB TEST MODE	
7		→	ACTIVATE RB TEST MODE COMPLETE	
8		←	RADIO BEARER SETUP	The Radio Bearer configuration is as described in TS 34.108, clause 6.10, Prioritised RAB No. 23: QoS parameter: Traffic Class: Interactive or Background, max. UL:64 kbps max. DL:64 kbps, Residual BER as described in TS 34.108, clause: 6.10.
9		→	RADIO BEARER SETUP COMPLETE	
10		←	CLOSE UE TEST LOOP	The SS initiates UE test loop mode 1, indicated by the Parameter: "UE test loop mode" 1 (X1=0 and X2=0) The "DCCH dummy transmission" not used: disabled: (Y1=0)
11		→	CLOSE UE TEST LOOP COMPLETE	After having received the test mode acknowledgement, the UE test loop mode 1 is activated.

### Specific message contents

The contents of test case specific message parameters are described in the test case (Expected Sequence). Default contents of messages are described in the clause Default PDCP Message Contents.

#### 7.3.1.2.1.2 Setup a UE terminated PS session using IP Header compression in UM RLC (using UE Test loop test mode 1)

### Initial Conditions

UE is in idle mode.

### Test procedure

After having received the System Information, the SS starts to setup a RRC connection. After connection establishment and Radio Bearer Setup, the UE test loop mode 1 is activated and the UE test loop mode 1 is closed.

### Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	
2		←	PAGING TYPE 1	CN domain identity: PS domain Paging cause: interactive session
3		→	RRC CONNECTION REQUEST	
4		←	RRC CONNECTION SETUP	Connection Setup message PS sessions in UM RLC used in RRC testing matches here
5		→	RRC CONNECTION SETUP COMPLETE	
6		←	ACTIVATE RB TEST MODE	
7		→	ACTIVATE RB TEST MODE COMPLETE	
8		←	RADIO BEARER SETUP	The Radio Bearer configuration is as described in TS 34.108, clause 6.10, Prioritised RAB No. 23: QoS parameter: Traffic Class: Interactive or Background, max. UL:64 kbps max. DL:64 kbps, Residual BER as described in TS 34.108, clause: 6.10.
9		→	RADIO BEARER SETUP COMPLETE	
10		←	CLOSE UE TEST LOOP	The SS initiates UE test loop mode 1, indicated by the Parameter: "UE test loop mode"1 (X1=0 and X2=0) The "DCCH dummy transmission" not used: disabled: (Y1=0)
11		→	CLOSE UE TEST LOOP COMPLETE	After having received the test mode acknowledgement, the UE test loop mode 1 is activated.

### Specific message contents

The contents of test case specific message parameters are described in the test case (Expected Sequence) Default contents of messages are described in the clause Default PDCP Message Contents.

#### 7.3.1.2.1.3 Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)

### Initial Conditions

UE is in connected mode, a UE test loop mode 1 for PDCP is activated, and the UE loop mode 1 is "closed".

### Test procedure

The UE opens the UE test loop mode 1, deactivates the test mode and the PS session, releases the Radio Bearer and enters Idle mode.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	OPEN UE TEST LOOP	The SS terminates the UE test loop mode 1, (see described parameter) After having received the test mode acknowledgement, the test loop mode 1 is deactivated.
2		→	OPEN UE TEST LOOP COMPLETE	
3		←	DEACTIVATE RB TEST MODE	SS deactivates the RB test mode UE shall confirm the previous message. Afterwards, the UE returns to normal operation
4		→	DEACTIVATE RB TEST MODE COMPLETE	
5		←	RRC CONNECTION RELEASE	SS terminates the connection UE confirms the connection release and returns to Idle mode
6		→	RRC CONNECTION RELEASE COMPLETE	

## Specific message contents

The contents of test case specific message parameter is described in the test case (Expected Sequence). Default contents of messages are described in the clause Default PDCP Message Contents.

## 7.3.1.2.2 Default PDCP Message Contents

This clause contains the default values of RRC messages used for PDCP testing, other than those specified in TS 34.108 clauses 6 and 9, and default values of PDCP messages. Unless indicated otherwise in specific test cases, only PDCP related specific message contents are described here which shall be transmitted by the system simulator in RRC messages, and which are required to be received from the UE under test. If not explicitly described, the message contents are identical with the default contents for the same message type of layer 3 messages for RRC tests, to establish a packet switched session or connection.

The necessary L3 messages are listed in alphabetic order, with the exception of the SYSTEM INFORMATION messages, where it is the information elements which are listed in alphabetic order (this is because some information elements occur in several SYSTEM INFORMATION types).

In this clause, decimal values are normally used. However, sometimes a hexadecimal value, indicated by an "H", or a binary value, indicated by a "B" is used.

## Default SYSTEM INFORMATION:

NOTE: SYSTEM INFORMATION BLOCK TYPE 1 (except for PLMN type "GSM-MAP"), SYSTEM INFORMATION BLOCK TYPE 8, SYSTEM INFORMATION BLOCK TYPE 9, SYSTEM INFORMATION BLOCK TYPE 10, SYSTEM INFORMATION BLOCK TYPE 14, SYSTEM INFORMATION BLOCK TYPE 15 and INFORMATION BLOCK TYPE 16 messages are not used.

## Contents of CONNECTION SETUP message:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement - System specific capability update requirement list	TRUE UE only supports 1 system



Contents of CLOSE UE TEST LOOP message:

Information Element	Value/remark
Protocol Discriminator	TS 24.007, 11.2.3.1.1
Skip indicator	TS 24.007, 11.2.3.1.2
Message type	01000000B
UE test loop mode	000000100B (X2=0 and X1=0 for UE test mode 1, Y1=0 DCCH dummy transmission disabled)
UE test loop mode 1 LB setup	
- Length of UE loop mode 1 LB setup IE	4 octets
- LB setup list	
- LB setup RAB subflow #1	
- Z13...Z0 (Uplink RLC SDU size in bits)	0...16383 (binary coded, Z13 most significant bit); value as negotiated

Contents of CLOSE UE TEST LOOP COMPLETE message:

Information Element	Value/remark
Protocol Discriminator	TS 24.007, 11.2.3.1.1
Skip indicator	TS 24.007, 11.2.3.1.2
Message type	01000001B

Contents of OPEN UE TEST LOOP message:

Information Element	Value/remark
IE Identifier (only in AM)	1000xxxx
Protocol Discriminator	TS 24.007, 11.2.3.1.1
Skip indicator	TS 24.007, 11.2.3.1.2
Message type	01000010B

Contents of OPEN UE TEST LOOP COMPLETE message:

Information Element	Value/remark
Protocol Discriminator	TS 24.007, 11.2.3.1.1
Skip indicator	TS 24.007, 11.2.3.1.2
Message type	01000011B

## 7.3.2 IP Header Compression and PID assignment

### 7.3.2.1 UE in RLC AM

#### 7.3.2.1.1 Transmission of uncompressed Header

##### 7.3.2.1.1.1 Definition and applicability

Applicable for all UEs supporting RLC AM and a Radio Bearer as described in the Common Test Sequences. The UE shall be capable to deal with TCP/IP and UDP/IP data packets with uncompressed IP header.

##### 7.3.2.1.1.2 Conformance requirement

1. The Packet Data Convergence Protocol shall perform the following functions:

- transfer of user data. This function is used for conveyance of data between users of PDCP services.

2. Depending on the configuration by upper layers (i.e. PDCP PDU type to be used and header compressor protocol), the PDCP sublayer shall be able to:

- identify the correct header compression protocol; and
- distinguish different types of header compression packets within a header compression protocol.

The mapping of the PID values shall follow the general rules listed below:

- PID value "0" shall indicate "no compression". PID value "0" shall be used in a PDCP PDU containing in its Data field a PDCP SDU that is unchanged by the Sender and that shall not be decompressed by the Receiver;

#### Reference(s)

TS 25.323 clause 5.

TS 25.323 clause 5.1.1.

#### 7.3.2.1.1.3 Test purpose

The test case consists of two test procedures:

The first test procedure verifies, that the "PDCP Data" PDU is used for uncompressed IP header packets, if no IP header compression is configured by higher layers. The second test procedure verifies, that the "PDCP No header" PDU is used for uncompressed IP header packets, if no IP header compression is configured by higher layers.

1. To verify, that the UE transmits and receives in acknowledged mode (RLC AM) TCP/IP and UDP/IP data packets without IP header compression as configured by higher layers.
2. To verify, that PID assignment rules are correctly applied, if usage of "PDCP Data" PDU are negotiated, i.e. the UE shall recognize PID value = 0 for a received TCP/IP and UDP/IP data packet and it shall use PID=0 to transmit IP data packets, if no IP header compression is negotiated. If usage of "PDCP No Header" PDU is negotiated, no PID assignment is used for transmitting and receiving TCP/IP and UDP/IP data packets.

#### 7.3.2.1.1.4 Method of test

##### Initial conditions

UE is in idle mode.

Test procedure 1: Usage of "PDCP Data" PDU and no IP header compression is configured.

Test procedure 2: No IP header compression is configured.

##### Related ICS/IXIT Statement(s)

Support of PS – Yes/No

PIXIT: Test\_PDCP\_TCP/IP\_Packet1

PIXIT: Test\_PDCP\_UDP/IP\_Packet1

##### Test procedure 1: Transmission of uncompressed IP header packets using PDCP Data PDU

- a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC AM using Common test procedures for mobile terminated PS switched sessions. Usage of "PDCP Data" PDU has been configured by higher layers.
- b) The SS sends a TCP/IP data packet with uncompressed IP Header.
- c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PDCP PDU type and shall handle the received data packet with the appropriate decoding method. Then it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration using PDCP Data PDU.
- d) The SS receives and decodes the TCP/IP data packet. The decoded data packet shall be identical with the data as sent before.
- e) Step b) to d) shall be repeated by using a UDP/IP data packet with uncompressed IP Header.

The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in AM RLC (using UE test loop mode 1)				
1		←	PDCP Data	<p>The SS creates a TCP/IP packet without IP header compression (PDCP Data PDU).</p> <p>The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE:                      PDU type = 000 (PDCP Data PDU)                      PID = 0 (uncompressed IP header)                      data: below described TCP/IP packet</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression)                      Therefore, no IP header decompression is applied for this packet.</p> <p>The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>

Step	Direction		Message	Comments
	UE	SS		
2		→	PDCP Data	<p>The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: data: previously received TCP/IP packet</p> <p>After reception of this TCP/IP data packet, the SS applies the appropriate decoding function for the received data</p>
3		←	PDCP Data	<p>The SS creates a UDP/IP packet without IP header compression (PDCP Data PDU).</p> <p>The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: PDU type = 000 (PDCP Data PDU) PID = 0 (uncompressed IP header) data: below described UDP/IP packet</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU and recognizes with PID value = 0, there was no IP header compression applied for the UDP/IP packet. Therefore, no IP header decompression is applied for this packet.</p> <p>The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>
4		→	PDCP Data	<p>The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: data: previously received UDP/IP packet</p> <p>After reception of this UDP/IP data packet, the SS decodes the received data</p>
Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in AM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

## RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in AM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) which fits to the below described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for AM RLC  Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108)
- CN domain identity	PS domain
- RB information to setup	
- RB identity	20
- PDCP info	
- Support of lossless SRNS relocation	False (IE "Support of lossless SRNS relocation" only present, if RLC "In-sequence delivery" is TRUE and in AM)
- PDCP PDU header	present
- RLC info	
- Downlink RLC mode	(AM RLC)
- Uplink RLC mode	(AM RLC)

## Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type	000
PID	00000 (No header compression, PID = 0)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## Content of PDCP Data PDU (Step 3)

Information Element	Value/remark
PDU type	000
PID	00000 (No header compression, PID = 0)
Data	PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## Test procedure 2: Transmission of uncompressed IP header packets using No Header PDU

- a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC AM using Common test procedures for mobile terminated PS switched sessions. Usage of "PDCP No Header" PDU has been configured by higher layers.
- b) The SS sends a TCP/IP data packet with uncompressed IP Header.

- c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PDCP PDU type and shall handle the received data packet with the appropriate decoding method. Then it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration using PDCP No Header PDU.
- d) The SS receives and decodes the TCP/IP data packet. The decoded data packet shall be identical with the data as sent before.
- e) Step b) to d) shall be repeated by using a UDP/IP data packet with uncompressed IP Header.
- f) The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in AM RLC (using UE test loop mode 1)				
1		←	PDCP No Header	<p>The SS creates a TCP/IP packet without IP header compression (PDCP No Header PDU).</p> <p>The SS sends a PDCP No Header PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: data: below described TCP/IP packet</p> <p>After having received the PDCP No Header PDU, the UE decodes the PDU and recognizes, there was no PID applied for the TCP/IP packet. Therefore, no IP header decompression shall be applied for this packet. Then, the data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>
2		→	PDCP No Header	<p>The UE sends a PDCP No Header PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: data: previously received TCP/IP packet</p> <p>After reception of this TCP/IP data packet, the SS applies the appropriate decoding function for the received data</p>
				The SS creates a UDP/IP packet without IP header compression (PDCP No Header PDU).

Step	Direction		Message	Comments
	UE	SS		
3		←	PDCP No Header	<p>The SS sends a PDCP No Header PDU using the RLC-AM-Data-Request Primitive with the following content to the UE: data: below described UDP/IP packet</p> <p>After having received the PDCP No Header PDU, the UE decodes the PDU and recognizes, there was no PID applied for the UDP/IP packet. Therefore, no IP header decompression shall be applied for this packet. Then, the data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>
4	→		PDCP No Header	<p>The UE sends a PDCP No Header PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: data: previously received UDP/IP packet</p> <p>After reception of this UDP/IP data packet, the SS decodes the received data</p>

Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1).

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in AM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

## RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in AM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) which fits to the below described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for AM RLC
- CN domain identity	PS domain
- RB information to setup	
- RB identity	20
- PDCP info	
- Support of lossless SRNS relocation	False (IE "Support of lossless SRNS relocation" only present, if RLC "In-sequence delivery" is TRUE and in AM)
- PDCP PDU header	absent
- RLC info	
- Downlink RLC mode	(AM RLC)
- Uplink RLC mode	(AM RLC)

## Content of PDCP No Header PDU (Step 1)

Information Element	Value/remark
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## Content of PDCP No Header PDU (Step 3)

Information Element	Value/remark
Data	PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## 7.3.2.1.1.5 Test requirements

## 1. Test requirements: Transmission of uncompressed IP header packets using PDCP Data PDU

The UE shall return the TCP/IP and UDP/IP data packets as indication, that the previous packets have been received and handled correctly (PDCP Data PDU). This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

## 2. Test requirements: Transmission of uncompressed IP header packets using PDCP No Header PDU

The UE shall return the TCP/IP and UDP/IP data packets as indication, that the previous packets have been received and handled correctly (PDCP No Header PDU). This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

### 7.3.2.1.2 Transmission of compressed Header

#### 7.3.2.1.2.1 Definition and applicability

Applicable for all UEs supporting RLC AM and a Radio Bearer as described in the Common Test Sequences.

The UE shall be capable to deal with compressed TCP/IP and UDP/IP data packets and furthermore to establish a PDCP entity which applies IP header compression protocol RFC 2507.

#### 7.3.2.1.2.2 Conformance requirement

1. The Packet Data Convergence Protocol shall perform the following functions:

- transfer of user data. This function is used for conveyance of data between users of PDCP services.

2. Depending on the configuration by upper layers (i.e. PDCP PDU type to be used and header compressor protocol), the PDCP sublayer shall be able to:

- identify the correct header compression protocol; and
- distinguish different types of header compression packets within a header compression protocol.

#### Reference(s)

TS 25.323 clause 5.

TS 25.323 clause 5.1.1.

#### 7.3.2.1.2.3 Test purpose

1. To verify, that the UE transmits and receives in acknowledged mode (RLC AM) TCP/IP and UDP/IP data packets by using IP header compression protocol as described in RFC2507 as configured by higher layers.
2. To verify, that the PID assignment rules are correctly applied by the UE. The UE as shall use the correct PID value for the applied optimisation method for transmitting and receiving TCP/IP and UDP/IP data packets.

#### 7.3.2.1.2.4 Method of test

##### Initial conditions

UE is in Idle mode. Usage of "PDCP Data" PDU and IP header compression is configured.

##### Related ICS/IXIT Statement(s)

Support of IP header compression protocol RFC 2507 - YES/NO.

Support of PS – Yes/No

PIXIT: Test\_PDCP\_TCP/IP\_Packet1

PIXIT: Test\_PDCP\_TCP/IP\_Packet2

PIXIT: Test\_PDCP\_UDP/IP\_Packet1

PIXIT: Test\_PDCP\_UDP/IP\_Packet2

##### Test procedure

- a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC AM using Common test procedures for mobile terminated PS switched sessions. Usage of "PDCP Data" PDU has been configured by higher layers.
- b) The SS sends a "normal" TCP/IP data packet (no compression packet type), PID=0.

- c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression protocol. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.
- d) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.
- e) The SS sends a TCP/IP data packet with packet type: Full\_Header, PID=1.

NOTE: According to the compression protocol RFC 2507, this is necessary to transmit the created CONTEXT and the assigned CID.

- f) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression protocol. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.
- g) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.
- h) The SS sends a TCP/IP data packet with packet type: Compressed\_TCP, PID=2.
- i) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression protocol. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.
- j) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.
- k) Step b) to d) is repeated for a "normal" UDP/IP data packet, PID=0.
- l) Step e) to g) is repeated for a UDP/IP data packet with packet type: Full\_Header, PID=1.
- m) The SS sends a UDP/IP data packet with packet type: Compressed\_non\_TCP, PID=4.
- n) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression protocol. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.
- o) The SS receives and decodes the UDP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.
- p) The SS deactivates the UE tests loop mode 1 and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in AM RLC (using UE test loop mode 1)				
1		←	PDCP Data	<p>The SS creates a TCP/IP packet without IP header compression.</p> <p>The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE:                      PDU type = 000 (PDCP Data PDU)                      PID = 0 (uncompressed IP header)                      data: below described TCP/IP packet</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression)                      Therefore, no IP header decompression is applied for this packet.</p> <p>The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>
2		→	PDCP Data	<p>The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS:                      PDU type = 000 (PDCP Data PDU)                      PID value = 0 to 3                      data: previously received TCP/IP packet</p> <p>After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>
3		←	PDCP Data	<p>The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE:                      PDU type = 000 (PDCP Data PDU)                      PID = 1 (Full_Header packet type [TCP/IP])                      data: below described TCP/IP packet</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU, recognizes PID value = 1 applied for this TCP/IP data packet and decompresses it with the appropriate method.                      The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>

Step	Direction		Message	Comments
	UE	SS		
4		→	PDCP Data	<p>The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS:  PDU type = 000 (PDCP Data PDU)  PID value = 0 to 3  data: previously received TCP/IP packet</p> <p>After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>
5		←	PDCP Data	<p>The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE:  PDU type = 000 (PDCP Data PDU)  PID = 2 (Compressed_TCP packet type)  data: below described TCP/IP packet</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU, recognizes PID value = 2 applied for this TCP/IP data packet and decompress it with the appropriate method. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>
6		→	PDCP Data	<p>The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS:  PDU type = 000 (PDCP Data PDU)  PID value = 0 to 3  data: previously received TCP/IP packet</p> <p>After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>
7		←	PDCP Data	<p>The SS creates a UDP/IP packet without compressed IP header compression.  The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE:  PDU type = 000 (PDCP Data PDU)  PID = 0 (uncompressed IP header)  data: below described UDP/IP packet</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU and recognizes with PID value = 0, there was no IP header compression applied for the UDP/IP packet.  Therefore, no IP header decompression is applied for this packet.</p> <p>The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>

Step	Direction		Message	Comments
	UE	SS		
8		→	PDCP Data	<p>The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS: PDU type = 000 (Data PDU with Header) PID value = 0,1 or 4 (depending on which UDP/IP header format is used by the UE) data: previously received UDP/IP packet</p> <p>After reception of this UDP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>

Step	Direction		Message	Comments
	UE	SS		
9		←	PDCP Data	<p>The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE:  PDU type = 000 (PDCP Data PDU)  PID = 1 (Full_Header packet type)  data: below described UDP/IP packet</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 1 applied for this UDP/IP data packet and decompress it with the appropriate method.</p> <p>The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>
10	→		PDCP Data	<p>The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS:  PDU type = 000 (Data PDU with Header)  PID value = 0,1 or 4 (depending on which UDP/IP header format is used by the UE)  data: previously received UDP/IP packet</p> <p>After reception of this UDP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>
11		←	PDCP Data	<p>The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE:  PDU type = 000 (PDCP Data PDU)  PID = 4 (Compressed _non-TCP packet type)  data: below described UDP/IP packet</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 4 applied for this UDP/IP data packet and decompress it with the appropriate method.</p> <p>The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>
12	→		PDCP Data	<p>The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS:  PDU type = 000 (Data PDU with Header)  PID value = 0,1 or 4 (depending on which UDP/IP header format is used by the UE)  data: previously received UDP/IP packet</p> <p>After reception of this UDP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>

Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)

## Specific Message Contents

## RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in AM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

## RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in AM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) which fit to the here described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for AM RLC
- CN domain identity	PS domain
- RB information to setup - RB identity - PDCP info - Support of lossless SRNS relocation	20  False (IE "Support of lossless SRNS relocation" only present, if RLC "In-sequence delivery" is TRUE and in AM)
- PDCP PDU header - Header compression information CHOICE <i>algorithm type</i> - RFC2507	present 1
- F_MAX_PERIOD	256 (Default)
- F_MAX_TIME	5 (Default)
- MAX_HEADER	168 (Default)
- TCP_SPACE	15 (Default)
- NON_TCP_SPACE	15 (Default)
- EXPECT_REORDERING	reordering not expected (Default)
- RLC info - Downlink RLC mode - Uplink RLC mode	(AM RLC) (AM RLC)

## Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type	000
PID	00000 (No header compression, PID = 0)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## Content of PDCP Data PDU (Step 3)

Information Element	Value/remark
PDU type	000
PID	00001 (Full_Header, PID = 1)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## Content of PDCP Data PDU (Step 5)

Information Element	Value/remark
PDU type	000
PID	00010 (Compressed_TCP, PID = 2)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## Content of PDCP Data PDU (Step 7)

Information Element	Value/remark
PDU type	000
PID	00000 (No header compression, PID = 0)
Data	PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## Content of PDCP Data PDU (Step 9)

Information Element	Value/remark
PDU type	000
PID	00001 (Full_Header, PID = 1)
Data	PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## Content of PDCP Data PDU (Step 11)

Information Element	Value/remark
PDU type	000
PID	00100 (Compressed_non-TCP, PID = 4)
Data	PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

### 7.3.2.1.2.5 Test requirements

The UE shall return the TCP/IP and UDP/IP data packets as indication, that the previous packets have been received and handled with the correct compression protocol. This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

## 7.3.2.2 UE in RLC UM

### 7.3.2.2.1 Transmission of uncompressed Header

#### 7.3.2.2.1.1 Definition and applicability

Applicable for all UEs supporting RLC UM and a Radio Bearer as described in the Common Test Sequences.

The UE shall be capable to deal with TCP/IP and UDP/IP data packets with uncompressed IP header.

#### 7.3.2.2.1.2 Conformance requirement

1. The Packet Data Convergence Protocol shall perform the following functions:
  - transfer of user data. This function is used for conveyance of data between users of PDCP services
2. Depending on the configuration by upper layers (i.e. PDCP PDU type to be used and header compressor protocol), the PDCP sublayer shall be able to:
  - identify the correct header compression protocol; and
  - distinguish different types of header compression packets within a header compression protocol.

The mapping of the PID values shall follow the general rules listed below:

- PID value "0" shall indicate "no compression". PID value "0" shall be used in a PDCP PDU containing in its Data field a PDCP SDU that is unchanged by the Sender and that shall not be decompressed by the Receiver;

#### Reference(s)

TS 25.323 clause 5.

TS 25.323 clause 5.1.1.

### 7.3.2.2.1.3 Test purpose

The test case consists of two test procedures:

The first test procedure verifies, that the "PDCP Data" PDU is used for uncompressed IP header packets, if no IP header compression is configured by higher layers. The second test procedure verifies, that the "PDCP No header" PDU is used for uncompressed IP header packets, if no IP header compression is configured by higher layers.

1. To verify, that the UE transmits and receives in unacknowledged mode (RLC UM) TCP/IP and UDP/IP data packets without IP header compression as configured by higher layers.
2. To verify, that PID assignment rules are correctly applied, if usage of "PDCP Data" PDU are negotiated, i.e. the UE shall recognize PID value = 0 for a received TCP/IP and UDP/IP data packet and it shall use PID=0 to transmit IP data packets, if no IP header compression is negotiated. If usage of "PDCP No Header" PDU is negotiated, no PID assignment is used for transmitting and receiving TCP/IP and UDP/IP data packets.

### 7.3.2.2.1.4 Method of test

#### Initial conditions

UE is in Idle mode.

Test procedure 1: Usage of "PDCP Data" PDU and no IP header compression is configured.

Test procedure 2: no IP header compression is configured.

#### Related ICS/IXIT Statement(s)

Support of PS – Yes/No

PIXIT: Test\_PDCP\_TCP/IP\_Packet1

PIXIT: Test\_PDCP\_UDP/IP\_Packet1

#### Test procedure 1: Transmission of uncompressed IP header packets using PDCP Data PDU

- a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC UM using Common test procedures for mobile terminated PS switched sessions. Usage of "PDCP Data" PDU has been configured by higher layers.
- b) The SS sends a TCP/IP data packet with uncompressed IP Header.
- c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PDCP PDU type and shall handle the received data packet with the appropriate decoding method. Then it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration using PDCP Data PDU.
- d) The SS receives and decodes the TCP/IP data packet. The decoded data packet shall be identical with the data as sent before.
- e) Step b) to d) shall be repeated by using a UDP/IP data packet with uncompressed IP Header.

The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in UM RLC (using UE test loop mode 1)				
1		←	PDCP Data	<p>The SS creates a TCP/IP packet without IP header compression (PDCP Data PDU).</p> <p>The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE:                      PDU type = 000 (PDCP Data PDU)                      PID = 0 (uncompressed IP header)                      data: below described TCP/IP packet</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression)                      Therefore, no IP header decompression is applied for this packet.</p> <p>The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>
2		→	PDCP Data	<p>The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS:                      data: previously received TCP/IP packet</p> <p>After reception of this TCP/IP data packet, the SS applies the appropriate decoding function for the received data</p>
				<p>The SS creates a UDP/IP packet without IP header compression (PDCP Data PDU).</p>

Step	Direction		Message	Comments
	UE	SS		
3		←	PDCP Data	<p>The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE:  PDU type = 000 (PDCP Data PDU)  PID = 0 (uncompressed IP header)  data: below described UDP/IP packet</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU and recognizes with PID value = 0, there was no IP header compression applied for the UDP/IP packet. Therefore, no IP header decompression is applied for this packet.</p> <p>The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>
4	→		PDCP Data	<p>The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS:  data: previously received UDP/IP packet</p> <p>After reception of this UDP/IP data packet, the SS decodes the received data</p>
Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)				

### Specific Message Contents

#### RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in UM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

## RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in UM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) which fits to the below described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity          - CN domain identity - RB information to setup - RB identity - PDCP info - PDCP PDU header - RLC info - Downlink RLC mode	No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for UM RLC  Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108)  PS domain  21  present  (UM RLC)

## Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## Content of PDCP Data PDU (Step 3)

Information Element	Value/remark
PDU type PID Data	000 00000 (No header compression, PID = 0) PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

Test procedure 2: Transmission of uncompressed IP header packets using No Header PDU

- a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC UM using Common test procedures for mobile terminated PS switched sessions. Usage of "PDCP No Header" PDU has been configured by higher layers.
- b) The SS sends a TCP/IP data packet with uncompressed IP Header.
- c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PDCP PDU type and shall handle the received data packet with the appropriate decoding method. Then it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration using PDCP No Header PDU.
- d) The SS receives and decodes the TCP/IP data packet. The decoded data packet shall be identical with the data as sent before.
- e) Step b) to d) shall be repeated by using a UDP/IP data packet with uncompressed IP Header.
- f) The SS deactivates the Loop back test mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in UM RLC (using UE test loop mode 1)				
1		←	PDCP No Header	<p>The SS creates a TCP/IP packet without IP header compression (PDCP No Header PDU).</p> <p>The SS sends a PDCP No Header PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: data: below described TCP/IP packet</p> <p>After having received the PDCP No Header PDU, the UE decodes the PDU and recognizes, there was no PID applied for the TCP/IP packet. Therefore, no IP header decompression shall be applied for this packet. Then, the data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>
2		→	PDCP No Header	<p>The UE sends a PDCP No Header PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: data: previously received TCP/IP packet</p> <p>After reception of this TCP/IP data packet, the SS applies the appropriate decoding function for the received data</p>
				The SS creates a UDP/IP packet without IP header compression (PDCP No Header PDU).

Step	Direction		Message	Comments
	UE	SS		
3		←	PDCP No Header	<p>The SS sends a PDCP No Header PDU using the RLC-UM-Data-Request Primitive with the following content to the UE: data: below described UDP/IP packet</p> <p>After having received the PDCP No Header PDU, the UE decodes the PDU and recognizes, there was no PID applied for the UDP/IP packet. Therefore, no IP header decompression shall be applied for this packet. Then, the data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>
4	→		PDCP No Header	<p>The UE sends a PDCP No Header PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS: data: previously received UDP/IP packet</p> <p>After reception of this UDP/IP data packet, the SS decodes the received data</p>
Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in UM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

## RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in UM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) which fits to the below described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for UM RLC
- CN domain identity	PS domain
- RB information to setup	
- RB identity	21
- PDCP info	False
- PDCP PDU header	absent
- RLC info	
- Downlink RLC mode	(UM RLC)
- Uplink RLC mode	(UM RLC)

## Content of PDCP No Header PDU (Step 1)

Information Element	Value/remark
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## Content of PDCP No Header PDU (Step 3)

Information Element	Value/remark
Data	PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## 7.3.2.2.1.5 Test requirements

1. Test requirements: Transmission of uncompressed IP header packets using PDCP Data PDU

The UE shall return the TCP/IP and UDP/IP data packets as indication, that the previous packets have been received and handled correctly (PDCP Data PDU). This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

2. Test requirements: Transmission of uncompressed IP header packets using PDCP No Header PDU

The UE shall return the TCP/IP and UDP/IP data packets as indication, that the previous packets have been received and handled correctly (PDCP No Header PDU). This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

### 7.3.2.2.2 Transmission of compressed Header

#### 7.3.2.2.2.1 Definition and applicability

Applicable for all UEs supporting RLC UM and a Radio Bearer as described in the Common Test Sequences.

The UE shall be capable to deal with compressed TCP/IP and UDP/IP data packets and furthermore to establish a PDCP entity which applies IP header compression protocol RFC 2507.

#### 7.3.2.2.2.2 Conformance requirement

1. The Packet Data Convergence Protocol shall perform the following functions:
  - transfer of user data. This function is used for conveyance of data between users of PDCP services.
2. Depending on the configuration by upper layers (i.e. PDCP PDU type to be used and header compressor protocol), the PDCP sublayer shall be able to:
  - identify the correct header compression protocol; and
  - distinguish different types of header compression packets within a header compression protocol.

#### Reference(s)

TS 25.323 clause 5.

TS 25.323 clause 5.1.1.

#### 7.3.2.2.2.3 Test purpose

1. To verify, that the UE transmits and receives in unacknowledged mode (RLC UM) TCP/IP and UDP/IP data packets by using IP header compression protocol as described in RFC2507 as configured by higher layers.
2. To verify, that the PID assignment rules are correctly applied by the UE. The UE shall use the correct PID value for the applied optimisation method for transmitting and receiving TCP/IP and UDP/IP data packets.

#### 7.3.2.2.2.4 Method of test

##### Initial conditions

UE is in Idle mode. Usage of "PDCP Data" PDU and no IP header compression is configured.

##### Related ICS/IXIT Statement(s)

Support of IP header compression protocol RFC 2507 - YES/NO

Support of PS – Yes/No

PIXIT: Test\_PDCP\_TCP/IP\_Packet1

PIXIT: Test\_PDCP\_TCP/IP\_Packet2

PIXIT: Test\_PDCP\_UDP/IP\_Packet1

PIXIT: Test\_PDCP\_UDP/IP\_Packet2

##### Test procedure

- a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC UM using Common test procedures for mobile terminated PS switched sessions. Usage of "PDCP Data" PDU has been configured by higher layers.
- b) The SS sends a "normal" TCP/IP data packet (no compression packet type), PID=0.

- c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression protocol. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.
- d) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.
- e) The SS sends a TCP/IP data packet with packet type: Full\_Header, PID=1.

NOTE: According to the compression protocol RFC 2507, this is necessary to transmit the created CONTEXT and the assigned CID.

- f) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression protocol. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.
- g) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.
- h) The SS sends a TCP/IP data packet with packet type: Compressed\_TCP, PID=2.
- i) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression protocol. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.
- j) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.
- k) Step b) to d) is repeated for a "normal" UDP/IP data packet, PID=0.
- l) Step e) to g) is repeated for a UDP/IP data packet with packet type: Full\_Header, PID=1.
- m) The SS sends a UDP/IP data packet with packet type: Compressed\_non\_TCP, PID=4.
- n) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decompression protocol. Then, it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.
- o) The SS receives and decodes the UDP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.
- p) The SS deactivates the UE test loop test mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in UM RLC (using UE test loop mode 1)				
1		←	PDCP Data	<p>The SS creates a TCP/IP packet without IP header compression.</p> <p>The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE:                      PDU type = 000 (PDCP Data PDU)                      PID = 0 (uncompressed IP header)                      data: below described TCP/IP packet</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression)                      Therefore, no IP header decompression is applied for this packet.</p> <p>The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>
2		→	PDCP Data	<p>The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS:                      PDU type = 000 (PDCP Data PDU)                      PID value = 0 to 3                      data: previously received TCP/IP packet</p> <p>After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>
3		←	PDCP Data	<p>The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE:                      PDU type = 000 (PDCP Data PDU)                      PID = 1 (Full_Header packet type [TCP/IP])                      data: below described TCP/IP packet</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU, recognizes PID value = 1 applied for this TCP/IP data packet and decompresses it with the appropriate method.                      The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity.</p>

Step	Direction		Message	Comments
	UE	SS		
4	→		PDCP Data	<p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p> <p>The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS:  PDU type = 000 (PDCP Data PDU)  PID value = 0 to 3  data: previously received TCP/IP packet</p> <p>After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>
5		←	PDCP Data	<p>The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE:  PDU type = 000 (PDCP Data PDU)  PID = 2 (Compressed_TCP packet type)  data: below described TCP/IP packet</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU, recognizes PID value = 2 applied for this TCP/IP data packet and decompress it with the appropriate method. The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity.</p>
6	→		PDCP Data	<p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p> <p>The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS:  PDU type = 000 (PDCP Data PDU)  PID value = 0 to 3  data: previously received TCP/IP packet</p> <p>After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>
7		←	PDCP Data	<p>The SS creates a UDP/IP packet without compressed IP header compression.</p> <p>The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE:  PDU type = 000 (PDCP Data PDU)  PID = 0 (uncompressed IP header)  data: below described UDP/IP packet</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU and recognizes with PID value = 0, there was no IP header compression applied for the UDP/IP packet. Therefore, no IP header decompression is applied for this packet.</p> <p>The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>

Step	Direction		Message	Comments
	UE	SS		
8		→	PDCP Data	<p>The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS:  PDU type = 000 (Data PDU with Header)  PID value = 0,1 or 4 (depending on which UDP/IP header format is used by the UE)  data: previously received UDP/IP packet</p> <p>After reception of this UDP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>
9		←	PDCP Data	<p>The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE:  PDU type = 000 (PDCP Data PDU)  PID = 1 (Full_Header packet type)  data: below described UDP/IP packet</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 1 applied for this UDP/IP data packet and decompress it with the appropriate method.</p> <p>The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>
10		→	PDCP Data	<p>The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS:  PDU type = 000 (Data PDU with Header)  PID value = 0,1 or 4 (depending on which UDP/IP header format is used by the UE)  data: below described UDP/IP packet</p> <p>After reception of this UDP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>
11		←	PDCP Data	<p>The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE:  PDU type = 000 (PDCP Data PDU)  PID = 4 (Compressed_non-TCP packet type)  data: below described UDP/IP packet</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 1 applied for this UDP/IP data packet and decompress it with the appropriate method.</p> <p>The data packet is forwarded via PDCP-SAP to the Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>

Step	Direction		Message	Comments
	UE	SS		
12		→	PDCP Data	<p>The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS:  PDU type = 000 (Data PDU with Header)  PID value = 0,1 or 4 (depending on which UDP/IP header format is used by the UE)  data: previously received UDP/IP packet</p> <p>After reception of this UDP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>
Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)				

### Specific Message Contents

#### RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in UM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

## RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in UM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) which fit to the here described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup	
- RAB info	
- RAB identity	No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for UM RLC
	Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108)
- CN domain identity	PS domain
- RB information to setup	
- RB identity	21
- PDCP info	False
- PDCP PDU header	present
- Header compression information	1
CHOICE <i>algorithm type</i>	
- RFC2507	
- F_MAX_PERIOD	256 (Default)
- F_MAX_TIME	5 (Default)
- MAX_HEADER	168 (Default)
- TCP_SPACE	15 (Default)
- NON_TCP_SPACE	15 (Default)
- EXPECT_REORDERING	reordering not expected (Default)
- RLC info	
- Downlink RLC mode	(UM RLC)
- Uplink RLC mode	(UM RLC)

## Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type	000
PID	00000 (No header compression, PID = 0)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## Content of PDCP Data PDU (Step 3)

Information Element	Value/remark
PDU type	000
PID	00001 (Full_Header, PID = 1)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## Content of PDCP Data PDU (Step 5)

Information Element	Value/remark
PDU type	000
PID	00010 (Compressed_TCP, PID = 2)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## Content of PDCP Data PDU (Step 7)

Information Element	Value/remark
PDU type	000
PID	00000 (No header compression, PID = 0)
Data	PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## Content of PDCP Data PDU (Step 9)

Information Element	Value/remark
PDU type	000
PID	00001 (Full_Header, PID = 1)
Data	PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## Content of PDCP Data PDU (Step 11)

Information Element	Value/remark
PDU type	000
PID	00100 (Compressed_non-TCP, PID = 4)
Data	PDCP test data type #2: UDP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## 7.3.2.2.2.5 Test requirements

The UE shall return the TCP/IP and UDP/IP data packets as indication, that the previous packets have been received and handled with the correct compression method. This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

## 7.3.2.2.3 Extension of used compression methods

## 7.3.2.2.3.1 Definition and applicability

Applicable for all UEs supporting RLC UM and a Radio Bearer as described in the Common Test Sequences.

The UE shall be capable to deal with compressed TCP/IP data packets and furthermore to establish a PDCP entity which applies IP header compression protocol: RFC 2507.

## 7.3.2.2.3.2 Conformance requirement

1. The Packet Data Convergence Protocol shall perform the following functions:

- transfer of user data. Transmission of user data means that PDCP receives PDCP SDU from the NAS and forwards it to the RLC layer and vice versa;

2. Depending on the configuration by upper layers (i.e. PDCP PDU type to be used and header compressor protocol), the PDCP sublayer shall be able to:
  - identify the correct header compression protocol; and
  - distinguish different types of header compression packets within a header compression protocol.
3. The mapping of the PID values shall follow the general rules listed below:
  - PID values are re-mapped for the PDCP entity after any reconfiguration of the header compression protocols for that entity.

#### Reference(s)

TS 25.323 clause 5.

TS 25.323 clause 5.1

TS 25.323 clause 5.1.1.

#### 7.3.2.2.3.3 Test purpose

1. To verify, that the UE is able to handle an extended PID value allocation table by header compression protocol IETF RFC 2507 after PDCP reconfiguration as configured by RRC.

#### 7.3.2.2.3.4 Method of test

#### Initial conditions

UE is in Idle mode. Usage of "PDCP Data" PDU and no IP header compression is configured.

#### Related ICS/IXIT Statement(s)

Support of IP header compression protocol RFC 2507 - YES/NO

Support of PS – Yes/No

PIXIT: Test\_PDCP\_TCP/IP\_Packet1

PIXIT: Test\_PDCP\_TCP/IP\_Packet2

#### Test procedure

- a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC UM using Common test procedures for mobile terminated PS switched sessions (with the UE test loop mode 1). Usage of "PDCP Data PDU" and no optimisation method has been configured by higher layers.
- b) The SS sends a TCP/IP data packet (no compression packet type), PID=0.
- c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.
- d) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.
- e) The SS reconfigures (using RRC Radio Bearer Reconfiguration message) the PDCP entity by extending the PID value allocation table and therefore the applied optimisation method with the IP header compression protocol RFC 2507. The UE test loop mode 1 in RLC UM is still active.
- f) The SS sends a TCP/IP data packet (no compression packet type), PID=0.

- g) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.
- h) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.
- i) The SS sends a TCP/IP data packet with packet type: Full\_Header, PID=1.
- j) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.
- k) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.
- l) The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in UM RLC (using UE test loop mode 1)				
1		←	PDCP Data	<p>The SS creates a TCP/IP packet without IP header compression.</p> <p>The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE:                      PDU type = 000 (PDCP Data PDU)                      PID = 0 (uncompressed IP header)                      data: below described TCP/IP packet</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression)                      Therefore, no IP header decompression shall be applied for this packet.</p> <p>The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>
2		→	PDCP Data	<p>The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS:                      PDU type = 000 (PDCP Data PDU)                      PID value = 0                      data: previously received TCP/IP packet</p> <p>After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>
3		←	RRC RADIO BEARER RECONFIGURATION	SS extends the "PID value allocation table" with IP header compression PID (RFC 2507) in the UE.
4		→	RRC RADIO BEARER RECONFIGURATION COMPLETE	UE acknowledges its new settings
5		←	PDCP Data	<p>The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE:                      PDU type = 000 (PDCP Data PDU)                      PID = 0 (normal packet type [TCP/IP])                      data: below described TCP/IP packet.</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression)                      Therefore, no IP header decompression shall be applied for this packet.</p> <p>The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>

Step	Direction		Message	Comments
	UE	SS		
6		→	PDCP Data	<p>The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS:                      PDU type = 000 (PDCP Data PDU)                      PID value = 0 to 3                      data: previously received TCP/IP packet</p> <p>After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>
7		←	PDCP Data	<p>The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE:                      PDU type = 000 (PDCP Data PDU)                      PID = 1 (Full_Header packet type [TCP/IP])                      data: below described TCP/IP packet</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 1 applied for this TCP/IP data packet and shall decompress it with the appropriate method.</p> <p>The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>
8		→	PDCP Data	<p>The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS:                      PDU type = 000 (PDCP Data PDU)                      PID value = 0 to 3                      data: previously received TCP/IP packet</p> <p>After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>
Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC RADIO BEARER RECONFIGURATION message

The contents of the RRC RADIO BEARER RECONFIGURATION message applied in the preamble "Setup a UE terminated PS session using IP Header compression in UM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
RB information to reconfigure list	1
RB information to reconfigure	
- PDCP info	
- PDCP PDU header	present
- Header compression information	1
CHOICE <i>algorithm type</i>	
- RFC2507	
- F_MAX_PERIOD	256 (Default)
- F_MAX_TIME	5 (Default)
- MAX_HEADER	168 (Default)
- TCP_SPACE	15 (Default)
- NON_TCP_SPACE	15 (Default)
- EXPECT_REORDERING	reordering not expected (Default)

## RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in UM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

## RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in UM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) which fit to the here described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for UM RLC
- CN domain identity	PS domain
- RB information to setup - RB identity	21
- PDCP info - PDCP PDU header	present
- RLC info - Downlink RLC mode - Uplink RLC mode	(UM RLC) (UM RLC)

## Content of PDCP Data PDU (Step 1 and 5)

Information Element	Value/remark
PDU type	000
PID	00000 (No header compression, PID = 0)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## Content of PDCP Data PDU (Step 7)

Information Element	Value/remark
PDU type	000
PID	00001 (Full_Header, PID = 1)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

### 7.3.2.2.3.5 Test requirements

After PDCP reconfiguration, the UE shall return the TCP/IP data packets as indication, that the extension of used optimisation method are applied by UE. This verifies, that the PDCP configuration on UE side works as negotiated by the RRC.

### 7.3.2.2.4 Compression type used for different entities

#### 7.3.2.2.4.1 Definition and applicability

Applicable only for an UE supporting the establishment of more than one PDCP entity in parallel, i.e. it shall be possible to configure more than one Radio Bearer Loop Back entities (each PDCP entity are assigned via PDCP-SAP to its own Radio Bearer Loop Back entity).

Applicable for all UEs supporting two Radio Bearers in RLC UM and RLC AM as described in this test case, clause 7.3.2.2.4.6 Combined PDCP Acknowledged and Unacknowledged mode configuration.

The UE shall be capable to deal with compressed TCP/IP data packets and furthermore it shall apply IP header compression protocol RFC 2507.

#### 7.3.2.2.4.2 Conformance requirement

1. The Packet Data Convergence Protocol shall perform the following functions:
  - transfer of user data. This function is used for conveyance of data between users of PDCP services.
2. Depending on the configuration by upper layers (i.e. PDCP PDU type to be used and header compressor protocol), the PDCP sublayer shall be able to:
  - identify the correct header compression protocol; and
  - distinguish different types of header compression packets within a header compression protocol.
3. The mapping of the PID values shall follow the general rules listed below:
  - PID values shall be mapped to the different packet types independently at each PDCP entity;

Several PDCP entities may be defined for a UE with each using the same or different protocol type. In this version of the specification, only one header compression protocol type, RFC 2507 [6], is supported.

#### Reference(s)

TS 25.323 clause 5.

TS 25.323 clause 5.1.1.

TS 25.323 clause 4.2.

#### 7.3.2.2.4.3 Test purpose

NOTE: For this test case, the SS shall be configured to handle more than one received PDCP messages.

1. To verify, that a configured IP header compression protocol are applied to compress and decompress TCP/IP data packets by several PDCP entities in parallel, if more than one entities are established, i.e. the UE uses the same PID to transmit two TCP/IP data packets with the same content in parallel using two Radio Bearer configurations.

#### 7.3.2.2.4.4 Method of test

#### Initial conditions

UE is in Idle mode. Usage of "PDCP Data" PDU and IP header compression is configured for both PDCP entities.

## Related ICS/IXIT Statement(s)

Establishment of more than one PDCP entities - YES/NO.

Support of IP header compression protocol RFC 2507 - YES/NO

Support of UM RB and AM RB

Support of PS – Yes/No

IXIT: Test\_PDCP\_TCP/IP\_Packet1

IXIT: Test\_PDCP\_TCP/IP\_Packet2

## Test procedure

- a) The SS setups a packet switched session including two radio bearer configurations in parallel in UE test loop mode 1 and in RLC UM and RLC UM using Common test procedures for mobile terminated PS switched sessions. Usage of IP header compression protocol RFC 2507 has been configured by higher layers.
- b) The SS sends two successive a "normal" TCP/IP data packet, PID=0 via both PDCP configurations to their peer entities.
- c) After having received the TCP/IP data packets, the PDCP entities of the UE shall recognize the PID value and shall handle the received data packet independent of the used PID with the correct decompression method. Then they forward the data to their Radio Bearer Loop Back entity. Both received data shall be returned by each Radio Bearer Loop Back entity.
- d) The SS receives and decodes TCP/IP data packets according to the inserted PID. The decoded data packets shall be identical with the data as sent before.
- e) After having received the TCP/IP data packets, the PDCP entities of the UE shall recognize the PID value and shall handle the received data packets independent of the used PID with the correct decompression method. Then they forward the data to their Radio Bearer Loop Back entity. Both received data shall be returned by each Radio Bearer Loop Back entity.
- f) The SS receives and decodes TCP/IP data packets according to the inserted PID. The decoded data packets shall be identical with the data as sent before.
- g) The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in UM RLC (using UE test loop mode 1)				
1		←	PDCP Data	<p>The SS sends two successive a PDCP Data PDU using the RLC-UM-Data-Request Primitive via both PDCP entities with the following contents to the UE:                      PDU type = 000 (PDCP Data PDU)                      PID = 0 (uncompressed IP header)                      data: below described TCP/IP packet</p> <p>After having received both PDCP Data PDUs, the UE decodes each PDU and recognizes PID value = 0 (no IP header compression applied for both TCP/IP data packets).</p> <p>Although the same PID is used for both PDUs, the UE shall handle they with the correct method and it forwards both data packets via PDCP-SAPs to their Radio Bearer Loop Back (RB LB) entities.</p> <p>The RB LB entities in UE test loop mode 1 return the received data packets and send they back to their PDCP entities.</p>

Step	Direction		Message	Comments
	UE	SS		
2		→	PDCP Data	<p>The UE sends back for each PDCP configuration a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS:                      PDU type = 000 (PDCP Data PDU)                      PID value = 0 to 3                      data: previously received TCP/IP packet</p> <p>After reception of TCP/IP data packets, the SS applies the appropriate decoding function for both received messages depending on which PID was assigned to the received data</p>
3		←	PDCP Data	<p>The SS sends two successive a PDCP Data PDU using the RLC-UM-Data-Request Primitive via both PDCP entities with the following contents to the UE:                      PDU type = 000 (PDCP Data PDU)                      PID = 1 (Full_Header packet type [TCP/IP])                      data: below described TCP/IP packet</p> <p>After having received both PDCP Data PDUs, the UE decodes each PDU and recognizes PID value = 1 (Full_Header packet type applied for both TCP/IP data packets).</p> <p>Although the same PID is used for both PDUs, the UE shall handle them with the correct method and it forwards both data packets via PDCP-SAPs to their Radio Bearer Loop Back (RB LB) entities.</p> <p>The RB LB entities in UE test loop mode 1 return the received data packets and send them back to their PDCP entities.</p>
4		→	PDCP Data	<p>The UE sends back for each PDCP configuration a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS:                      PDU type = 000 (PDCP Data PDU)                      PID value = 0 to 3                      data: previously received TCP/IP packet</p> <p>After reception of TCP/IP data packets, the SS applies the appropriate decoding function for both received messages depending on which PID was assigned to the received data</p>
Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in UM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings



Content of both PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type	000
PID	00000 (No header compression, PID = 0)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

Content of both PDCP Data PDU (Step 3)

Information Element	Value/remark
PDU type	000
PID	00001 (Full_Header, PID = 1)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

#### 7.3.2.2.4.5 Test requirements

The UE shall return both TCP/IP data packets as indication that the previous received data packets associated with the same PID value are handled in parallel with the same decompression protocol. This verifies, that more than one PDCP configuration on UE side using the same compression protocol is able to apply it in parallel.

#### 7.3.2.2.4.6 Combined PDCP Acknowledged and Unacknowledged mode configuration

This configuration is based on the interactive or background / UL:64 DL 64 kbps / PS RAB. The SRB configurations are UL:3.4 DL:3.4 kbps for DCCH aligned to this combined RABs are described for SRB DL 3.4 kbps in TS 34.108, clause 6.10.2.4.1.2.2 and for SRB DL 3.4 kbps in TS 34.108, clause 6.10.2.4.1.2.1. The TFCS refer to TS34.108, clause 6.10.2.4.1.24.1.1.3 for UL and clause 6.10.2.4.1.25.2.1.3 for DL, the Physical channel parameters refer to TS 34.108, clause 6.10.2.4.1.24.1.2 for UL clause 6.10.2.4.1.25.2.2 and for DL accordingly. The configuration is applied to PDCP test cases using both the acknowledged and unacknowledged mode.

**Table 7.3.2.2.4/1: Uplink Transport channel parameter for combined RABs PS AM\_UM**

Higher layer	RAB/Signalling RB	RAB #20	RAB #21	
RLC	Logical channel type	DTCH	DTCH	
	RLC mode	AM	UM	
	Payload sizes, bit	316	324	
	Max data rate, bps	63200	64800	
	TrD PDU header, bit	16	8	
MAC	MAC header, bit	4		
	MAC multiplexing	2 logical channel multiplexing		
Layer 1	TrCH type	DCH		
	TB sizes, bit	336		
	TFS	TF0, bits	0x336	
		TF1, bits	1x336	
		TF2, bits	2x336	
		TF3, bits	3x336	
		TF4, bits	4x336	
	TTI, ms	20		
	Coding type	TC		
	CRC, bit	16		
	Max number of bits/TTI after channel coding	4236		
	Uplink: Max number of bits/radio frame before rate matching	2118		
RM attribute	130-170			

**Table 7.3.2.2.4/2: Downlink Transport channel parameter for combined RABs PS AM\_UM**

Higher layer	RAB/Signalling RB	RAB #20	RAB #21	
RLC	Logical channel type	DTCH	DTCH	
	RLC mode	AM	UM	
	Payload sizes, bit	316	324	
	Max data rate, bps	63200	64800	
	TrD PDU header, bit	16	8	
MAC	MAC header, bit	4		
	MAC multiplexing	2 logical channel multiplexing		
Layer 1	TrCH type	DCH		
	TB sizes, bit	336		
	TFS	TF0, bits	0x336	
		TF1, bits	1x336	
		TF2, bits	2x336	
		TF3, bits	3x336	
		TF4, bits	4x336	
	TTI, ms	20		
	Coding type	TC		
	CRC, bit	16		
	Max number of bits/TTI after channel coding	4236		
RM attribute	130-170			

### 7.3.2.2.5 Reception of not defined PID values

#### 7.3.2.2.5.1 Definition and applicability

Applicable for all UEs supporting RLC UM and a Radio Bearer as described in the Common Test Sequences.

The UE shall be capable to deal with compressed TCP/IP data packets and furthermore to establish a PDCP entity, which applies PDCP Data PDU if no IP header compression protocol, is negotiated.

The UE shall not forward invalid PDCP PDU data contents to its Radio Bearer.

#### 7.3.2.2.5.2 Conformance requirement

1. Depending on the configuration by upper layers (i.e. PDCP PDU type to be used and header compressor protocol), the PDCP sublayer shall be able to:
  - identify the correct header compression protocol; and
  - distinguish different types of header compression packets within a header compression protocol.
2. If a PDCP entity receives a PDCP PDU with a PDU Type set to Reserved (...), it shall:
  - discard the PDCP PDU.

#### PDU Type

Reserved (PDUs with this encoding are invalid for this version of the protocol)

#### Reference(s)

TS 25.323 clause 5.1.1.

TS 25.323 clause 9.1 and 8.3.1.

### 7.3.2.2.5.3 Test purpose

1. To verify, that a UE considers a received PDCP PDU message with not defined PID value as invalid, i.e. such an invalid PDCP PDU is not forwarded to the Radio Bearer entity on UE side. Therefore the UE using test loop mode 1 does not return such data packet to the SS.

### 7.3.2.2.5.4 Method of test

#### Initial conditions

UE is in Idle mode. Usage of "PDCP Data" PDU and no IP header compression is configured.

#### Related ICS/IXIT Statement(s)

Support of IP header compression protocol RFC 2507 - YES/NO

Support of PS – Yes/No

IXIT: Test\_PDCP\_TCP/IP\_Packet1

IXIT: Test\_PDCP\_TCP/IP\_Packet2

#### Test procedure

- a) The SS setups a packet switched session including radio bearer and UE test loop mode 1 in RLC UM using Common test procedures for mobile terminated PS switched sessions. Usage of "PDCP Data PDU" and no PDCP IP header compression protocol has been configured by higher layers.
- b) The SS sends a "normal" TCP/IP data packet (no compression packet type), PID=0.
- c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decoding method. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.
- d) The SS receives and decodes TCP/IP data packets according to the inserted PID. The decoded data packets shall be identical with the data as sent before.
- e) The SS sends a TCP/IP data packet with packet type: Full\_Header, PID=1.
- f) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet with the correct decoding method.
- g) The SS waits an amount of time to make sure, that no returned data packet was sent by UE.
- h) The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in UM RLC (using UE test loop mode 1)				
1		←	PDCP Data	<p>The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE:                      PDU type = 000 (PDCP Data PDU)                      PID = 0 (uncompressed IP header)                      data: below described TCP/IP packet</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression)                      Therefore, no IP header decompression shall be applied for this packet.</p> <p>The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>
2		→	PDCP Data	<p>The UE sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content back to the SS:                      PDU type = 000 (PDCP Data PDU)                      PID value = 0                      data: previously received TCP/IP packet</p> <p>After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>
3		←	PDCP Data	<p>The SS sends a PDCP Data PDU using the RLC-UM-Data-Request Primitive with the following content to the UE:                      PDU type = 000 (PDCP Data PDU)                      PID = 1 (Full_Header packet type [TCP/IP])                      data: below described TCP/IP packet.</p> <p>After having received the PDCP Data PDU, the UE shall recognize, that a not defined PID value (as configured by higher layers) is inserted in the PDCP PDU.</p> <p>The UE shall consider this PDU as invalid, i.e. the data packet is not forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity.</p> <p>Therefore this data packet is not returned to the SS.</p>
4				<p>The SS waits a amount of time to make sure, that the previously sent data packet is not returned to the SS.</p>
Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in UM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

### RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in UM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for UM) which fit to the here described parameters with the following exceptions:

Information Element	Value/remark
RAB information for setup - RAB info - RAB identity	No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for UM RLC
- CN domain identity	PS domain
- RB information to setup - RB identity	21
- PDCP info - PDCP PDU header	present
- RLC info - Downlink RLC mode - Uplink RLC mode	(UM RLC) (UM RLC)

### Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type	000
PID	00000 (No header compression, PID = 0)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes

### Content of PDCP Data PDU (Step 3)

Information Element	Value/remark
PDU type	000
PID	00001 (Full_Header, PID = 1)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

#### 7.3.2.2.5.5 Test requirements

The UE shall return the received TCP/IP data packet using the PDCP Data PDU with PID = 0 as indication, that the UE works as configured.

The UE shall not return the TCP/IP data packet using the PDCP Data PDU with PID = 1 as indication, that this PDU was considered as invalid by the UE. This verifies, that the PDCP configuration on UE side has considered this PDU as invalid.

## 7.3.3 PDCP sequence numbering when lossless SRNS Relocation

### 7.3.3.1 Data transmission if lossless SRNS Relocation is supported

#### 7.3.3.1.1 Definition and applicability

Applicable for all UEs supporting RLC AM, RLC in-sequence delivery, a Radio Bearer as described in the Common Test Sequences and lossless SRNS relocation.

The UE shall be capable to deal with uncompressed TCP/IP data packets and furthermore to establish a PDCP entity which applies PDCP Sequence Numbering

#### 7.3.3.1.2 Conformance requirement

1. PDCP sequence numbering shall be applied when lossless SRNS Relocation is supported. PDCP Sequence Numbers serve to acknowledge previously transmitted PDCP SDUs prior to relocation.
2. In case of a lossless SRNS Relocation procedure:
  - the UTRAN should send to the UE the next expected UL\_Receive PDCP SN; and
  - the UE shall send to the UTRAN the next expected DL\_Receive PDCP SN.

This information exchange synchronises the Sequence Numbers at the UE and UTRAN PDCP entities.

#### Reference(s)

TS 25.323 clause 5.4.1.1

TS 25.323 clause 5.4.1.3.

#### 7.3.3.1.3 Test purpose

1. To verify, that a UE supporting lossless SRNS relocation is able to receive and to send IP data packets by using PDCP Sequence Numbering as configured by higher layers.

#### 7.3.3.1.4 Method of test

#### Initial conditions

SS: 2 cells - Cell A belonging to the valid SRNS (Source SRNS), Cell B belonging to the DRNS (Target SRNS). Both cells are neighbour cells. Cell A has a higher RF power level than Cell B such that an UE shall find Cell A more suitable for service.

UE: It is in Idle mode and has selected cell A with valid SRNS (Source SRNS). Usage of "PDCP Data" PDU, PDCP SeqNum PDU and no IP header compression is configured.

#### Related ICS/IXIT Statement(s)

Support of lossless SRNS Relocation - YES/NO

Support of PS – Yes/No

IXIT: Test\_PDCP\_TCP/IP\_Packet1

IXIT: Test\_PDCP\_TCP/IP\_Packet2

#### Test procedure

- a) The SS setups a packet switched session including Radio Bearer and UE test loop mode 1 in RLC AM and in-sequence delivery using Common test procedures for mobile terminated PS switched sessions in Cell A. The RLC buffer discharge mode shall be set to "no discard". Usage of "PDCP Data" PDU, support of lossless SRNS

relocation and no IP header compression has been configured by higher layers. The PDCP SN window size has been negotiated by RRC.

- b) The SS sends a TCP/IP data packet (no compression packet type), PID=0.
- c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.
- d) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.
- e) The SS starts to broadcast BCCH messages on the primary CPICH in cell B with a power level higher than in cell A. The UE shall chose cell B to be more suitable for service and hence perform a cell reselection.
- f) After completion of cell reselection, the UE transmits a CELL UPDATE message to the SS on the uplink CCCH of cell B with the Cell update cause "Cell Reselection".
- g) The SS sends a TCP/IP data packet (no compression packet type), PID=0. The PDCP SeqNum PDU is used due to lossless SRNS relocation procedure.
- h) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The UE shall increase its internal Sequence Number counter by 1. The received data shall be returned by the UE via its PDCP configuration using PDCP SeqNum PDU.
- i) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.
- j) After having performed SRNS relocation (target RNC allocated with new S-RNTI for the UE), the Target SRNS is the valid SRNS and the SS sends a "CELL UPDATE CONFIRM" message with new RNC\_ID to indicate the completion of the cell update.
- k) The UE shall confirm the reallocation.
- l) The SS sends the next TCP/IP data packet (no compression packet type), PID=0 using the "PDCP Data" PDU to the UE.
- m) After having received the TCP/IP data packet, the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.
- n) The SS receives and decodes TCP/IP data packets according to the inserted PID. The decoded data packets shall be identical with the data as sent before.
- o) The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in AM RLC (using UE test loop mode 1) in Cell A				
1		←	PDCP Data	<p>The SS creates a TCP/IP packet without IP header compression. The DL_Send PDCP SN is set to "0".</p> <p>The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE:                      PDU type = 000 (PDCP Data PDU)                      PID = 0 (uncompressed IP header)                      data: below described TCP/IP packet                      Afterwards the SS increments its counter value DL_Send PDCP SN by "1".</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression)                      Therefore, no IP header decompression shall be applied for this packet.</p> <p>The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>
2		→	PDCP Data	<p>The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS:                      PDU type = 000 (PDCP Data PDU)                      PID value = 0                      data: previously received TCP/IP packet</p> <p>After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>
3				<p>The SS increases the RF power level of cell B and decreases the power level of Cell A such that the UE finds cell B more suitable for service.</p>
4				<p>The UE cell reselection is performed and Cell B are selected for service.</p>
5		→	RRC CELL UPDATE	<p>Then, the UE shall inform the SS about the new cell selection by sending cell update with new parameters (parameter values as used in RRC testing).</p>

Step	Direction		Message	Comments
	UE	SS		
6		←	PDCP SeqNum	<p>The SS sends a PDCP SeqNum PDU including its current Sequence Number with the following content to the UE:  PDU type = 000 (PDCP Data PDU)  PID = 0 (uncompressed IP header)  SeqNum = current PDCP Sequence Number  data: below described TCP/IP packet</p> <p>Afterwards the SS increments its counter value DL_Send PDCP SN by "1".</p> <p>After having received the PDCP SeqNum PDU, the UE shall set the received PDCP Sequence Number as its own valid value. It decodes the PDU, recognizes PID value = 0 applied for this TCP/IP data packet and shall decompress it with the appropriate method.</p> <p>The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The SN synchronisation shall be considered as successfully performed after acknowledgement of SeqNum PDU transmission by lower layer in the SS.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>
7	→		PDCP SeqNum	<p>The UE sends a PDCP SeqNum PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS:  PDU type = 000 (PDCP Data PDU)  PID value = 0  SeqNum = current PDCP Sequence Number  data: previously received TCP/IP packet  After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>
8	←		RRC CELL UPDATE CONFIRM	<p>After having performed SRNS relocation, the Target SRNS is the valid SRNS and the SS sends a "CELL UPDATE CONFIRM" message  See message content.</p>
9	→		UTRAN MOBILITY INFORMATION CONFIRM	<p>The UE confirms the newly received information.</p>
10		←	PDCP Data	<p>The SS sends the next PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE:  PDU type = 000 (PDCP Data PDU)  PID = 0 (uncompressed IP header)  data: below described TCP/IP packet  Afterwards the SS increments its counter value DL_Send PDCP SN by "1".  After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression)</p> <p>Therefore, no IP header decompression shall be applied for this packet.</p> <p>The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity.</p>

Step	Direction		Message	Comments
	UE	SS		
11		→	PDCP Data	<p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p> <p>The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS:                      PDU type = 000 (PDCP Data PDU)                      PID value = 0                      data: previously received TCP/IP packet</p> <p>After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>
Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in AM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access capability update requirement	TRUE NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

## RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in AM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) which fit to the here described parameters with the following exceptions:

Information Element	Value/remark
<ul style="list-style-type: none"> <li>- Downlink counter synchronisation info</li> <li>- RB with PDCP information list               <ul style="list-style-type: none"> <li>- RB identity</li> <li>- PDCP SN info</li> </ul> </li> <li>RAB information for setup               <ul style="list-style-type: none"> <li>- RAB info</li> <li>- RAB identity</li> </ul> </li> <li>- CN domain identity</li> <li>- RB information to setup               <ul style="list-style-type: none"> <li>- RB identity</li> <li>- PDCP info                   <ul style="list-style-type: none"> <li>- Max PDCP SN window size</li> <li>- Support of lossless SRNS relocation</li> <li>- PDCP PDU header</li> </ul> </li> </ul> </li> <li>- RLC info               <ul style="list-style-type: none"> <li>- Downlink RLC mode                   <ul style="list-style-type: none"> <li>- In-sequence delivery</li> </ul> </li> <li>- Uplink RLC mode                   <ul style="list-style-type: none"> <li>- Transmission RLC Discard</li> </ul> </li> <li>- Uplink RLC mode                   <ul style="list-style-type: none"> <li>- Transmission RLC Discard</li> </ul> </li> </ul> </li> </ul>	<p>20 1 (Note: next expected Sequence Number)</p> <p>UL: Interactive/Background 32kbps PS RAB + SRB for CCCH + SRB for DCCH (TS34.108 v4.2.0 clause6.10.2.4.4.1)</p> <p>DL: Interactive/Background 32kbps PS RAB + SRB for CCCH + SRB for DCCH + SRB for BCCH (TS34.108 v4.2.0 clause6.10.2.4.3.2)</p> <p>No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for AM RLC</p> <p>Residual BER as described in TS 34.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108)</p> <p>PS domain</p> <p>20</p> <p>65535 TRUE present</p> <p>(AM RLC) True (AM RLC) No discard      Note: Default value as defined in TS 34.108, Annex B</p>

## Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type	000
PID	00000 (No header compression, PID = 0)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## Content of PDCP SeqNum PDU (Step 6)

Information Element	Value/remark
PDU type	001
PID	00000 (No header compression, PID = 0)
Sequence number	(16 Bit value) valid Sequence Number of the SS
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## CELL UPDATE CONFIRM (Step 8)

Use the message sub-type in default message content defined in Annex A, with the following exceptions.

Information Element	Value/Remarks
New U-RNTI	New value of U-RNTI different from the previous U-RNTI
Receive PDCP sequence number	IE is set to the value to be counted inside SS as next expected reception Sequence Number

## UTRAN MOBILITY INFORMATION CONFIRM (Step 9)

Only the message type is checked.

## Content of PDCP Data PDU (Step 10)

Information Element	Value/remark
PDU type	000
PID	00000 (No header compression, PID = 0)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## 7.3.3.1.5 Test requirements

After having sent the "RRC CELL UPDATE", the UE shall return the received TCP/IP data packet by using PDCP SeqNum PDUs as indication, that it supports lossless SRNS relocation. This verifies, that Sequence Numbering is used for lossless SRNS relocation.

## 7.3.3.2 Synchronisation of PDCP sequence numbers

## 7.3.3.2.1 Definition and applicability

Applicable for all UEs supporting RLC AM, RLC in-sequence delivery, a Radio Bearer as described in the Common Test Sequences.

The UE shall be capable to deal with compressed TCP/IP and UDP/IP data packets and furthermore it shall be capable to use IP Header compression protocol RFC 2507.

## 7.3.3.2.2 Conformance requirement

The PDCP SeqNum PDU shall be sent by the peer PDCP entities when synchronisation of the PDCP SN is required. (...) Synchronisation of PDCP SN is required after (...) RB reconfiguration.

1. In case of a lossless SRNS Relocation procedure:

- the UTRAN should send to the UE the next expected UL\_Receive PDCP SN; and
- the UE shall send to the UTRAN the next expected DL\_Receive PDCP SN.

This information exchange synchronises the Sequence Numbers at the UE and UTRAN PDCP entities.

2. For radio bearers that are configured to support lossless SRNS Relocation, the PDCP entity shall:
  - if upper layer indicates to a PDCP entity that it should synchronise the PDCP SN following a RLC reset or RB reconfiguration; or
  - if the UE/UTRAN PDCP entity receives an invalid "next expected UL/DL\_Receive PDCP SN" from upper layer after Relocation:
    - trigger the PDCP SN synchronisation procedure by submitting one PDCP SeqNum PDU to lower layer;
  - consider that the synchronisation procedure is complete on confirmation by lower layer of the successful transmission of the PDCP SeqNum PDU.

#### Reference(s)

TS 25.323 clause 5.4.1.3

TS 25.323 clause 5.4.1.2

#### 7.3.3.2.3 Test purpose

1. To verify, that the UE supporting lossless SRNS relocation as configured by higher layers is able to handle the "PDCP SeqNum" PDU to synchronize the used PDCP Sequence Number after reconfiguration of the Radio Bearer.

#### 7.3.3.2.4 Method of test

#### Initial conditions

SS: 2 cells - Cell A belonging to the valid SRNS (Source SRNS), Cell B belonging to the DRNS (Target SRNS). Both cells are neighbour cells. Cell A has a higher RF power level than Cell B such that an UE shall find Cell A more suitable for service.

UE: It is in Idle mode and has selected cell A with valid SRNS (Source SRNS). Usage of "PDCP Data" PDU, "PDCP SeqNum" PDU and no IP header compression is configured.

#### Related ICS/IXIT Statement(s)

Support of lossless SRNS relocation - YES/NO

Support of RLC in-sequence delivery - YES/NO

#### Test procedure

- a) The SS setups a packet switched session including Radio Bearer and UE test loop mode 1 in RLC AM and in-sequence delivery using Common test procedures for mobile terminated PS switched sessions in Cell A. The RLC buffer discharge mode shall be set to "no discard". Usage of "PDCP Data" PDU and "PDCP SeqNum" PDU, support of lossless SRNS relocation and no IP header compression has been configured by higher layers. The PDCP SN window size has been negotiated by RRC.
- b) The SS sends a TCP/IP data packet (no compression packet type), PID=0.
- c) After having received the TCP/IP data packet, the PDCP entity of the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE via its PDCP configuration.
- d) The SS receives and decodes the TCP/IP data packet according to the inserted PID. The decoded data packet shall be identical with the data as sent before.

- e) The SS reconfigures (using RRC Radio Bearer Reconfiguration message) the PDCP entity by extending the PID value allocation table and therefore the applied optimisation method with the IP header compression protocol RFC 2507. The UE test loop mode 1 in RLC AM is still active.
- f) The SS sends the next TCP/IP data packet (no compression packet type), PID=0 using the "PDCP SeqNum" PDU including the current PDCP Sequence Number value to the UE.
- g) After having received the TCP/IP data packet, the UE shall recognize the PID value and shall handle the received data packet correctly. Afterwards it forwards the data to its Radio Bearer Loop Back entity. The received data shall be returned by the UE by using PDCP "SeqNum" PDU including its DL\_Receive PDCP SN via its PDCP configuration.
- h) The SS receives and decodes TCP/IP data packets according to the inserted PID. The decoded data packets shall be identical with the data as sent before.
- i) The SS deactivates the UE test loop mode and terminates the connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
Setup a UE terminated PS session using IP Header compression in AM RLC (using UE test loop mode 1) in Cell A				
1		←	PDCP Data	<p>The SS creates a TCP/IP packet without IP header compression. The DL_Send PDCP SN is set to "0".</p> <p>The SS sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content to the UE:                      PDU type = 000 (PDCP Data PDU)                      PID = 0 (uncompressed IP header)                      data: below described TCP/IP packet                      Afterwards the SS increments its counter value DL_Send PDCP SN by "1".</p> <p>After having received the PDCP Data PDU, the UE decodes the PDU and recognizes PID value = 0 (no IP header compression)                      Therefore, no IP header decompression shall be applied for this packet.</p> <p>The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>
2		→	PDCP Data	<p>The UE sends a PDCP Data PDU using the RLC-AM-Data-Request Primitive with the following content back to the SS:                      PDU type = 000 (PDCP Data PDU)                      PID value = 0                      data: previously received TCP/IP packet</p> <p>After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>
3		←	RRC RADIO BEARER RECONFIGURATION	SS extends the "PID value allocation table" with IP header compression PID (RFC 2507) in the UE.
4		→	RRC RADIO BEARER RECONFIGURATION COMPLETE	UE acknowledges its new settings

Step	Direction		Message	Comments
	UE	SS		
5		←	PDCP SeqNum	<p>The SS sends a PDCP SeqNum PDU including its current Sequence Number with the following content to the UE:                      PDU type = 001 (PDCP SeqNum PDU)                      PID = 0 (normal packet type [TCP/IP])                      SeqNum = current PDCP Sequence Number                      data: below described TCP/IP packet                      Afterwards the SS increments its counter value DL_Send PDCP SN by "1".                      After having received the PDCP SeqNum PDU, the UE shall set the received PDCP Sequence Number as its own valid value. It decodes the PDU, recognizes PID value = 0 applied for this TCP/IP data packet and shall decompress it with the appropriate method.                      The UE shall set the value of DL_Receive PDCP SN to the value as received from SS.                      The data packet is forwarded via PDCP-SAP to its Radio Bearer Loop Back (RB LB) entity. The SN synchronisation shall be considered as successfully performed after acknowledgement of SeqNum PDU transmission by lower layer in the SS.</p> <p>The RB LB entity in UE test loop mode 1 returns the received data packet and sends it back to its PDCP entity.</p>
6	→		PDCP PDU	<p>The UE sends a PDCP PDU with PDCP Header back to the SS. The content is as follows:                      PDU type = 000 (PDCP Data PDU)                      PID value = 0 to 3                      SeqNum: current UE value, (optional parameter, depending on PDU used)                      data: previously received TCP/IP packet.</p> <p>After reception of this TCP/IP data packet, the SS applies the appropriate decoding function depending on the assigned PID.</p>
Deactivate a UE terminated PS session using IP Header compression (using UE test loop mode 1)				

Specific Message Contents

RRC RADIO BEARER RECONFIGURATION message

The contents of the RRC RADIO BEARER RECONFIGURATION message applied in the preamble "Setup a UE terminated PS session using IP Header compression in AM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) with the following exceptions:

Information Element	Value/remark
RB information to reconfigure list	1
RB information to reconfigure	
- PDCP info	
- Max PDCP SN window size	65535
- Support of lossless SRNS relocation	TRUE
- PDCP PDU header	present
- Header compression information	1
CHOICE <i>algorithm type</i>	
- RFC2507	
- F_MAX_PERIOD	256 (Default)
- F_MAX_TIME	5 (Default)
- MAX_HEADER	168 (Default)
- TCP_SPACE	15 (Default)
- NON_TCP_SPACE	15 (Default)
- EXPECT_REORDERING	reordering not expected (Default)
Receive PDCP sequence number	IE is set to the value to be counted inside SS as next expected reception Sequence Number
U-RNTI	New value of U-RNTI different from the previous U-RNTI

### RRC CONNECTION SETUP message

The contents of the RRC CONNECTION SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in AM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) with the following exceptions:

Information Element	Value/remark
Capability update requirement	
- UE radio access capability update requirement	TRUE
	NOTE: Value will be checked. Stated capability must be compatible with 34.123-2 (c.f. PICS/PIXIT statements in GSM) and the user settings

## RADIO BEARER SETUP message

The contents of the RADIO BEARER SETUP message applied in the preamble "Setup a UE terminated PS session using IP Header compression in AM RLC" of this test case is identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] (PS connection for AM) which fit to the here described parameters with the following exceptions:

Information Element	Value/remark
- Downlink counter synchronisation info	
- RB with PDCP information list	
- RB identity	20
- PDCP SN info	1 (Note: next expected Sequence Number)
- RAB information for setup	
- RAB info	
- RAB identity	No. # 23 as described in TS 34.108, Table 6.10.2.1.1 Prioritised RABs. QoS parameter: Traffic Class: Interactive or Background, max. UL: 64 kbps and max. DL: 64 kbps as described in TS 34.108, including described physical channel parameters, configuration for AM RLC
	Residual BER as described in TS 24.108, clause: 6.10 Related Signalling RB UL: 3.4 kbps, DL: 3.4 kbps DCCH, No. #2 (as described in TS 34.108)
- CN domain identity	PS domain
- RB information to setup	
- RB identity	20
- PDCP info	
- Max PDCP SN window size	65535
- Support of lossless SRNS relocation	TRUE
- PDCP PDU header	present
- RLC info	
- Downlink RLC mode	(AM RLC)
- In-sequence delivery	True
- Uplink RLC mode	(AM RLC)
- Transmission RLC Discard	No Discard Note: Default value defined in TS 34.108, Annex B

## Content of PDCP Data PDU (Step 1)

Information Element	Value/remark
PDU type	000
PID	00000 (No header compression, PID = 0)
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## Content of PDCP SeqNum PDU (Step 5)

Information Element	Value/remark
PDU type	001
PID	00000 (No header compression, PID = 0)
Sequence number	(16 Bit value) valid Sequence Number of the SS
Data	PDCP test data type #1: TCP/IP data packet without IP header compression with any data content. The data shall be limited to 1500 bytes.

## 7.3.3.2.5 Test requirements

After having received the TCP/IP data packet conveyed with the "PDCP SeqNum" PDU, the UE shall return the TCP/IP data packets as indication, that the UE is able to handle a Sequence Number synchronisation.

7.3.3.3 PDCP Sequence Numbering and Data Forwarding - Reception of reserved PDU type

FFS

7.3.3.4 PDCP Sequence Number synchronization – Reception of invalid next expected receive Sequence Number

FFS

## 7.3.4 PDCP configuration testing

7.3.4.1 PDCP configuration behaviour while RRC Radio bearer setup procedure

FFS

7.3.4.2 PDCP configuration behaviour while RRC Radio bearer release procedure

FFS

7.3.4.3 PDCP configuration behaviour while RRC Cell Update procedure

FFS

7.3.4.4 PDCP configuration behaviour for an invalid RRC configuration

FFS

## 7.4 BMC

### General

For BMC testing, the UE manufacturers shall define CB data as PIXIT (CB-Data 1 and 2) for different CB message types and for CB Data41 (ANSI-41 data) and it shall describe how the reception is indicated in a clear way on UE side.

Only Cell Broadcast Services (CBS) as distributed BMC service is applied. For a UE supporting BMC, it is assumed, that there is a BMC entity established, if Initial conditions are reached.

If not otherwise mentioned, the same procedures as used in RRC test specification [TS 34.123-1] are applied to reach Initial conditions for BMC testing.

It shall be possible to activate and deactivate a CB message types by using the Message ID of CB data 1, 2 and CB41 data 1 on UE side.

## 7.4.1 BMC RAB + SRBs for CCCH + SRB for DCCH + SRB for BCCH

### 7.4.1.1 Transport channel parameters of BMC RAB and SRBs for CCCH, SRB for DCCH, and SRB for BCCH

Higher layer	RAB/signalling RB	SRB#1	SRB#2	SRB#3	SRB#4	SRB#5	SRB#6	RAB#30	
	User of Radio Bearer	RRC	RRC	RRC	NAS_DT High prio	NAS_DT Low prio	RRC	-	
RLC	Logical channel type	CCCH	DCCH	DCCH	DCCH	DCCH	BCCH	CTCH	
	RLC mode	UM	UM	AM	AM	AM	TM	UM	
	Payload sizes, bit	152	136 or 120*	128	128	128	166	152	
	Max data rate, bps	45600	40800 or 36000	38400	38400	38400	49800	45600	
	AMD/UMD/TrD PDU header, bit	8	8	16	16	16	0	8	
MAC	MAC header, bit	8	24 or 40	24	24	24	2	8	
	MAC multiplexing	7 logical channel multiplexing							
Layer 1	TrCH type	FACH							
	TB sizes, bit	168							
	TFS	TF0, bits	0x168						
		TF1, bits	1x168						
		TF2, bits	2x168						
		TF3, bits	3x168						
	TTL, ms	10							
	Coding type	CC 1/2							
	CRC, bit	16							
	Max number of bits/TTL before rate matching	1136							
RM attribute	200-240								

\* MAC header size and RLC payload size depend on use of U-RNTI or C-RNTI.

### 7.4.1.2 TFCS

TFCS size	4
TFCS	(BMC RAB and SRBs for CCCH/DCCH/BCCH) = TF0, TF1, TF2, TF3

### 7.4.1.3 Physical channel parameters

SCCPCH	DTX position	Flexible
	Spreading factor	64
	Number of TFCI bits/slot	8
	Number of Pilot bits/slot	0
	Number of data bits/slot	72
	Number of data bits/frame	1080

## 7.4.2 General BMC message reception

### 7.4.2.1 UE in RRC Idle mode

#### 7.4.2.1.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) as a type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of certain CBS message contents carried with certain activated CB message types in a clear way on UE side.

#### 7.4.2.1.2 Conformance requirement

A UE supporting Cell Broadcast Services shall be capable to receive BMC messages in the RRC Idle mode.

#### Reference(s)

TS 25.324 clause 9.1

#### 7.4.2.1.3 Test purpose

To verify, that a BMC configuration for a UE is able to receive activated CBS messages when in RRC Idle mode.

#### 7.4.2.1.4 Method of test

#### Initial conditions

UE is in RRC Idle mode; BMC entity is established

SS: 1 cell,

NOTE: The CB message ID stored on the SIM shall be known for this test (parameter for CBS PDU's). The CBS data type shall be allocated and activated in the UE.

#### Related ICS/IXIT Statement(s)

Support of BMC – Yes/No

Support of PS – Yes/No

ICS: CBS message support - YES/No

IXIT: CBS-Data 1: Octetstring of N (where  $N \geq 1$  and less than 1246)

NOTE: For CB-Data 1 IXIT, the manufacturer shall define CBS data as Octetstring together with the CB message ID used for transmitting this CB data, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. Furthermore, the manufacturer shall describe the indication on UE side (e.g. certain CBS traffic information)

#### Test procedure

- a) The UE in RRC Idle mode is triggered to wait for the next system information. The UE is activated to receive CBS messages,
- b) The UE and the SS have configured their RLC, MAC and PHYs layers with all CB related system information, broadcasted by SS
- c) The SS sends the CBS message containing an activated CBS message type according to CB-Data 1 to the UE; this shall be repeated for "CPREP" times (indicated by parameter "repetition period")
- d) The UE indicates in an unambiguous way, that this message was received, by certain clear indications (e.g. a unique part of the CB data contents)

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit this message as described below on the BCCH, in addition to the regular BCCH transmissions (see RRC test description). Included are CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - BMC Schedule Level 1 information (N,K)
2				The SS waits for about 10 s to make sure, that the UE is configured to receive CBS data
3		←	BMC CBS Message	Activated CBS message with CB Data 1 message content as described by the manufacturer. This message shall be repeated "CPREP" times, Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 1,
4				After having received the BMC CBS message the UE shall indicate the reception of CB Data 1 in a clear way.

## Specific Message Contents

## SYSTEM INFORMATION TYPE 5 AND 6

The contents of SYSTEM INFORMATION TYPE 5 AND 6 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode	(see RRC default test settings)
- CTCH allocation period	N
- CTCH frame offset	K
Secondary CCPCH system	1
- Secondary CCPCH information	(see RRC default test settings)
- TFCS	1
- FACH/PCH information	(see RRC default test settings)
- TFS	TRUE
- CTCH indicator	

## BMC CBS Message

Information Element	Value/remark
Message Type	1 (CBS message)
Message ID	Bitstring (16) CB message ID, it shall fit to the stored Message ID in the SIM inserted in the UE (source and type) [see TS 23.041] according to the transmitted CB-Data 1 content.
Serial Number	[see TS 23.041]
- Geographic Scope Indicator (2 bit)	11 (Normal Cell wide)
- Message Code (10 bit)	in accordance with the Message ID
- Update Number (4 bit)	for a new message: 0000, incremented by one for each repetition
Data Coding Scheme	Bitstring (16) ID of the alphabet/coding and the applied language [see TS 23.041]
CB Data	Octetstring, [see IXIT value: CB-Data 1]

#### 7.4.2.1.5 Test requirements

The UE shall store and decode a received activated CBS message.

### 7.4.2.2 UE in RRC Connected mode, state CELL\_PCH

#### 7.4.2.2.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) as a type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of certain CBS message contents carried with certain activated CB message types in a clear way on UE side.

#### 7.4.2.2.2 Conformance requirement

A UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages (...) in CELL\_PCH RRC-state of Connected mode.

#### Reference(s)

TS 25.324 clause 9.1

#### 7.4.2.2.3 Test purpose

To verify, that a BMC configuration for a UE is able to receive activated CBS messages when in RRC Connected mode, state CELL\_PCH.

#### 7.4.2.2.4 Method of test

#### Initial conditions

UE is in Connected mode state CELL\_PCH; BMC entity is established

SS: 1 cell,

NOTE: The CB message ID stored on the SIM shall be known for this test (parameter for CBS PDU's). The CBS data type shall be allocated and activated in the UE.

#### Related ICS/IXIT Statement(s)

ICS:

Support of BMC – Yes/No

Support of PS – Yes/No

CBS message support - YES/No

IXIT: CBS-Data 1: Octetstring of N (where  $N \geq 1$  and less than 1246)

NOTE: For CB-Data 1 IXIT, the manufacturer shall define CBS data as Octetstring together with the CB message ID used for transmitting this CB data, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. Furthermore, the manufacturer shall describe the indication on UE side (e.g. certain CBS traffic information)

#### Test procedure

- a) The UE in RRC CELL\_PCH is triggered to wait for the next system information. The UE is activated to receive CBS messages.
- b) The UE and the SS have configured their RLC, MAC and PHYs layers with all CB related system information, broadcasted by SS.

- c) The SS sends the CBS message containing an activated CBS message type according to CB-Data 1 to the UE; this shall be repeated for "CPREP" times (indicated by parameter "repetition period").
- d) The UE indicates in an unambiguous way, that this message was received, by certain clear indications (e.g. a unique part of the CB data contents).

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit this message as described below on the BCCH, in addition to the regular BCCH transmissions (see RRC test description). Included are CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - BMC Schedule Level 1 information (N,K)
2				The SS waits for about 10 s to make sure, that the UE is configured to receive CBS data
3		←	BMC CBS Message	Activated CBS message with CB Data 1 message content as described by the manufacturer. This message shall be repeated "CPREP" times, Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 1,
4				After having received the BMC CBS message the UE shall indicate the reception of CB Data 1 in a clear way.

#### Specific Message Contents

##### SYSTEM INFORMATION TYPE 5 and 6

The contents of SYSTEM INFORMATION TYPE 5 and 6 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode	(see RRC default test settings)
- CTCH allocation period	N
- CTCH frame offset	K
Secondary CCPCH system	1
- Secondary CCPCH information	(see RRC default test settings)
- TFCS	1
- FACH/PCH information	(see RRC default test settings)
- TFS	TRUE
- CTCH indicator	(see RRC default test settings)

## BMC CBS Message

Information Element	Value/remark
Message Type	1 (CBS message)
Message ID	Bitstring (16) CB message ID, it shall fit to the stored Message ID in the SIM inserted in the UE (source and type) [see TS 23.041] according to the transmitted CB-Data 1 content.
Serial Number - Geographic Scope Indicator (2 bit) - Message Code (10 bit) - Update Number (4 bit)	[see TS 23.041] 11 (Normal Cell wide) in accordance with the Message ID for a new message: 0000, incremented by one for each repetition
Data Coding Scheme	Bitstring (16) ID of the alphabet/coding and the applied language [see TS 23.041]
CB Data	Octetstring, [see IXIT value: CB-Data 1]

## 7.4.2.2.5 Test requirements

The UE shall store and decode a received activated CBS message.

## 7.4.2.3 UE in RRC Connected mode, state URA\_PCH

## 7.4.2.3.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) as a type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of certain CBS message contents carried with certain activated CB message types in a clear way on UE side.

## 7.4.2.3.2 Conformance requirement

A UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages (...) in CELL\_PCH and URA\_PCH RRC-state of Connected mode.

## Reference(s)

TS 25.324 clause 9.1.

## 7.4.2.3.3 Test purpose

To verify, that a BMC configuration for a UE is able to receive activated CBS messages when in RRC Connected mode, state URA\_PCH.

## 7.4.2.3.4 Method of test

## Initial conditions

UE is in Connected mode state URA\_PCH; BMC entity is established

SS: 1 cell.

NOTE: The CB message ID stored on the SIM shall be known for this test (parameter for CBS PDU's). The CBS data type shall be allocated and activated in the UE.

## Related ICS/IXIT Statement(s)

ICS:

Support of BMC – Yes/No

Support of PS – Yes/No

CBS message support - YES/No.

IXIT: CBS-Data 1: Octetstring of N (where  $N \geq 1$  and less than 1246).

NOTE: For CB-Data 1 IXIT, the manufacturer shall define CBS data as Octetstring together with the CB message ID used for transmitting this CB data, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. Furthermore, the manufacturer shall describe the indication on UE side (e.g. certain CBS traffic information)

#### Test procedure

- a) The UE in RRC URA\_PCH is triggered to wait for the next system information. The UE is activated to receive CBS messages.
- b) The UE and the SS have configured their RLC, MAC and PHYs layers with all CB related system information, broadcasted by SS.
- c) The SS sends the CBS message containing an activated CBS message type according to CB-Data 1 to the UE, this shall be repeated for "CPREP" times (indicated by parameter "repetition period").
- d) The UE indicates in an unambiguous way, that this message was received, by certain clear indications (e.g. a unique part of the CB data contents).

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit this message as described below on the BCCH, in addition to the regular BCCH transmissions (see RRC test description). Included are CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - BMC Schedule Level 1 information (N,K)
2				The SS waits for about 10 s to make sure, that the UE is configured to receive CBS data
3		←	BMC CBS Message	Activated CBS message with CB Data 1 message content as described by the manufacturer. This message shall be repeated "CPREP" times, Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 1,
4				After having received the BMC CBS message the UE shall indicate the reception of CB Data 1 in a clear way.

## Specific Message Contents

## SYSTEM INFORMATION TYPE 5 and 6

The contents of SYSTEM INFORMATION TYPE 5 and 6 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode	(see RRC default test settings)
- CTCH allocation period	N
- CTCH frame offset	K
Secondary CCPCH system	1
- Secondary CCPCH information	(see RRC default test settings)
- TFCS	1
- FACH/PCH information	(see RRC default test settings)
- TFS	TRUE
- CTCH indicator	(see RRC default test settings)

## BMC CBS Message

Information Element	Value/remark
Message Type	1 (CBS message)
Message ID	Bitstring (16) CB message ID, it shall fit to the stored Message ID in the SIM inserted in the UE (source and type) [see TS 23.041] according to the transmitted CB-Data 1 content.
Serial Number	[see TS 23.041]
- Geographic Scope Indicator (2 bit)	11 (Normal Cell wide)
- Message Code (10 bit)	in accordance with the Message ID
- Update Number (4 bit)	for a new message: 0000, incremented by one for each repetition
Data Coding Scheme	Bitstring (16) ID of the alphabet/coding and the applied language [see TS 23.041]
CB Data	Octetstring, [see IXIT value: CB-Data 1]

## 7.4.2.3.5 Test requirements

The UE shall store and decode a received activated CBS message.

## 7.4.2.4 UE in RRC Idle mode (ANSI-41 CB data)

## 7.4.2.4.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) for ANSI-41 CB data as a type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of a certain CBS41 message content carried with certain activated CB41 message types in a clear way on UE side.

## 7.4.2.4.2 Conformance requirement

A UE supporting Cell Broadcast Services shall be capable to receive BMC messages in RRC Idle mode. (...)BMC messages are identified: (...), CBS41 Message

## Reference(s)

TS 25.324 clause 9.1.

#### 7.4.2.4.3 Test purpose

To verify, that a BMC configuration supporting ANSI-41 CB Data is able to receive activated CBS41 messages when in RRC Idle mode.

#### 7.4.2.4.4 Method of test

##### Initial conditions

UE is in RRC Idle mode; BMC entity is established.

SS: 1 cell,

NOTE: The CB message ID stored on the SIM shall be known for this test (parameter for CBS41 PDU's). The CBS41 data type shall be allocated and activated in the UE.

##### Related ICS/IXIT Statement(s)

ICS:

Support of BMC – Yes/No

Support of PS – Yes/No

CBS41 message support - YES/No.

IXIT: CB41-Data 1: Octetstring of N (where  $N \geq 1$  and less than 1246).

NOTE: For CB41-Data 1 IXIT, the manufacturer shall define CBS data as Octetstring together with the CB message ID used for transmitting this CB41 data, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. Furthermore, the manufacturer shall describe the indication on UE side (e.g. certain CBS41 traffic information)

##### Test procedure

- a) The UE in RRC Idle mode is triggered to wait for the next system information. The UE is activated to receive expected CBS41 messages as described by the manufacturer.
- b) The UE and the SS have configured their RLC, MAC and PHYs layers with all CB related system information, broadcasted by SS.
- c) The SS sends the CBS41 message containing an activated CBS41 message type according to CB41-Data 1 to the UE; this shall be repeated for "CPREP" times (indicated by parameter "repetition period").
- d) The UE indicates in an unambiguous way, that this message was received, by certain clear indications (e.g. a unique part of the CB41 data contents).

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit this message as described below on the BCCH, in addition to the regular BCCH transmissions (see RRC test description). Included are CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - BMC Schedule Level 1 information (N,K) In addition, the MIB and SIB 16 are sent as described below to setup the ANSI-41 parameters
2				The SS waits for about 10 s to make sure, that the UE is configured to receive CB41 data
3		←	BMC CBS41 Message	Activated CBS message with CB41 Data 1 message content as described by the manufacturer. This message shall be repeated "CPREP" times, Parameter: - Message_type, - Broadcast Address - CB41-Data 1
4				After having received the BMC CBS message the UE shall indicate the reception of CB41 Data 1 in a clear way.

Specific Message Contents

#### MASTER INFORMATION BLOCK (MIB)

The contents of MASTER INFORMATION BLOCK Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
ANSI-41 Core Network information	Present

#### SYSTEM INFORMATION TYPE 5 AND 6

The contents of SYSTEM INFORMATION TYPE 5 AND 6 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode	(see RRC default test settings)
- CTCH allocation period	N
- CTCH frame offset	K
Secondary CCPCH system	1
- Secondary CCPCH information	(see RRC default test settings)
- TFCS	1
- FACH/PCH information	(see RRC default test settings)
- TFS	TRUE
- CTCH indicator	(see RRC default test settings)

## SYSTEM INFORMATION TYPE 13

The contents of SYSTEM INFORMATION TYPE 13 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE CN Type - CN domain specific NAS information - NAS (ANSI-41) system information	ANSI-41  T.B.D

## BMC CBS41 Message

Information Element	Value/remark
Message Type Broadcast Address CB Data41	3 (CBS41 Message) Bitstring (40) Address Information of higher layer Octetstring, [see IXIT value: CB41-Data 1] (ANSI-41)

## 7.4.2.4.5 Test requirements

The UE shall store and decode a received activated CBS41 message.

## 7.4.2.5 UE in RRC Connected mode, state CELL\_PCH (ANSI-41 CB data)

## 7.4.2.5.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) for ANSI-41 CB data as a type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of certain CBS41 message contents carried with certain activated CB41 message types in a clear way on UE side.

## 7.4.2.5.2 Conformance requirement

A UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages (...) in CELL\_PCH RRC-state of Connected mode. (...)BMC messages are identified: (...), CBS41 Message.

## Reference(s)

TS 25.324 clause 9.1.

## 7.4.2.5.3 Test purpose

To verify, that a BMC configuration supporting ANSI-41 CB Data is able to receive activated CBS41 messages when in RRC Connected mode, state CELL\_PCH.

## 7.4.2.5.4 Method of test

## Initial conditions

UE is in Connected mode state CELL\_PCH; BMC entity is established.

SS: 1 cell,

NOTE: The CB41 message ID stored on the SIM shall be known for this test (parameter for CBS41 PDU's). The CBS41 data type shall be allocated and activated in the UE.

Related ICS/IXIT Statement(s)

ICS:

Support of BMC – Yes/No

Support of PS – Yes/No

CBS41 message support - YES/No.

IXIT: CBS41-Data 1: Octetstring of N (where  $N \geq 1$  and less than 1246).

**NOTE:** For CB41-Data 1 IXIT, the manufacturer shall define CBS data as Octetstring together with the CB message ID used for transmitting this CB41 data, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. Furthermore, the manufacturer shall describe the indication on UE side

Test procedure

- a) The UE in RRC CELL\_PCH is triggered to wait for the next system information. The UE is activated to receive expected CBS41 messages as described by the manufacturer.
- b) The UE and the SS have configured their RLC, MAC and PHYs layers with all CB41 related system information, broadcasted by SS.
- c) The SS sends the CBS41 message containing an activated CBS41 message type according to CB41-Data 1 to the UE; this shall be repeated for "CPREP" times (indicated by parameter "repetition period").
- d) The UE indicates in an unambiguous way, that this message was received, by certain clear indications (e.g. a unique part of the CB41 data contents).

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit this message as described below on the BCCH, in addition to the regular BCCH transmissions (see RRC test description). Included are CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - BMC Schedule Level 1 information (N,K) In addition, the MIB and SIB 13 are sent as described below for setup the ANSI-41 parameters
2				The SS waits for about 10 s to make sure, that the UE is configured to receive CB41 data
3		←	BMC CBS41 Message	Activated CBS message with CB41 Data 1 message content as described by the manufacturer. This message shall be repeated "CPREP" times, Parameter: - Message_type, - Broadcast Address - CB41-Data 1
4				After having received the BMC CBS message the UE shall indicate the reception of CB41 Data 1 in a clear way.

## Specific Message Contents

## MASTER INFORMATION BLOCK (MIB)

The contents of MASTER INFORMATION BLOCK Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
ANSI-41 Core Network information	Present

## SYSTEM INFORMATION TYPE 5 and 6

The contents of SYSTEM INFORMATION TYPE 5 and 6 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode	(see RRC default test settings)
- CTCH allocation period	N
- CTCH frame offset	K
Secondary CCPCH system	1
- Secondary CCPCH information	(see RRC default test settings)
- TFCS	1
- FACH/PCH information	(see RRC default test settings)
- TFS	TRUE
- CTCH indicator	(see RRC default test settings)

## SYSTEM INFORMATION TYPE 13

The contents of SYSTEM INFORMATION TYPE 13 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE CN Type	ANSI-41
- CN domain specific NAS information	
- NAS (ANSI-41) system information	T.B.D

## BMC CBS41 Message

Information Element	Value/remark
Message Type	3 (CBS41 Message)
Broadcast Address	Bitstring (40) Address Information of higher layer
CB Data41	Octetstring, [see IXIT value: CB41-Data 1] (ANSI-41)

## 7.4.2.5.5 Test requirements

The UE shall store and decode a received activated CBS41 message.

## 7.4.2.6 UE in RRC Connected mode, state URA\_PCH (ANSI-41 CB data)

## 7.4.2.6.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) for ANSI-41 CB data as a type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of a certain CBS41 message content carried with certain activated CB41 message types in a clear way on UE side.

#### 7.4.2.6.2 Conformance requirement

A UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages (...) in URA\_PCH RRC-state of Connected mode. (...)BMC messages are identified: (...), CBS41 Message.

#### Reference(s)

TS 25.324 clause 9.1.

#### 7.4.2.6.3 Test purpose

To verify, that a BMC configuration supporting ANSI-41 CB Data is able to receive activated CBS41 messages when in RRC Connected mode, state URA\_PCH.

#### 7.4.2.3.4 Method of test

##### Initial conditions

UE is in Connected mode state URA\_PCH; BMC entity is established.

SS: 1 cell,

NOTE: The CB41 message ID stored on the SIM shall be known for this test (parameter for CBS41 PDU's). The CBS41 data type shall be allocated and activated in the UE.

##### Related ICS/IXIT Statement(s)

ICS:

Support of BMC – Yes/No

Support of PS – Yes/No

CBS41 message support - YES/No.

IXIT: CBS41-Data 1: Octetstring of N (where  $N \geq 1$  and less than 1246).

NOTE: For CB41-Data 1 IXIT, the manufacturer shall define CBS data as Octetstring together with the CB message ID used for transmitting this CB41 data, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. Furthermore, the manufacturer shall describe the indication on UE side (e.g. certain CBS41 traffic information).

##### Test procedure

- a) The UE in RRC URA\_PCH is triggered to wait for the next system information. The UE is activated to receive expected CBS41 messages as described by the manufacturer.
- b) The UE and the SS have configured their RLC, MAC and PHYs layers with all CB related system information, broadcasted by SS.
- c) The SS sends the CBS41 message containing an activated CBS41 message type according to CB41-Data 1 to the UE, this shall be repeated for "CPREP" times (indicated by parameter "repetition period").
- d) The UE indicates in an unambiguous way, that this message was received, by certain clear indications (e.g. a unique part of the CB41 data contents).

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit this message as described below on the BCCH, in addition to the regular BCCH transmissions (see RRC test description). Included are CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - BMC Schedule Level 1 information (N,K) In addition, the MIB and SIB 13 are sent as described below for setup the ANSI-41 parameters
2				The SS waits for about 10 s to make sure, that the UE is configured to receive CB41 data
3		←	BMC CBS41 Message	Activated CBS message with CB41 Data 1 message content as described by the manufacturer. This message shall be repeated "CPREP" times, Parameter: - Message_type, - Broadcast Address - CB41-Data 1
4				After having received the BMC CBS message the UE shall indicate the reception of CB41 Data 1 in a clear way.

## Specific Message Contents

## MASTER INFORMATION BLOCK (MIB)

The contents of MASTER INFORMATION BLOCK Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
ANSI-41 Core Network information	Present

## SYSTEM INFORMATION TYPE 5 and 6

The contents of SYSTEM INFORMATION TYPE 5 and 6 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode	(see RRC default test settings)
- CTCH allocation period	N
- CTCH frame offset	K
Secondary CCPCH system	1
- Secondary CCPCH information	(see RRC default test settings)
- TFCS	1
- FACH/PCH information	(see RRC default test settings)
- TFS	TRUE
- CTCH indicator	(see RRC default test settings)

## SYSTEM INFORMATION TYPE 13

The contents of SYSTEM INFORMATION TYPE 13 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE CN Type	ANSI-41
- CN domain specific NAS information	
- NAS (ANSI-41) system information	T.B.D

## BMC CBS41 Message

Information Element	Value/remark
Message Type	3 (CBS41 Message)
Broadcast Address	Bitstring (40) Address Information of higher layer
CB Data41	Octetstring, [see IXIT value: CB41-Data 1] (ANSI-41)

## 7.4.2.6.5 Test requirements

The UE shall store and decode a received activated CBS41 message.

## 7.4.3 BMC message reception procedure

## 7.4.3.1 Reception of certain CBS message types

## 7.4.3.1.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) as type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of two different CBS message contents carried with different activated CB message types in a clear way on UE side.

It shall be possible to activate/deactivate the CBS message types used to receive CB Data 1 or 2.

## 7.4.3.1.2 Conformance requirement

A UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages in RRC Idle mode.

The BMC entity on UE side evaluates received BMC Schedule Messages and takes decisions which BMC messages are received.

If not otherwise requested by upper layers, only those CB messages received in BMC CBS Messages should be delivered to upper layers for which the Serial Number associated with the CB message has changed. This implies that the BMC has to store the last received Serial Number of each CB message activated by upper layers.

## Reference(s)

TS 25.324 clause 9.1.

TS 25.324 clause 9.4.

## 7.4.3.1.3 Test purpose

1. To verify, that a UE supporting CBS ignores a deactivated CBS message type which has been broadcasted by SS.
2. To verify, that a UE only stores Serial Numbers of a newly transmitted CBS messages. This shall be verified by indication of a received CBS message with changed Serial Number as indication for the storage of Serial Numbers.

## 7.4.3.1.4 Method of test

## Initial conditions

UE is in RRC Idle mode.

SS: 1 cell,

NOTE: The CB message ID stored on the SIM shall be known for this test (as parameter for the CBS message PDU). The CBS data type shall be allocated and in the UE. It shall be possible to activate/deactivate such CBS data type.

## Related ICS/IXIT Statement(s)

ICS:

Support of BMC – Yes/No

Support of PS – Yes/No

CBS message support - YES/No.

IXIT:

- CBS-Data 1: Octetstring of N (where  $N \geq 1$  and less than 1246), with used CB message ID for CB-Data 1.
- CBS-Data 2: Octetstring of N (where  $N \geq 1$  and less than 1246), with used CB message ID for CB-Data 2 (CB message ID for CB-Data 1 shall be different to CB message ID for CB-Data 2).

NOTE: For CBS data IXIT's, the manufacturer shall define CBS data as Octetstring as described in the IXIT, which is indicated by the UE after reception in a clear way according to the capabilities stored on the SIM. The manufacturer shall describe the indication on UE side for both CBS data types (e.g. certain CBS broadcast information shown in the display of the UE).

## Test procedure

- a) The UE in RRC Idle mode is triggered to wait for the next system information. The UE is activated to receive CBS data 1, CBS data 2) are deactivated.
- b) The UE and the SS have configured their RLC, MAC and PHY's layers with all CB related system information, broadcasted by SS.
- c) The SS sends the first BMC CBS schedule message to predict the next CBS messages to the UE.
- d) The SS sends the CBS message containing CB-Data 1 to the UE, together with the CBS schedule message to predict the next CBS messages (repetition of CB Data 1, and the next CBS schedule message).
- e) The UE indicates on an unambiguous way, that this CB-Data 1 has been received by the UE (e.g. a unique part of the CBS data contents shown on the display).
- f) The SS sends the repeated CB Data 1, and the next CBS schedule message to predict the next CBS messages to the UE. (CBS schedule message predicts the first repetition of CB Data).
- g) The UE indicates on an unambiguous way, that CB-Data 2 has been received by the UE (e.g. a unique part of the CBS data contents shown in the display).
- h) The UE deactivates the CB Message type ID used for CB-Data 1.
- i) The SS sends the CB Data 2 (as deactivated CB Data type) to the UE.
- j) The UE ignores the newly received CB-Data 2, i.e. there is no indication for this CB Data 2 as described in step e).

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	Transmit these messages as described below on the BCCH, in addition to the regular BCCH transmissions. Included are all CB related system information parameter of the CBS: - CTCH ID, - FACH ID and associated format set, - S-CCPCH ID, - BMC Schedule Level 1 information (N,K)
2				The SS waits for about 10 s to make sure, that the UE is configured to receive the CBS Data message
3		←	BMC CBS Schedule	Inband CBS schedule message with BMC schedule information Level 2 (DRX) to predict the next CB data block (CB Data 1 –new-, CBS Schedule message)
4		←	BMC CBS Message	Activated CBS message with certain CB data content (CBS data 1 as described by the manufacturer). This message is sent the first time. Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 1 (new)
5				After having received the BMC CB-Data 1 the UE shall indicate the reception in a clear way.
6		←	BMC CBS Schedule	Inband CBS schedule message with BMC schedule information Level 2 (DRX) to predict the next CB data block (CB Data 1 –rep.1-, CBS Schedule message)
7		←	BMC CBS Message	Activated CBS message with certain CB data content (CBS data 1 as described by the manufacturer). This message is repeated. Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 1 (old)
8				The UE deactivates "CB message type ID" used for CB-Data 1
9		←	BMC CBS Schedule	Inband CBS schedule message with BMC schedule information Level 2 (DRX) to predict the next CB data block (CB Data 2 –new-).
10		←	BMC CBS Message	Deactivated CBS message with certain CB data content (CBS data 2 as described by the manufacturer). This message is sent the first time. Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 2 (new)
11				After having received the BMC CBS message (CB-Data 2) the UE shall ignore the newly received CBS data 1 message, i.e. there is no indication as described by the manufacturer.

## Specific Message Contents

## SYSTEM INFORMATION TYPE 5 and 6

The contents of SYSTEM INFORMATION TYPE 5 and 6 Information Element in this test case are identical to those of the default contents of layer 3 messages for RRC tests [TS 34.123-1] with the following exceptions:

Information Element	Value/remark
CHOICE mode	(see RRC default test settings)
- CTCH allocation period	N
- CTCH frame offset	K
Secondary CCPCH system	1
- Secondary CCPCH information	(see RRC default test settings)
- TFCS	1
- FACH/PCH information	(see RRC default test settings)
- TFS	TRUE
- CTCH indicator	(see RRC default test settings)

## BMC CBS Message (Step 4 and 7)

Information Element	Value/remark
Message Type	1 (CBS message)
Message ID	Bitstring (16) CB message ID, it shall fit to the stored Message ID in the SIM inserted in the UE (source and type) [see TS 23.041]
Serial Number	[see TS 23.041]
- Geographic Scope Indicator (2 bit)	11 (Normal Cell wide)
- Message Code (10 bit)	according with the Message ID
- Update Number (4 bit)	for a new message: 0000, incremented by one for each repetition
Data Coding Scheme	Bitstring (16) ID of the alphabet/coding and the applied language [see TS 23.041]
CB Data	Octetstring, [see IXIT value: CB-Data 1]

## BMC CBS Message (Step 10)

Information Element	Value/remark
Message Type	1 (CBS message)
Message ID	Bitstring (16) CB message ID, it shall fit to the stored Message ID in the SIM inserted in the UE (source and type) [see TS 23.041]
Serial Number	[see TS 23.041]
- Geographic Scope Indicator (2 bit)	11 (Normal Cell wide)
- Message Code (10 bit)	according with the Message ID
- Update Number (4 bit)	for a new message: 0000, incremented by one for each repetition
Data Coding Scheme	Bitstring (16) ID of the alphabet/coding and the applied language [see TS 23.041]
CB Data	Octetstring, [see IXIT value: CB-Data 2]

## BMC Schedule Message (Step 3, 6 and Step 9)

The parameters for BMC Schedule Message (inband schedule message) in Step 5 are inserted for CB-Data 2 and in Step 8 for CB-Data 1.

Information Element	Value/remark
Message Type	2 (Schedule message)
Offset to begin CTCH BS index	calculated offset value of the BS (Integer: 0...255) as recommended in TR 25.925
Length of CBS Schedule Period	Number of consecutive CTCH BS of the next CBS Schedule Period, (Integer: 1...255) as recommended in TR 25.925
New Message Bitmap	Bitmap (N*8), N = Length of CBS Schedule Period as recommended in TR 25.925
Message Description	1 for new message (see TS 25.324, Table 11.9-3)
- Message Description Type	5 for old message (see TS 25.324, Table 11.9-3)
- Message ID	CB message ID used for the next CB data
- Offset to CTCH (BS index of first transmission)	for Message description type 1 or 5: CB message ID IE included (see TS 23.041)

#### 7.4.3.1.5 Test requirements

After having received the CB-Data 1 message (step 4), the UE shall store the Serial Number of this message and indicate the reception of the CBS message as described by the manufacturer.

After CB-Data 2 message was newly broadcasted (step 10), the UE shall not indicate the reception for the deactivated CBS message (CB-Data 1).

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## 8 Radio Resource Control RRC

### 8.1 RRC Connection Management Procedure

#### 8.1.1 Paging

##### 8.1.1.1 Paging for Connection in idle mode

###### 8.1.1.1.1 Definition

###### 8.1.1.1.2 Conformance requirement

A UE in idle mode, CELL\_PCH state or URA\_PCH state shall receive the paging information for all its monitored paging occasions. For an UE in idle mode, the paging occasions are specified in [25.304] and depend on the IE "CN domain specific DRX cycle length coefficient", as specified in subclause 8.6.3.1a. For a UE in CELL\_PCH state or URA\_PCH state, the paging occasions depend also on the IE "UTRAN DRX cycle length coefficient" and the IE "RRC State Indicator", as specified in subclauses 8.6.3.2 and 8.6.3.3 respectively.

When the UE receives a PAGING TYPE 1 message, it shall perform the actions as specified below.

If the UE is in idle mode, for each occurrence of the IE "Paging record" included in the message the UE shall:

- 1> if the IE "Used paging identity" is a CN identity:
  - 2> compare the IE "UE identity" with all of its allocated CN UE identities:
  - 2> if one match is found:
    - 3> indicate reception of paging; and
    - 3> forward the IE "CN domain identity", the IE "UE identity" and the IE "Paging cause" to the upper layers.
- 1> otherwise:
  - 2> ignore that paging record.

:

In the UE, the initial direct transfer procedure shall be initiated, when the upper layers request establishment of a signalling connection. This request also includes a request for the transfer of a NAS message.

Upon initiation of the initial direct transfer procedure when the UE is in idle mode, the UE shall:

- 1> set the variable ESTABLISHMENT\_CAUSE to the cause for establishment indicated by upper layers;
- 1> perform an RRC connection establishment procedure, according to subclause 8.1.3;
- 1> if the RRC connection establishment procedure was not successful:
  - 2> indicate failure to establish the signalling connection to upper layers and end the procedure.
- 1> when the RRC connection establishment procedure is completed successfully:
  - 2> continue with the initial direct transfer procedure as below.

Upon initiation of the initial direct transfer procedure when the UE is in CELL\_PCH or URA\_PCH state, the UE shall:

- 1> perform a cell update procedure, according to subclause 8.3.1, using the cause "uplink data transmission";
- 1> when the cell update procedure completed successfully:

2> continue with the initial direct transfer procedure as below.

The UE shall, in the INITIAL DIRECT TRANSFER message:

- 1> set the IE "NAS message" as received from upper layers; and
- 1> set the IE "CN domain identity" as indicated by the upper layers; and
- 1> set the IE "Intra Domain NAS Node Selector" as follows:
  - 2> derive the IE "Intra Domain NAS Node Selector" from TMSI/PMTSI, IMSI, or IMEI; and
  - 2> provide the coding of the IE "Intra Domain NAS Node Selector" according to the following priorities:
    1. derive the routing parameter for IDNNS from TMSI (CS domain) or PTMSI (PS domain) whenever a valid TMSI/PTMSI is available;
    2. base the routing parameter for IDNNS on IMSI when no valid TMSI/PTMSI is available;
    3. base the routing parameter for IDNNS on IMEI only if no (U)SIM is inserted in the UE.
- 1> calculate the START according to subclause 8.5.9 for the CN domain as set in the IE "CN Domain Identity"; and
- 1> include the calculated START value for that CN domain in the IE "START".

In CELL\_FACH state, the UE shall:

- 1> include a measurement report in the IE "Measured results on RACH", as specified in the IE "Intra-frequency reporting quantity for RACH reporting" and the IE "Maximum number of reported cells on RACH" in System Information Block type 12 (or "System Information Block Type 11" if "System Information Block Type 12" is not being broadcast);
- 1> include in the IE "Measured results on RACH" all requested reporting quantities for cells for which measurements are reported.

The UE shall:

- 1> transmit the INITIAL DIRECT TRANSFER message on the uplink DCCH using AM RLC on signalling radio bearer RB3;
- 1> when the INITIAL DIRECT TRANSFER message has been submitted to lower layers for transmission:
  - 2> confirm the establishment of a signalling connection to upper layers; and
  - 2> add the signalling connection with the identity indicated by the IE "CN domain identity" in the variable ESTABLISHED\_SIGNALLING\_CONNECTIONS.
- 1> when the successful delivery of the INITIAL DIRECT TRANSFER message has been confirmed by RLC:
  - 2> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.1.2 and 8.1.8, 3GPP TS 25.211 clause 5.3.3.10 (FDD), 3GPP TS 25.221 (TDD), 3GPP TS 25.304 clause 8.

### 8.1.1.1.3 Test purpose

To confirm that the UE establishes an RRC connection after it receives a PAGING TYPE 1 message which includes IE "UE identity"(in IE "Paging Record") set to the IMSI of the UE, and responds with a correct INITIAL DIRECT TRANSFER message.

## 8.1.1.1.4 Method of test

## Initial Condition

System Simulator: 1 cell

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 with a CN UE identity (set to IMSI), depending on the CN domain(s) supported by the UE.

## Test Procedure

SS transmits SYSTEM INFORMATION BLOCK TYPE 1 or 13 messages, depending on the CN type supported by the UE. The SS transmits a PAGING TYPE 1 message, which includes an unmatched CN UE identity for the UE in the idle state. The UE shall not change its state. The SS transmits a PAGING TYPE 1 message, which includes a matched CN UE identity for the UE in the idle state. During transmission of PAGING TYPE 1 messages, SS selects the correct paging indicator on the PICH in order to allow the UE to respond to paging. Then the UE transmits an RRC CONNECTION REQUEST to the SS, the SS transmits an RRC CONNECTION SETUP to the UE. When the UE receives this message, the UE establishes an RRC connection and transmits an RRC CONNECTION SETUP COMPLETE message and an INITIAL DIRECT TRANSFER message on the uplink DCCH.

NOTE: For UEs supporting GSM-MAP CN type only, SYSTEM INFORMATION TYPE 1 messages are to be sent by SS in this test case. On the other hand, SS transmits SYSTEM INFORMATION TYPE 13 messages if the UE under test supports only ANSI-41 CN type.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	SYSTEM INFORMATION BLOCK TYPE 13 or SYSTEM INFORMATION BLOCK TYPE 1	Transmit these messages on the BCCH, in addition to the normal BCCH transmissions. See specific message contents.
2		←	PAGING TYPE 1	The SS transmits the message, which includes an unmatched identity (incorrect IMSI), and the UE does not change its state.
3		←	PAGING TYPE 1	The SS transmits the message, which includes a matched identity (test-SIM IMSI).
4		→	RRC CONNECTION REQUEST	
5		←	RRC CONNECTION SETUP	SS assigns DPCH resources to allow UE to establish an RRC connection.
6		→	RRC CONNECTION SETUP COMPLETE	
7		→	INITIAL DIRECT TRANSFER	

## Specific Message Contents

## SYSTEM INFORMATION BLOCK TYPE 1 (Step 1) – for UEs supporting GSM-MAP core networks

Information Element	Value/remark
CN common GSM-MAP NAS system information	LAC
CN domain system information list	Only 1 entry
- CN domain system information	Supported Domain (PS Domain or CS Domain)
- CN domain identity	GSM-MAP
- CHOICE CN Type	1E 01(CS) or 00 00(PS)
- CN domain specific NAS system information	7
- CN domain specific DRX cycle length coefficient	
UE Timers and constants in idle mode	
- T300	4000 milliseconds
- N300	7
- T312	10 seconds
- N312	1

## SYSTEM INFORMATION TYPE 13 (Step 1) – for UEs supporting ANSI-41 core networks

Information Element	Value/remark
CN domain system information list	Only 1 entry
CN domain system information	Supported Domain (PS Domain or CS Domain)
- CN domain identity	ANSI-41
- CHOICE CN Type	Default
- CN domain specific NAS system information	7
- CN domain specific DRX cycle length coefficient	
UE Timers and constants in idle mode	
- T300	4000 milliseconds
- N300	7
- T312	10 sec
- N312	1

## PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Message Type	
Paging record list	Only 1 entry
Paging record	
CHOICE Used paging identity	CN identity
- Paging cause	Terminating Call with one of the supported services
- CN domain identity	Registered Domain (PS Domain or CS Domain)
- CHOICE UE Identity	IMSI
- IMSI	Set to an arbitrary octet string of length 7 bytes which is different from the IMSI value stored in the TEST USIM card.
BCCH modification info	Not Present

## PAGING TYPE 1 (Step 3)

Information Element	Value/remark
Message Type	
Paging record list	Only 1 entry
Paging record	
CHOICE Used paging identity	CN identity
- Paging cause	Terminating Call with one of the supported services
- CN domain identity	Registered Domain (PS Domain or CS Domain )
- CHOICE UE Identity	IMSI
- IMSI	Set to the same octet string as in the IMSI stored in the TEST USIM card
BCCH modification info	Not Present

## RRC CONNECTION REQUEST (Step 4)

Information Element	Value/remark
Message type	
Initial UE identity	Same as the IMSI stored in the TEST USIM card, or the registered TMSI or P-TMSI
Establishment Cause	Check to see if it is set to the same value as "Paging Cause" IE in the PAGING TYPE 1 message transmitted on step 3.
Protocol Error Indicator	Check to see if it is set to FALSE
Measured results on RACH	Not checked.

## INITIAL DIRECT TRANSFER (Step 7) – for UEs supporting GSM-MAP core networks

Information Element	Value/remark
Message Type	
Integrity check info	Not present
CN domain identity	CS domain or PS domain
Intra Domain NAS Node Selector	
- CHOICE version	R99
-- CHOICE CN type	GSM-MAP
--- CHOICE Routing basis	IMSI (response to IMSI paging)
---- Routing parameter	Bit string (10) consisting of DecimalToBinary [(IMSI div 10) mod 1000]. The bits of the result are numbered from b0 to b9, with bit b0 being the least significant..
--- Entered parameter	False
NAS message	Not checked
START	Not checked
Measured results on RACH	Not checked

## INITIAL DIRECT TRANSFER (Step 7) – for UEs supporting ANSI-41 core networks

Information Element	Value/remark
Message Type	
Integrity check info	Not present
CN domain identity	CS domain or PS domain
Intra Domain NAS Node Selector	
- CHOICE version	ANSI-41 : Bitstring(14), all bits set to 0
NAS message	Not checked
START	Not checked
Measured results on RACH	Not checked

## 8.1.1.1.5 Test requirement

After step 2 the UE shall not transmit on the uplink CCCH in order to establish a RRC connection.

After step 5 the UE shall have an RRC connection based on dedicated physical channel resources and transmit an RRC CONNECTION SETUP COMPLETE message and INITIAL DIRECT TRANSFER message on the uplink DCCH.

## 8.1.1.2 Paging for Connection in connected mode (CELL\_PCH)

## 8.1.1.2.1 Definition

## 8.1.1.2.2 Conformance requirement

A UE in idle mode, CELL\_PCH state or URA\_PCH state shall receive the paging information for all its monitored paging occasions. For an UE in idle mode, the paging occasions are specified in [25.304] and depend on the IE "CN domain specific DRX cycle length coefficient", as specified in subclause 8.6.3.1a. For a UE in CELL\_PCH state or URA\_PCH state, the paging occasions depend also on the IE "UTRAN DRX cycle length coefficient" and the IE "RRC State Indicator", as specified in subclauses 8.6.3.2 and 8.6.3.3 respectively.

When the UE receives a PAGING TYPE 1 message, it shall perform the actions as specified below.

:

If the UE is in connected mode, for each occurrence of the IE "Paging record" included in the message the UE shall:

- 1> if the IE "Used paging identity" is a UTRAN identity and if this U-RNTI is the same as the U-RNTI allocated to the UE:
  - 2> if the optional IE "CN originated page to connected mode UE" is included:
    - 3> indicate reception of paging; and
    - 3> forward the IE "CN domain identity", the IE "Paging cause" and the IE "Paging record type identifier" to the upper layers.
  - 2> otherwise:
    - 3> perform a cell update procedure with cause "paging response" as specified in subclause 8.3.1.2.
  - 2> ignore any other remaining IE "Paging record" that may be present in the message.
- 1> otherwise:
  - 2> ignore that paging record.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- includes "CN information elements"; or
- includes the IE "Ciphering mode info"; or
- includes the IE "Integrity protection mode info"; or
- includes the IE "New C-RNTI"; or
- includes the IE "New U-RNTI":

the UE shall:

- 1> transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

## Reference

3GPP TS 25.331 clause 8.1.2, [8.3.1.7](#).

### 8.1.1.2.3 Test purpose

To confirm that the UE enters the CELL\_FACH state after it receives a PAGING TYPE 1 message which indicates that the paging has originated from UTRAN. To verify that the UE performs cell update procedure after entering the CELL\_FACH state.

### 8.1.1.2.4 Method of test

## Initial Condition

System Simulator: 1 cell

UE: CELL\_PCH state (state 6-12) as specified in clause 7.4 of TS 34.108, with a valid U-RNTI already assigned by the SS.

## Test Procedure

SS transmits SYSTEM INFORMATION BLOCK TYPE 1 or 13 messages, depending on the CN type supported by the UE. The SS transmits a PAGING TYPE 1 message, which includes an unmatched U-RNTI. The UE does not change its state. Then SS transmits a PAGING TYPE 1 message with a matched identifier but originates from the CN instead of UTRAN. The UE shall not change state after receiving this message. The SS transmits a PAGING TYPE 1 message, which includes a matched U-RNTI. Then the UE enters the CELL\_FACH state and performs the cell updating procedure.

NOTE: For UEs supporting GSM-MAP CN type only, SYSTEM INFORMATION TYPE 1 messages are to be sent by SS in this test case. On the other hand, SS transmits SYSTEM INFORMATION TYPE 13 messages if the UE under test supports only ANSI-41 CN type.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	SYSTEM INFORMATION BLOCK TYPE 13 or SYSTEM INFORMATION BLOCK TYPE 1	Transmit these messages on the BCCH, in addition to the normal BCCH transmissions. See specific message contents
2		←	PAGING TYPE 1	The SS transmits a message including an unmatched identifier. UE shall not respond to the paging.
3		←	PAGING TYPE 1	The SS transmits a message includes a matched identifier but with the used paging identity being a CN identity, UE shall not respond to the paging.
4		←	PAGING TYPE 1	The SS transmits the message with used paging identity being a UTRAN identity and including the UE's assigned U-RNTI
5		→	CELL UPDATE	The UE enters the CELL_FACH state. UE performs cell updating procedure. The CELL UPDATE message shall contain the value "Cell Update Cause" set to "paging response".
6		←	CELL UPDATE CONFIRM	See message content.
7		→	UTRAN MOBILITY INFORMATION CONFIRM	

## Specific Message Contents

## PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Message Type	Only 1 entry
Paging record list	
Paging record	UTRAN identity
- CHOICE Used paging identity	
- U-RNTI	Set to an arbitrary 16-bit string which is different from the SRNC identity assigned.
- SRNC Identity	
- S-RNTI	Set to an arbitrary 20-bit string which is different from the S-RNTI assigned.
- CN originated page to connected mode UE	Not Present
BCCH modification info	Not Present

## PAGING TYPE 1 (Step 3)

Same as the PAGING TYPE 1 message as in step 3 of clause 8.1.1.1.4.

## PAGING TYPE 1 (Step 4)

Information Element	Value/remark
Message Type	Only 1 entry
Paging record list	
Paging record	UTRAN identity
- CHOICE Used paging identity	
- U-RNTI	
- SRNC Identity	Set to the same SRNC identity as previously assigned.
- S-RNTI	Set to the same S-RNTI as previously assigned.
- CN originated page to connected mode UE	Not Present
BCCH modification info	Not Present

## SYSTEM INFORMATION BLOCK TYPE 13

Use the same SYSTEM INFORMATION BLOCK TYPE 13 message as specified in clause 8.1.1.1.4.

## SYSTEM INFORMATION BLOCK TYPE 1

Use the same SYSTEM INFORMATION BLOCK TYPE 1 message as specified in clause 8.1.1.1.4.

## CELL UPDATE CONFIRM (Step 6)

Use the message sub-type in default message content defined in [9] (TS 34.108) Clause 9, with the following exceptions.

Information Element	Value/Remarks
New C-RNTI	'1010 1010 1010 1010'

## UTRAN MOBILITY INFORMATION CONFIRM (Step 7)

Only the message type is checked.

## 8.1.1.2.5 Test requirement

After step 2 the UE shall not respond to the PAGING TYPE 1 message sent in step 2.

After step 3 the UE shall not respond to the PAGING TYPE 1 message sent in step 3.

After step 4 the UE shall enter the CELL\_FACH state and send a CELL\_UPDATE message with "Cell Update Cause" IE set to "paging response".

After step 6 the UE shall be in the CELL\_FACH state and shall transmit UTRAN MOBILITY INFORMATION CONFIRM message.

## 8.1.1.3 Paging for Connection in connected mode (URA\_PCH)

## 8.1.1.3.1 Definition

## 8.1.1.3.2 Conformance requirement

A UE in idle mode, CELL\_PCH state or URA\_PCH state shall receive the paging information for all its monitored paging occasions. For an UE in idle mode, the paging occasions are specified in [25.304] and depend on the IE "CN domain specific DRX cycle length coefficient", as specified in subclause 8.6.3.1a. For a UE in CELL\_PCH state or URA\_PCH state, the paging occasions depend also on the IE "UTRAN DRX cycle length coefficient" and the IE "RRC State Indicator", as specified in subclauses 8.6.3.2 and 8.6.3.3 respectively.

When the UE receives a PAGING TYPE 1 message, it shall perform the actions as specified below.

:

If the UE is in connected mode, for each occurrence of the IE "Paging record" included in the message the UE shall:

- 1> if the IE "Used paging identity" is a UTRAN identity and if this U-RNTI is the same as the U-RNTI allocated to the UE:
  - 2> if the optional IE "CN originated page to connected mode UE" is included:
    - 3> indicate reception of paging; and
    - 3> forward the IE "CN domain identity", the IE "Paging cause" and the IE "Paging record type identifier" to the upper layers.
  - 2> otherwise:
    - 3> perform a cell update procedure with cause "paging response" as specified in subclause 8.3.1.2.
  - 2> ignore any other remaining IE "Paging record" that may be present in the message.
- 1> otherwise:
  - 2> ignore that paging record.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- includes "CN information elements"; or
- includes the IE "Ciphering mode info"; or
- includes the IE "Integrity protection mode info"; or
- includes the IE "New C-RNTI"; or
- includes the IE "New U-RNTI":

the UE shall:

- 1> transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

## Reference

3GPP TS 25.331 clause 8.1.2, [8.3.1.7](#).

### 8.1.1.3.3 Test purpose

To confirm that the UE enters the CELL\_FACH state after it receives a PAGING TYPE 1 message in which the IE "Used paging identity" is set to "UTRAN identity", and the UE takes the U-RNTI value assigned to it in the IE "U-RNTI".

### 8.1.1.3.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: URA\_PCH state (state 6-13) as specified in clause 7.4 of TS 34.108, with a valid U-RNTI assigned by the SS.

#### Test Procedure

The SS transmits a PAGING TYPE 1 message, which includes an unmatched U-RNTI. The UE does not change its current state. The SS transmits a PAGING TYPE 1 message which includes a matched U-RNTI. Then the UE listens to

it and enters the CELL\_FACH state to transmit a CELL UPDATE message using uplink CCCH in response to the paging.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PAGING TYPE 1	The SS transmits the message that includes an unmatched identifier, but UE does not change its state.
2		←	PAGING TYPE 1	The SS transmits the message that includes a matched identifier.
3		→	CELL UPDATE	The UE enters the CELL_FACH state.
4		←	CELL UPDATE CONFIRM	See message content.
5		→	UTRAN MOBILITY INFORMATION CONFIRM	

Specific Message Contents

PAGING TYPE 1 (Step 1)

Information Element	Value/remark
Message Type	Only 1 entry
Paging record list	
Paging record	UTRAN identity
- CHOICE Used paging identity	
- U-RNTI	Set to an unused SRNC identity which is different from the SRNC identity assigned.
- SRNC Identity	
- S-RNTI	Set to an arbitrary 20-bit string which is different from the S-RNTI assigned.
- CN originated page to connected mode UE	Not Present
BCCH modification info	Not Present

PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Message Type	Only 1 entry
Paging record list	
Paging record	UTRAN identity
- CHOICE Used paging identity	
- U-RNTI	Set to the previously assigned SRNC identity
- SRNC Identity	
- S-RNTI	Set to previously assigned S-RNTI
- CN originated page to connected mode UE	Not Present
BCCH modification info	Not Present

CELL UPDATE CONFIRM (Step 4)

Use the message sub-type in default message content defined in [9] (TS 34.108) Clause 9, with the following exceptions.

Information Element	Value/Remarks
New C-RNTI	'1010 1010 1010 1010'

UTRAN MOBILITY INFORMATION CONFIRM (Step 5)

Only the message type is checked.

#### 8.1.1.3.5 Test requirement

After step 1 the UE shall not respond to the paging.

After step 2 the UE shall enter the CELL\_FACH state, and transmit CELL\_UPDATE message to initiate the cell updating procedure with the paging cause set to "paging response".

After step 4 the UE shall be in the CELL\_FACH state and shall transmit UTRAN\_MOBILITY\_INFORMATION\_CONFIRM message.

### 8.1.1.4 Paging for notification of BCCH modification in idle mode

#### 8.1.1.4.1 Definition

#### 8.1.1.4.2 Conformance requirement

A UE in idle mode state shall receive the paging information for all its monitored paging occasions. For an UE in idle mode, the paging occasions are specified in TS 25.304 and depend on the IE "CN domain specific DRX cycle length coefficient".

When the UE receives a PAGING\_TYPE 1 message, it shall perform the actions as specified below.

...

If the IE "BCCH modification info" is included, any UE in idle mode state shall perform the actions as specified in TS 25.331 subclause 8.1.1 in addition to any actions caused by the IE "Paging record" occurrences in the message.

The UE shall:

- 1> compare the value of IE "MIB value tag" in the IE "BCCH modification info" with the value tag stored for the master information block in variable VALUE\_TAG.
- 1> if the value tags differ:
  - 2> read the master information block on BCH;
  - 2> if the value tag of the master information block in the system information is the same as the value in IE "MIB value tag" in "BCCH modification info" but different from the value tag stored in the variable VALUE\_TAG:
    - 3> perform actions as specified in TS 25.331 subclause 8.1.1.5.

...

Upon reception of the master information block, the UE shall:

- 1> compare the value tag in the master information block with the value tag stored for this cell and this PLMN in the variable VALUE\_TAG;
- 1> if the value tags differ:
  - 2> store the value tag into the variable VALUE\_TAG for the master information block;
  - 2> read and store scheduling information included in the master information block.

....

For all system information blocks or scheduling blocks that are supported by the UE referenced in the master information block or the scheduling blocks, the UE shall perform the following actions:

- 1> for all system information blocks with area scope "PLMN" or "Equivalent PLMN" that use value tags:
  - 2> compare the value tag read in scheduling information for that system information block with the value stored within the variable VALUE\_TAG for that system information block;
  - 2> if the value tags differ:

3> store the value tag read in scheduling information for that system information block into the variable VALUE\_TAG;

3> read and store the IEs of that system information block.

...

#### Reference

3GPP TS 25.331 clause 8.1.1, 8.1.2.

#### 8.1.1.4.3 Test purpose

To confirm that the UE checks the new value tag of the master information block and reads the updated SYSTEM INFORMATION BLOCK messages after it receives a PAGING TYPE 1 message which includes the IE "BCCH Modification Information".

#### 8.1.1.4.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 with a CN UE identity, depending on the CN domain(s) supported by the UE.

## Test Procedure

The SS transmits a PAGING TYPE 1 message. This message addresses the UE using its IMSI and the "paging cause" IE set to a terminating call type that is supported by the UE. The UE shall respond with RRC CONNECTION REQUEST message. Then SS shall transmit RRC CONNECTION REJECT message to UE.

The SS transmits a PAGING TYPE 1 message on the paging occasions assigned to the UE. The message shall include the IE "BCCH Modification Information" indicating the time when the first modified master information block is available. Before the starting time, SS continuously broadcast the original MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on the BCCH mapped to BCH transport channel. SS maintains this status until the SFN which corresponds to the modification time is reached. Then it transmits the new master information block followed by the new SYSTEM INFORMATION BLOCK TYPE 5 message. In the new SIB TYPE 5 message, the IE "Available Signature" is different when compared to the original SIB TYPE 5 message.

At the paging occasion, SS transmits a new PAGING TYPE 1 message. This message addresses the UE using its IMSI and the "paging cause" IE set to a terminating call type that is supported by the UE. The UE shall respond with RRC CONNECTION REQUEST message. Then SS shall transmit RRC CONNECTION REJECT message to UE.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PAGING TYPE 1	SS starts to transmit this message on the PCCH at the correct paging occasion.
1a		→	RRC CONNECTION REQUEST	
1b		←	RRC CONNECTION REJECT	
2		←	PAGING TYPE 1	SS transmits the message including the IE "BCCH Modification Information", with the "Value Tag" changed from the "MIB Value Tag" of the current Master Information Block. Also the BCCH modification time is set to 2048 radio frames from the current SFN. SS continues to broadcast the original MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on BCCH.
3		←	MASTER INFORMATION BLOCK	At the SFN indicated by the BCCH modification time, SS starts to transmit the MIB with the "MIB Value Tag" IE different from the original setting.
		←	SYSTEM INFORMATION BLOCK TYPE 5	At the same time, SS starts to transmit the affected SIB TYPE 5 messages continuously. The IE "Available Signature" is changed from "0000 0000 1111 1111(B)" to "1111 1111 0000 0000(B)".
4		←	PAGING TYPE 1	SS starts to transmit this message continuously on the PCCH at the correct paging occasion.
5			RRC CONNECTION REQUEST	
6		←	RRC CONNECTION REJECT	

## Specific Message Contents

## PAGING TYPE 1 (Step 1 and 4)

Information Element	Value/remark
Message Type	Only 1 entry
Paging record list	
Paging record	CN identity Terminating Call with one of the supported services Supported Domain (PS Domain or CS Domain) TMSI Same as registered TMSI or P-TMSI
- CHOICE Used paging identity	
- Paging Cause	
- CN Domain Identity	
- CHOICE UE Identity	
- IMSI	Not Present
BCCH modification info	

## RRC CONNECTION REJECT (Step 1b)

Use the same message type found in [9] TS 34.108 clause 9.

## PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Message Type	Not Present
Paging record list	
BCCH modification info	2 Set to (current SFN + 2048)
MIB Value Tag	
BCCH Modification time	

## MASTER INFORMATION BLOCK (Step 3)

Information Element	Value/remark
MIB Value tag	2

## SYSTEM INFORMATION BLOCK TYPE 5 (Step 3)

Use the same message type found in clause 6.1 of TS 34.108, with the following exception.

Information Element	Value/remark
- PRACH system information	FDD '1111 1111 0000 0000'B
- PRACH info	
- CHOICE mode	
- Available Signature	

## RRC CONNECTION REJECT

Use the same message type found in TS 34.108, clause 9.

## 8.1.1.4.5 Test requirement

After step 1 the UE shall transmit RRC CONNECTION REQUEST messages in response to the PAGING TYPE 1 messages sent in step 1, using an allowed signature according to original IE "Available signature" in SYSTEM INFORMATION BLOCK TYPE 5.

After step 4 the UE shall transmit RRC CONNECTION REQUEST messages in response to the PAGING TYPE 1 messages sent in step 4, using an allowed signature according to modified IE "Available signature" in SYSTEM INFORMATION BLOCK TYPE 5.

### 8.1.1.5 Paging for notification of BCCH modification in connected mode (CELL\_PCH)

#### 8.1.1.5.1 Definition

#### 8.1.1.5.2 Conformance requirement

A UE in CELL\_PCH state shall receive the paging information for all its monitored paging occasions. For a UE in CELL\_PCH state, the paging occasions depend also on the IE "UTRAN DRX cycle length coefficient" and the IE "RRC State Indicator", as specified in TS 25.331 subclauses 8.6.3.2 and 8.6.3.3 respectively.

When the UE receives a PAGING TYPE 1 message, it shall perform the actions as specified below.

...

If the IE "BCCH modification info" is included, any UE in CELL\_PCH state shall perform the actions as specified in TS 25.331 subclause 8.1.1 in addition to any actions caused by the IE "Paging record" occurrences in the message.

The UE shall:

- 1> compare the value of IE "MIB value tag" in the IE "BCCH modification info" with the value tag stored for the master information block in variable VALUE\_TAG.
- 1> if the value tags differ:
  - 2> read the master information block on BCH;
  - 2> if the value tag of the master information block in the system information is the same as the value in IE "MIB value tag" in "BCCH modification info" but different from the value tag stored in the variable VALUE\_TAG:
    - 3> perform actions as specified in TS 25.331 subclause 8.1.1.5.

...

Upon reception of the master information block, the UE shall:

- 1> compare the value tag in the master information block with the value tag stored for this cell and this PLMN in the variable VALUE\_TAG;
- 1> if the value tags differ:
  - 2> store the value tag into the variable VALUE\_TAG for the master information block;
  - 2> read and store scheduling information included in the master information block.

....

For all system information blocks or scheduling blocks that are supported by the UE referenced in the master information block or the scheduling blocks, the UE shall perform the following actions:

- 1> for all system information blocks with area scope "PLMN" or "Equivalent PLMN" that use value tags:
  - 2> compare the value tag read in scheduling information for that system information block with the value stored within the variable VALUE\_TAG for that system information block;
  - 2> if the value tags differ:
    - 3> store the value tag read in scheduling information for that system information block into the variable VALUE\_TAG;
    - 3> read and store the IEs of that system information block.

...

## Reference

3GPP TS 25.331 clause 8.1.1, 8.1.2.

### 8.1.1.5.3 Test purpose

To confirm that the UE, in addition to any actions caused by the IE "Paging record" occurrences in the PAGING TYPE 1 message, checks the new value tag of the master information block, and read the SYSTEM INFORMATION messages after it receives a PAGING TYPE 1 message which includes the IE "BCCH Modification Information".

### 8.1.1.5.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CELL\_PCH state (state 6-12) as specified in clause 7.4 of TS 34.108 with valid a U-RNTI assigned to it.

#### Test Procedure

The SS transmits a PAGING TYPE 1 message on the paging occasions assigned to the UE. The paging identity is equal to the U-RNTI assigned earlier. The UE shall respond with a CELL UPDATE message and set IE "cell update cause" to "paging response". The PAGING TYPE 1 message shall also include the IE "BCCH Modification Information" indicating the time when the first modified master information block is available. Before the starting time, SS continuously broadcast the original MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on the BCCH mapped to BCH transport channel. SS maintains this status until the SFN, which corresponds to the modification time, is reached. Then it transmits the new master information block followed by the new SYSTEM INFORMATION BLOCK TYPE 6 message. In the new SIB TYPE 6 message, the IE "Available Signature" is different when compared to the original SIB TYPE 6 message. At the paging occasion, SS transmits a new PAGING TYPE 1 message. This message addresses the UE using its U-RNTI. The UE shall respond with a CELL UPDATE message and set IE "cell update cause" to "paging response". The SS shall transmit a CELL UPDATE CONFIRM message.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1			Void	
2		←	PAGING TYPE 1	SS transmits the paging message which comprises IE "BCCH Modification Information", with the "Value Tag" changed from the "MIB Value Tag" of the current Master Information Block. Also the modification time is set to 2048 radio frame from the current SFN. SS continuously broadcast the same MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on BCCH.
2a		→	CELL UPDATE	
2b		←	CELL UPDATE CONFIRM	
3		←	MASTER INFORMATION BLOCK	At the SFN indicated by the BCCH modification time, SS starts to transmit the MIB with the "MIB Value Tag" IE different from the original setting.
		←	SYSTEM INFORMATION BLOCK TYPE 6	At the same time, SS starts to transmit the affected SIB TYPE 6 continuously. The value of IE "Available Signature" is changed from "0000 0000 1111 1111(B)" to "1111 1111 0000 0000(B)".
4		←	PAGING TYPE 1	SS transmits this message continuously on the PCCH at the correct paging occasion.
5		→	CELL UPDATE	
6		←	CELL UPDATE CONFIRM	See message content.

## Specific Message Contents

## PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Message Type	Only 1 entry
Paging record list	
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	Equal to the U-RNTI assigned earlier.
- SRNC Identity	
- S-RNTI	
- CN originated page to connected mode UE	Not Present
BCCH modification info	
- MIB Value Tag	2
- BCCH Modification time	Set to (current SFN + 2048)

## CELL UPDATE (Step 2a)

Check to see if the same message type found in Annex A[9] (TS 34.108) Clause 9 is received, with the following exceptions:

Information Element	Value/remark
U-RNTI	Checked to see if it is set to the same values as in step 2
- SRNC identity	
- S-RNTI	
Cell update cause	Paging response

## CELL UPDATE CONFIRM (Step 2b)

Use the same message type found in clause Annex A[9] (TS 34.108) Clause 9., with the following exception:

Information Element	Value/remark
RRC State indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3

## MASTER INFORMATION BLOCK (Step 3)

Information Element	Value/remark
MIB Value tag	2

## SYSTEM INFORMATION BLOCK TYPE 6 (Step 3)

Use the same message type found in clause 6.1 of TS 34.108, with the following exception.

Information Element	Value/remark
- PRACH system information	
- PRACH info	
- CHOICE mode	FDD
- Available Signature	'1111 1111 0000 0000'B

## PAGING TYPE 1 (Step 4)

Information Element	Value/remark
Message Type	
Paging record list	Only 1 entry
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	Equal to the U-RNTI assigned earlier.
- SRNC Identity	
- S-RNTI	
- CN originated page to connected mode UE	Not Present
BCCH modification info	Not Present

## CELL UPDATE (Step 5)

Check to see if the same message type found in TS 34.108, clause 9 is received, with the following exceptions:

Information Element	Value/remark
U-RNTI	Checked to see if it is set to the same values as in step 4
- SRNC identity	
- S-RNTI	
Cell update cause	Paging response

## CELL UPDATE CONFIRM (Step 6)

Use the same message type found in Annex A[9] (TS 34.108) Clause 9., with the following exception:

Information Element	Value/remark
RRC State indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3

#### 8.1.1.5.5 Test requirement

After step 2 the UE shall transmit a CELL UPDATE message with IE "cell update cause" set to "paging response", using an allowed signature according to original IE "Available signature" in SYSTEM INFORMATION BLOCK TYPE 6.

After step 4 the UE shall transmit a CELL UPDATE message with IE "cell update cause" set to "paging response", using an allowed signature according to modified IE "Available signature" in SYSTEM INFORMATION BLOCK TYPE 6.

### 8.1.1.6 Paging for notification of BCCH modification in connected mode (URA\_PCH)

#### 8.1.1.6.1 Definition

#### 8.1.1.6.2 Conformance requirement

A UE in URA\_PCH state shall receive the paging information for all its monitored paging occasions. For a UE in URA\_PCH state, the paging occasions depend also on the IE "UTRAN DRX cycle length coefficient" and the IE "RRC State Indicator", as specified in TS 25.331 subclauses 8.6.3.2 and 8.6.3.3 respectively.

When the UE receives a PAGING TYPE 1 message, it shall perform the actions as specified below.

...

If the IE "BCCH modification info" is included, any UE in URA\_PCH state shall perform the actions as specified in TS 25.331 subclause 8.1.1 in addition to any actions caused by the IE "Paging record" occurrences in the message as specified above.

The UE shall:

- 1> compare the value of IE "MIB value tag" in the IE "BCCH modification info" with the value tag stored for the master information block in variable VALUE\_TAG.
- 1> if the value tags differ:
  - 2> read the master information block on BCH;
  - 2> if the value tag of the master information block in the system information is the same as the value in IE "MIB value tag" in "BCCH modification info" but different from the value tag stored in the variable VALUE\_TAG:
    - 3> perform actions as specified in subclause 8.1.1.5.

...

Upon reception of the master information block, the UE shall:

- 1> compare the value tag in the master information block with the value tag stored for this cell and this PLMN in the variable VALUE\_TAG;
- 1> if the value tags differ:
  - 2> store the value tag into the variable VALUE\_TAG for the master information block;
  - 2> read and store scheduling information included in the master information block.

....

For all system information blocks or scheduling blocks that are supported by the UE referenced in the master information block or the scheduling blocks, the UE shall perform the following actions:

- 1> for all system information blocks with area scope "PLMN" or "Equivalent PLMN" that use value tags:
  - 2> compare the value tag read in scheduling information for that system information block with the value stored within the variable VALUE\_TAG for that system information block;
  - 2> if the value tags differ:
    - 3> store the value tag read in scheduling information for that system information block into the variable VALUE\_TAG;
    - 3> read and store the IEs of that system information block.

...

## Reference

3GPP TS 25.331 clause 8.1.1, 8.1.2.

### 8.1.1.6.3 Test purpose

To confirm that the UE checks the included new value tag of the master information block and reads the relevant SYSTEM INFORMATION block(s) after it receives a PAGING TYPE 1 message which includes the IE "BCCH Modification Information".

### 8.1.1.6.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: URA\_PCH state (state 6-13) as specified in clause 7.4 of TS 34.108 with a valid U-RNTI assigned.

#### Test Procedure

The SS transmits a PAGING TYPE 1 message on the paging occasions assigned to the UE. The message shall include the IE "BCCH Modification Information" indicating the time when the first modified master information block is available. Before the starting time, SS continuously broadcast the original MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on the BCCH mapped to BCH transport channel. SS maintains this status until the SFN which corresponds to the modification time is reached. Then it transmits the new master information block followed by the new SYSTEM INFORMATION BLOCK TYPE 6 message. In the new SIB TYPE 5 message, the IE "Available Signature" is different when compared to the original SIB TYPE 6 message. At the next paging occasion, SS transmits a new PAGING TYPE 1 message. This message addresses the UE using its U-RNTI and the "paging cause" IE set to a terminating call type that is supported by the UE. The UE shall respond with a CELL UPDATE message and set IE "cell update cause" to "paging response". The SS shall transmit a CELL UPDATE CONFIRM message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1			Void	
2		←	PAGING TYPE 1	SS transmits the paging message which comprises IE "BCCH Modification Information", with the "Value Tag" changed from the "MIB Value Tag" of the current Master Information Block. Also the modification time is set to 2048 radio frame from the current SFN. SS continuously broadcast the same MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on BCCH.
3		←	MASTER INFORMATION BLOCK	At the SFN indicated by the BCCH modification time, SS starts to transmit the MIB with the "MIB Value Tag" IE different from the original setting.
		←	SYSTEM INFORMATION BLOCK TYPE 6	At the same time, SS starts to transmit the affected SIB TYPE 6 message continuously. The value of IE "Available Signature" is changed from "0000 0000 1111 1111(B)" to "1111 1111 0000 0000(B)".
4		←	PAGING TYPE 1	SS transmits this message continuously on the PCCH at the correct occasion.
5		→	CELL UPDATE	
6		←	CELL UPDATE CONFIRM	See message content.

Specific Message Contents

PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Message Type	
Paging record list	Not Present
BCCH modification info	
- MIB Value Tag	2
- BCCH Modification time	Set to (current SFN + 2048)

MASTER INFORMATION BLOCK (Step 3)

Information Element	Value/remark
MIB Value tag	2

SYSTEM INFORMATION BLOCK TYPE 6 (Step 3)

Use the same message type found in clause 6.1 of TS 34.108, with the following exception.

Information Element	Value/remark
- PRACH system information - PRACH info - CHOICE mode - Available Signature	FDD '1111 1111 0000 0000'B

## PAGING TYPE 1 (Step 4)

Information Element	Value/remark
Message Type	Only 1 entry
Paging record list	
Paging record	UTRAN identity Equal to the U-RNTI assigned earlier.
- CHOICE Used paging identity	
- U-RNTI	
- SRNC Identity	
- S-RNTI	
- CN originated page to connected mode UE	Not Present
BCCH modification info	Not Present

## CELL UPDATE (Step 5)

Check to see if the same message type found in TS 34.108, clause 9 is received, with the following exceptions:

Information Element	Value/remark
U-RNTI	Checked to see if it is set to the same values as in step 4
- SRNC identity	
- S-RNTI	
Cell update cause	Paging response

## CELL UPDATE CONFIRM (Step 6)

Use the same message type found in TS 34.108, clause 9 with the following exceptions.

Information Element	Value/Remarks
RRC State indicator	URA_PCH
UTRAN DRX cycle length coefficient	3

## 8.1.1.6.5 Test requirement

After step 4, the UE shall transmit a CELL UPDATE message with IE "cell update cause" set to "paging response", using an allowed signature according to modified IE "Available signature" in SYSTEM INFORMATION BLOCK TYPE 6.

## 8.1.1.7 Paging for Connection in connected mode (CELL\_DCH)

## 8.1.1.7.1 Definition

## 8.1.1.7.2 Conformance requirement

When the UE receives a PAGING TYPE 2 message, it shall not affect the state of any other ongoing RRC procedures, when not stated otherwise elsewhere.

The UE shall:

- 1> indicate reception of paging; and
- 1> forward the IE "Paging cause" and the IE "Paging record type identifier" to upper layers.

...

In the UE, the initial direct transfer procedure shall be initiated, when the upper layers request establishment of a signalling connection. This request also includes a request for the transfer of a NAS message.

The UE shall, in the INITIAL DIRECT TRANSFER message:

...

The UE shall:

- 1> transmit the INITIAL DIRECT TRANSFER message on the uplink DCCH using AM RLC on signalling radio bearer RB3;
- 1> when the INITIAL DIRECT TRANSFER message has been submitted to lower layers for transmission:
  - 2> confirm the establishment of a signalling connection to upper layers; and
  - 2> add the signalling connection with the identity indicated by the IE "CN domain identity" in the variable ESTABLISHED\_SIGNALLING\_CONNECTIONS.
- 1> when the successful delivery of the INITIAL DIRECT TRANSFER message has been confirmed by RLC:
  - 2> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.1.8.2, 8.1.11.

### 8.1.1.7.3 Test purpose

To confirm that the UE responds to a PAGING TYPE 2 message which includes the IE "Paging Cause" and the IE "Paging Record Type Identifier".

To confirm that the UE responds with a RRC STATUS message after it has received an invalid PAGING TYPE 2 message.

### 8.1.1.7.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CELL\_DCH state (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE, after executing a location registration or attach procedure followed by the release of the TMSI of P-TMSI allocated. The UE has been registered in both CS and PS domains.

#### Test Procedure

The SS transmits an invalid PAGING TYPE 2 message. UE shall respond by transmitting a RRC STATUS message on the uplink DCCH using RLC-AM mode. Finally, SS transmits a PAGING TYPE 2 message, which includes a matched Paging Record Type Identifier. Then the UE shall respond to this message by the transmission of an INITIAL DIRECT TRANSFER message.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1			Void	
2		←	PAGING TYPE 2	See message content.
3		→	RRC STATUS	The UE shall respond by reporting the protocol error to the SS.
4		←	PAGING TYPE 2	SS pages the UE with a matched identifier and with a valid "paging cause" IE from a new CN Domain.
5		→	INITIAL DIRECT TRANSFER	The UE shall respond to the paging message sent in step 4.

Specific Message Contents

PAGING TYPE 2 (Step 2)

SS sends a message containing a protocol error causing the UE to perform procedure specific error handling.

Information Element	Value/remark
Message Type RRC transaction identifier Integrity check info  - Message authentication code  - RRC Message sequence number  Paging Cause CN Domain Identity Paging Record Type Identifier	Arbitrarily selects an integer between 0 and 3 The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted. SS calculates the value of MAC-I for this message and writes to this IE. SS provides the value of this IE, from its internal counter. Set to value "Spare" CS Set to "IMSI (GSM-MAP)" for UEs supporting GSM-MAP core network type or "IMSI (DS-41)" for UEs supporting ANSI-41 core network type.

RRC STATUS (Step 3)

Use the same message type found in TS 34.108, clause 9, with the following exception.

Information Element	Value/remark
Identification of received message - Received message type - RRC transaction identifier  Protocol error information - Protocol Error Cause	PAGING TYPE 2 Checked to see if the value is identical to the same IE in the PAGING TYPE 2 message.  Information element value not comprehended

PAGING TYPE 2 (Step 4)

Use the same message type found in TS 34.108, clause 9, with the following exception.

Information Element	Value/remark
Paging cause CN domain identity Paging record type identifier	Terminating Call supported by the UE Domain supported by the UE Set to "IMSI (GSM-MAP)" for UEs supporting GSM-MAP core network type or "IMSI (DS-41)" for UEs supporting ANSI-41 core network type.

## INITIAL DIRECT TRANSFER (Step 5) – for UEs supporting GSM-MAP core networks

Information Element	Value/remark
Message Type	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted. This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
Integrity check info	
- Message authentication code	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
- RRC Message sequence number	CS domain or PS domain
CN domain identity	
Intra Domain NAS Node Selector	R99
- CHOICE version	GSM
-- CHOICE CN type	IMSI (response to IMSI paging)
--- CHOICE Routing basis	
---- Routing parameter	Bit string (10) consisting of DecimalToBinary [(IMSI div 10) mod 1000]. The bits of the result are numbered from b0 to b9, with bit b0 being the least significant.
--- Entered parameter	FALSE
NAS message	Not checked
START	Not checked
Measured results on RACH	Not checked

## INITIAL DIRECT TRANSFER (Step 5) – for UEs supporting ANSI-41 core networks

Information Element	Value/remark
Message Type	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted. This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
Integrity check info	
- Message authentication code	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
- RRC Message sequence number	CS domain or PS domain
CN domain identity	
Intra Domain NAS Node Selector	ANSI-41 : Bitstring(14), all bits set to 0
- CHOICE version	
NAS message	Not checked
START	Not checked
Measured results on RACH	Not checked

## 8.1.1.7.5 Test requirement

After step 2 the UE shall respond to the paging message by transmitting RRC STATUS on the DCCH, stating the protocol error as " Information element value not comprehended ".

After step 4 the UE shall respond to the paging message by transmitting an INITIAL DIRECT TRANSFER message on the uplink DCCH.

## 8.1.1.8 Paging for Connection in connected mode (CELL\_FACH)

## 8.1.1.8.1 Definition

## 8.1.1.8.2 Conformance requirement

When the UE receives a PAGING TYPE 2 message, it shall not affect the state of any other ongoing RRC procedures, when not stated otherwise elsewhere.

The UE shall:

1> indicate reception of paging; and

1> forward the IE "Paging cause" and the IE "Paging record type identifier" to upper layers.

...

In the UE, the initial direct transfer procedure shall be initiated, when the upper layers request establishment of a signalling connection. This request also includes a request for the transfer of a NAS message.

The UE shall, in the INITIAL DIRECT TRANSFER message:

...

In CELL\_FACH state, the UE shall:

1> include a measurement report in the IE "Measured results on RACH", as specified in the IE "Intra-frequency reporting quantity for RACH reporting" and the IE "Maximum number of reported cells on RACH" in System Information Block type 12 (or "System Information Block Type 11" if "System Information Block Type 12" is not being broadcast);

1> include in the IE "Measured results on RACH" all requested reporting quantities for cells for which measurements are reported.

The UE shall:

1> transmit the INITIAL DIRECT TRANSFER message on the uplink DCCH using AM RLC on signalling radio bearer RB3;

1> when the INITIAL DIRECT TRANSFER message has been submitted to lower layers for transmission:

2> confirm the establishment of a signalling connection to upper layers; and

2> add the signalling connection with the identity indicated by the IE "CN domain identity" in the variable ESTABLISHED\_SIGNALLING\_CONNECTIONS.

1> when the successful delivery of the INITIAL DIRECT TRANSFER message has been confirmed by RLC:

2> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.1.8.2, 8.1.11.

### 8.1.1.8.3 Test purpose

To confirm that the UE responds to a PAGING TYPE 2 message, which includes a matching value for IE "Paging Record Type Identifier".

### 8.1.1.8.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CELL\_FACH state (state 6-11) as specified in clause 7.4 of TS 34.108. The UE has been registered in both CS and PS domains.

#### Test Procedure

The SS transmits a PAGING TYPE 2 message. Then the UE shall respond by transmitting an upper layer message to answer this page.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1			Void	
2		←	PAGING TYPE 2	The SS transmits the message includes a matched identifier.
3		→	INITIAL DIRECT TRANSFER	The UE responds by sending an upper layer message.

Specific Message Content

PAGING TYPE 2 (Step 2)

Use the same message type found in [9] (TS 34.108) Clause 9, with the following exception.

Information Element	Value/remark
Paging cause	Terminating Call supported by the UE
CN domain identity	CS
Paging record type identifier	Set to "IMSI (GSM-MAP)" for UEs supporting GSM-MAP core network type or "IMSI (DS-41)" for UEs supporting ANSI-41 core network type.

INITIAL DIRECT TRANSFER (Step 3) – for UEs supporting GSM-MAP core networks

Only the message type IE for this message is checked.

Information Element	Value/remark
Message Type	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted. This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
Integrity check info	
- Message authentication code	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
- RRC Message sequence number	CS domain
CN domain identity	R99
Intra Domain NAS Node Selector	GSM
- CHOICE version	Local (P)TMSI
-- CHOICE CN type	
--- CHOICE Routing basis	
---- Routing parameter	The TMSI/P-TMSI consists of 4 octets (32bits). The bits are numbered from b0 to b31, with bit b0 being the least significant
	The "Routing parameter" bit string consists of bits b14 through b23 of the TMSI/ PTMSI where bit b14 is the least significant.
--- Entered parameter	FALSE
NAS message	Not checked
START	Not checked
Measured results on RACH	Not checked

INITIAL DIRECT TRANSFER (Step 3) – for UEs supporting ANSI-41 core networks

Information Element	Value/remark
Message Type	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
Integrity check info	
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
CN domain identity	CS domain
Intra Domain NAS Node Selector	ANSI-41 : Bitstring(14), all bits set to 0
- CHOICE version	
NAS message	Not checked
START	Not checked
Measured results on RACH	Not checked

#### 8.1.1.8.5 Test requirement

After step 2 the UE shall respond to the PAGING TYPE 2 message by transmitting an INITIAL DIRECT TRANSFER message on the uplink DCCH.

## 8.1.2 RRC Connection Establishment

### 8.1.2.1 RRC Connection Establishment in CELL\_DCH state: Success

#### 8.1.2.1.1 Definition

#### 8.1.2.1.2 Conformance requirement

The UE shall initiate the procedure when upper layers in the UE requests the establishment of a signalling connection and the UE is in idle mode (no RRC connection exists).

Upon initiation of the procedure, the UE shall:

...

- 1> set the contents of the RRC CONNECTION REQUEST message according to TS 25.331 subclause 8.1.3.3;
- 1> set CFN in relation to SFN of current cell according to TS 25.331 subclause 8.5.15;
- 1> perform the mapping of the Access Class to an Access Service Class as specified in TS 25.331 subclause 8.5.13, and apply the given Access Service Class when accessing the RACH;
- 1> submit the RRC CONNECTION REQUEST message for transmission on the uplink CCCH;
- 1> set counter V300 to 1; and
- 1> start timer T300 when the MAC layer indicates success or failure to transmit the message;
- 1> select a Secondary CCPCH according to TS 25.304;
- 1> start receiving all FACH transport channels mapped on the selected Secondary CCPCH.

The UE shall, in the transmitted RRC CONNECTION REQUEST message:

- 1> set the IE "Establishment cause" to the value of the variable ESTABLISHMENT\_CAUSE;
- 1> set the IE "Initial UE identity" to the value of the variable INITIAL\_UE\_IDENTITY;

...

The UE shall compare the value of the IE "Initial UE identity" in the received RRC CONNECTION SETUP message with the value of the variable INITIAL\_UE\_IDENTITY.

If the values are different, the UE shall:

- 1> ignore the rest of the message.

If the values are identical, the UE shall:

- 1> stop timer T300, and act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified otherwise in the following:

- 2> if the UE will be in the CELL\_FACH state at the conclusion of this procedure:

...

- 1> perform the physical layer synchronization procedure as specified in TS 25.214;

- 1> enter UTRA RRC connected mode, in a state according to TS 25.331 subclause 8.6.3.3;

- 1> submit an RRC CONNECTION SETUP COMPLETE message to the lower layers on the uplink DCCH after successful state transition per TS 25.331 subclause 8.6.3.3, with the contents set as specified below:

- 2> set the IE "RRC transaction identifier" to:

- 3> the value of "RRC transaction identifier" in the entry for the RRC CONNECTION SETUP message in the table "Accepted transactions" in the variable TRANSACTIONS; and

- 3> clear that entry.

...

- 2> retrieve its UTRA UE radio access capability information elements from variable UE\_CAPABILITY\_REQUESTED; and then

- 2> include this in IE "UE radio access capability" and IE "UE radio access capability extension", provided this IE is included in variable UE\_CAPABILITY\_REQUESTED;

- 2> retrieve its inter-RAT-specific UE radio access capability information elements from variable UE\_CAPABILITY\_REQUESTED; and then

- 2> include this in IE "UE system specific capability".

When the RRC CONNECTION SETUP COMPLETE message has been submitted to lower layers for transmission the UE shall:

- 1> consider the procedure to be successful;

And the procedure ends.

## Reference

3GPP TS 25.331 clause 8.1.3.

### 8.1.2.1.3 Test purpose

1. To confirm that the UE leaves the Idle Mode and correctly establishes signalling radio bearers on the DCCH.
2. To confirm that the UE indicates the requested UE radio access capabilities and UE system specific capabilities (may be used by UTRAN e.g. to configure inter RAT- measurements).

### 8.1.2.1.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

### Test Procedure

The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by attempting to make an outgoing call. After SS receives this message, it assigns the necessary radio resources and U-RNTI to be used by the UE. SS then transmits an RRC CONNECTION SETUP message containing an IE "Initial UE Identity" that does not match the IE "Initial UE Identity" in the most recent RRC CONNECTION REQUEST message sent by the UE. UE receives the RRC CONNECTION SETUP message before timer T300 expires but discards it due to a IE "Initial UE Identity" mismatch. UE shall wait for timer T300 to time out before re-transmitting a RRC CONNECTION REQUEST message to the SS. SS again assigns the necessary radio resources and U-RNTI. SS then transmits a RRC CONNECTION SETUP message containing an IE "Initial UE Identity" that matches the IE "Initial UE Identity" in the most recent RRC CONNECTION REQUEST sent by the UE. SS then waits for the UE to transmit an RRC CONNECTION SETUP COMPLETE message on the DCCH. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		→	RRC CONNECTION REQUEST	By outgoing call operation. See specific message contents.
2		←	RRC CONNECTION SETUP	This message is not addressed to the UE. See specific message contents.
3		→	RRC CONNECTION REQUEST	UE shall re-transmit the request message again after a time out of T300 from step 1.
4		←	RRC CONNECTION SETUP	See specific message contents.
5				The UE configures the layer 2 and layer 1.
6		→	RRC CONNECTION SETUP COMPLETE	See specific message contents.
7		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

### Specific Message Content

#### System Information Block type 11 (FDD)

Use the default system information block with the same type specified in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
- Intra-frequency reporting quantity for RACH Reporting	
- SFN-SFN observed time difference reporting indicator	No report
- CHOICE mode	
- FDD	
- Reporting quantity	CPICH Ec/N0
- Maximum number of reported cells on RACH	current cell

#### RRC CONNECTION REQUEST (Step 1)

Use the default message with the same message type specified in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
Measured results on RACH	Check to see if set in accordance with the IE "Intra-frequency reporting quantity for RACH Reporting" included in SYSTEM INFORMATION BLOCK Type 11
- Measurement result for current cell	
- CHOICE mode	
- FDD	
- CHOICE measurement quantity	
- CPICH Ec/N0	The actual reported value is not checked

### RRC CONNECTION SETUP (Step 2)

Use the same message type found in clause 9 of TS 34.108, with the following exception.

Information Element	Value/remark
Initial UE Identity	Set to the same type as in the RRC CONNECTION REQUEST message but with a different value

### RRC CONNECTION SETUP (Step 4)

Use the default message with the same message type and covering the scenario used in this test (Transition to CELL\_DCH) specified in clause 9 of TS 34.108.

### RRC CONNECTION SETUP COMPLETE (Step 6)

Use the default message with the same message type specified in clause 9 of TS 34.108 with the following exception.

Information Element	Value/remark
UE Radio Access Capability	Checked to see if compatible with the stated capability in PIXIT/PICS statements.
UE radio access capability extension	Checked to see if compatible with the stated capability in PIXIT/PICS statements.
UE system specific Capability	Checked to see if compatible with the stated capability in PIXIT/PICS statements.

#### 8.1.2.1.5 Test requirement

After step 2 the UE shall re-transmit the RRC CONNECTION REQUEST message again in order to continue the RRC connection establishment procedure.

After step 6 the UE shall establish an RRC connection and continue the procedure of the outgoing call on the DCCH.

#### 8.1.2.2 RRC Connection Establishment: Success after T300 timeout

##### 8.1.2.2.1 Definition

##### 8.1.2.2.2 Conformance requirement

If the UE has not yet received an RRC CONNECTION SETUP message with the value of the IE "Initial UE identity" equal to the value of the variable INITIAL\_UE\_IDENTITY; and

if expiry of timer T300 occurs:

the UE shall:

1> check the value of V300; and

2> if V300 is equal to or smaller than N300:

3> set the IEs in the RRC CONNECTION REQUEST message according to TS 25.331 subclause 8.1.3.3;

- 3> submit a new RRC CONNECTION REQUEST message to lower layers for transmission on the uplink CCCH;
  - 3> increment counter V300;
  - 3> restart timer T300 when the MAC layer indicates success or failure to transmit the message.
- 2> if V300 is greater than N300:
- ...

## Reference

3GPP TS 25.331 clause 8.1.3.5.

### 8.1.2.2.3 Test purpose

To confirm that the UE retries to establish the RRC connection until V300 is greater than N300 after the expiry of timer T300 when the SS transmits no response for an RRC CONNECTION REQUEST message.

### 8.1.2.2.4 Method of test

## Initial Condition

System Simulator: 1 cell. SCCPCH configuration as specified in 6.1.1 of TS 34.108.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

NOTE: This test requires that N300 is bigger than 0, which is the case (see default contents of SIB 1, specified in TS 34.108). Expiry of timer T300 is verified only for N300 values exceeding 1.

## Test Procedure

Before the test starts, SYSTEM INFORMATION BLOCK TYPE 5 message is modified and this modification is notified to the UE. An internal counter K in SS is initialized to a value = 0. Following this, the UE shall transmit an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by use of selected PRACH from the available PRACH No.1 and PRACH No.2, after the operator attempts to make an outgoing call. SS ignores this message, increments K every time such a message is received and waits for T300 timer to expire. This cycle is repeated until K reaches N300. When K is equal to N300, the SS transmits an RRC CONNECTION SETUP message containing an unexpected critical message extension as specified in step 6 to the UE. The UE shall send another RRC CONNECTION REQUEST message on the uplink CCCH. SS replies with a valid RRC CONNECTION SETUP message. The UE shall then acknowledge the establishment of RRC connection by sending the RRC CONNECTION SETUP COMPLETE message on uplink DCCH.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PAGING TYPE 1	SS transmits the paging message which comprises IE "BCCH Modification Information", with the "Value Tag" different from the "MIB Value Tag" of the current Master Information Block. Also the modification time is set to 2048 radio frames from the current SFN. SS continuously broadcast the same MASTER INFORMATION BLOCK and various types of SYSTEM INFORMATION BLOCK on BCCH. See specific message contents.
1a		←	MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 5	SS starts to transmit the MIB with the "MIB Value Tag" IE different from the original setting. At the same time, SS starts to transmit the affected SIB TYPE 5 messages. See specific message contents.
2				SS initializes counter K to 0. Operator is asked to make an outgoing call and SS starts to wait for RRC CONNECTION REQUEST on uplink CCCH.
3		→	RRC CONNECTION REQUEST	See the clause 9 in TS 34.108 on default message content
4				SS increments K.
5				SS checks to see if K is equal to N300. If so, goes to step 6. Else, continues to execute step 3.
6		←	RRC CONNECTION SETUP	Use an invalid message in ASN.1. See specific message contents for this message.
7		→	RRC CONNECTION REQUEST	See specific message contents.
8		←	RRC CONNECTION SETUP	This is a legal message. See the clause 9 in TS 34.108 on default message content for RRC.
9				The UE configures the layer 1 and layer 2.
10		→	RRC CONNECTION SETUP COMPLETE	See clause 9 in TS 34.108 on default message content

## Specific Message Contents

## PAGING TYPE 1 (Step 1)

Information Element	Value/remark
Message Type	
Paging record list	Not present
BCCH modification info	
- MIB Value Tag	2
- BCCH Modification time	Set to (current SFN + 2048)

## SYSTEM INFORMATION TYPE 5 (Step 1a) - (FDD)

Use the default parameter values for the system information block with the same type specified in clause 6.1.1 of TS 34.108, with the following exceptions:

- PRACH system information	2PRACHs
- PRACH info (PRACH No.1)	
- CHOICE mode	FDD
- Available Signature	'0000 0000 1111 1111'B
- Available SF	64
- Preamble scrambling code number	0
- Puncturing Limit	1.00
- Available Sub Channel number	'1111 1111 1111'B
- Transport Channel Identity	15
- RACH TFS	
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	
- RLC size	168
- Number of TB and TTI List	
- Number of Transport blocks	1
- CHOICE Mode	FDD
- CHOICE Logical Channel List	Configured
- RLC size	360
- Number of TB and TTI List	
- Number of Transport blocks	1
- CHOICE Mode	FDD
- CHOICE Logical Channel List	Configured
- Semi-static Transport Format information	
- Transmission time interval	20 ms
- Type of channel coding	Convolutional
- Coding Rate	1/2
- Rate matching attribute	150
- CRC size	16
- RACH TFCS	
- Normal	
- TFCI Field 1 information	
- CHOICE TFCS representation	Complete reconfiguration
- TFCS addition information	
- CHOICE CTFC Size	2 bit
- CTFC information	0
- Power offset information	
- CHOICE Gain Factors	Computed Gain Factor
- Reference TFC ID	0
- CHOICE Mode	FDD
- Power offset Pp-m	0dB
- CTFC information	1
- Power offset information	
- CHOICE Gain Factors	Signalled Gain Factor
- Gain factor $\beta_c$	11
- Gain factor $\beta_d$	15
- Reference TFC ID	0
- CHOICE Mode	FDD
- Power offset Pp-m	0dB
- PRACH partitioning	
- Access Service Class	
- ASC Setting	Not Present
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#1)
- Available signature End Index	7 (ASC#1)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	Not Present
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#3)
- Available signature End Index	7 (ASC#3)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	Not Present
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#5)
- Available signature End Index	7 (ASC#5)

- Assigned Sub-channel Number	'1111'B
- ASC Setting	Not Present
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#7)
- Available signature End Index	7 (ASC#7)
- Assigned Sub-channel Number	'1111'B
- Persistence scaling factor	
- Persistence scaling factor	0.9 (for ASC#2)
- Persistence scaling factor	0.9 (for ASC#3)
- Persistence scaling factor	0.9 (for ASC#4)
- Persistence scaling factor	0.9 (for ASC#5)
- Persistence scaling factor	0.9 (for ASC#6)
- Persistence scaling factor	0.9 (for ASC#7)
- AC-to-ASC mapping table	
- AC-to-ASC mapping	6 (AC0-9)
- AC-to-ASC mapping	5 (AC10)
- AC-to-ASC mapping	4 (AC11)
- AC-to-ASC mapping	3 (AC12)
- AC-to-ASC mapping	2 (AC13)
- AC-to-ASC mapping	1 (AC14)
- AC-to-ASC mapping	0 (AC15)
CHOICE mode	FDD
- Primary CPICH DL TX power	31
- Constant value	-10
- PRACH power offset	
- Power Ramp Step	3dB
- Preamble Retrans Max	4
- RACH transmission parameters	
- Mmax	2
- NB01min	3 slot
- NB01max	10 slot
- AICH info	
- Channelisation code	3
- STTD indicator	FALSE
- AICH transmission timing	0
- PRACH info (PRACH No.2)	
- CHOICE mode	FDD
- Available Signature	'0000 0000 1111 1111'B
- Available SF	64
- Preamble scrambling code number	1
- Puncturing Limit	1.00
- Available Sub Channel number	'1111 1111 1111'B
- Transport Channel Identity	15
- RACH TFS	
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	
- RLC size	168
- Number of TB and TTI List	
- Number of Transport blocks	1
- CHOICE Mode	FDD
- CHOICE Logical Channel List	Configured
- RLC size	360
- Number of TB and TTI List	
- Number of Transport blocks	1
- CHOICE Mode	FDD
- CHOICE Logical Channel List	Configured
- Semi-static Transport Format information	
- Transmission time interval	20 ms
- Type of channel coding	Convolutional
- Coding Rate	1/2
- Rate matching attribute	150
- CRC size	16
- RACH TFCS	
- Normal	
- TFCI Field 1 information	
- CHOICE TFCS representation	Complete reconfiguration
- TFCS addition information	

- CHOICE CTFC Size	2 bit
- CTFC information	0
- Power offset information	
- CHOICE Gain Factors	Computed Gain Factor
- Reference TFC ID	0
- CHOICE Mode	FDD
- Power offset Pp-m	0 dB
- CTFC information	1
- Reference TFC ID	0
- Power offset information	
- CHOICE Gain Factors	Signalled Gain Factor
- Gain factor $\beta_c$	11
- Gain factor $\beta_d$	15
- Reference TFC ID	0
- CHOICE Mode	FDD
- Power offset Pp-m	0dB
- PRACH partitioning	
- Access Service Class	
- ASC Setting	Not Present
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#1)
- Available signature End Index	7 (ASC#1)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	Not Present
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#3)
- Available signature End Index	7 (ASC#3)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	Not Present
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#5)
- Available signature End Index	7 (ASC#5)
- Assigned Sub-channel Number	'1111'B
- ASC Setting	Not Present
- ASC Setting	
- CHOICE mode	FDD
- Available signature Start Index	0 (ASC#7)
- Available signature End Index	7 (ASC#7)
- Assigned Sub-channel Number	'1111'B
- Persistence scaling factor	
- Persistence scaling factor	0.9 (for ASC#2)
- Persistence scaling factor	0.9 (for ASC#3)
- Persistence scaling factor	0.9 (for ASC#4)
- Persistence scaling factor	0.9 (for ASC#5)
- Persistence scaling factor	0.9 (for ASC#6)
- Persistence scaling factor	0.9 (for ASC#7)
- AC-to-ASC mapping table	
- AC-to-ASC mapping	6 (AC0-9)
- AC-to-ASC mapping	5 (AC10)
- AC-to-ASC mapping	4 (AC11)
- AC-to-ASC mapping	3 (AC12)
- AC-to-ASC mapping	2 (AC13)
- AC-to-ASC mapping	1 (AC14)
- AC-to-ASC mapping	0 (AC15)
CHOICE mode	FDD
- Primary CPICH DL TX power	31
- Constant value	-10
- PRACH power offset	
- Power Ramp Step	3dB
- Preamble Retrans Max	4
- RACH transmission parameters	
- Mmax	2
- NB01min	3 slot
- NB01max	10 slot

- AICH info	
- Channelisation code	4
- STTD indicator	FALSE
- AICH transmission timing	0

## SYSTEM INFORMATION TYPE 5 (Step 1a) – 3.84 Mcps TDD

- PRACH system information	2PRACHs
- PRACH info (PRACH No.1)	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Timeslot Number	14
- PRACH Channelisation Code	
- CHOICE SF	8
- Channelisation Code List	
- Channelisation Code	8/1
- Channelisation Code	8/2
- Channelisation Code	8/3
- Channelisation Code	8/4
- PRACH Midamble	Direct
-PNBSCH allocation	Not Present
- Transport Channel Identity	15
- RACH TFS	
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	
- RLC size	168
- Number of TB and TTI List	
- Transport Time Interval	Not Present
- Number of Transport Blocks	1
- CHOICE Logical Channel List	ALL
- Semi-static Transport Format information	
- Transmission time interval	10 ms
- Type of channel coding	Convolutional
- Coding Rate	1/2
- Rate matching attribute	150
- CRC size	16
- RACH TFCS	Not Present
- PRACH partitioning	
- Access Service Class	
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	'11110000'B (ASC#0)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	'11110000'B (ASC#1)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	'11110000'B (ASC#2)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	'11110000'B (ASC#3)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	'11110000'B (ASC#4)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	'11110000'B (ASC#5)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD

- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	'11110000'B (ASC#6)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	'11110000'B (ASC#7)
- CHOICE subchannel size	Size1
- Persistence scaling factor	
- Persistence scaling factor	0.9 (for ASC#2)
- Persistence scaling factor	0.9 (for ASC#3)
- Persistence scaling factor	0.9 (for ASC#4)
- Persistence scaling factor	0.9 (for ASC#5)
- Persistence scaling factor	0.9 (for ASC#6)
- Persistence scaling factor	0.9 (for ASC#7)
- AC-to-ASC mapping table	
- AC-to-ASC mapping	6 (AC0-9)
- AC-to-ASC mapping	5 (AC10)
- AC-to-ASC mapping	4 (AC11)
- AC-to-ASC mapping	3 (AC12)
- AC-to-ASC mapping	2 (AC13)
- AC-to-ASC mapping	1 (AC14)
- AC-to-ASC mapping	0 (AC15)
- CHOICE mode	TDD
- PRACH info (PRACH No.2)	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Timeslot Number	14
- PRACH Channelisation Code	
- CHOICE SF	8
- Channelisation Code List	
- Channelisation Code	8/5 where i denotes an unassigned code
- Channelisation Code	8/6 where i denotes an unassigned code
- Channelisation Code	8/7 where i denotes an unassigned code
- Channelisation Code	8/8 where i denotes an unassigned code
- PRACH Midamble	Direct
-PNBSCH allocation	Not Present
- RACH TFS	
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	
- RLC size	168
- Number of TB and TTI List	
- Transport Time Interval	Not Present
- Number of Transport Blocks	1
- CHOICE Logical Channel List	ALL
- Semi-static Transport Format information	
- Transmission time interval	10 ms
- Type of channel coding	Convolutional
- Coding Rate	1/2
- Rate matching attribute	150
- CRC size	16
- RACH TFCS	Not Present
- PRACH partitioning	
- Access Service Class	
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	'00001111'B (ASC#0)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	'00001111'B (ASC#1)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD

- Available SYNC_UL codes indices	'00001111'B (ASC#2)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	'00001111'B (ASC#3)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	'00001111'B (ASC#4)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	'00001111'B (ASC#5)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	'00001111'B (ASC#6)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- Available SYNC_UL codes indices	'00001111'B (ASC#7)
- CHOICE subchannel size	Size1
- Persistence scaling factor	
- Persistence scaling factor	0.9 (for ASC#2)
- Persistence scaling factor	0.9 (for ASC#3)
- Persistence scaling factor	0.9 (for ASC#4)
- Persistence scaling factor	0.9 (for ASC#5)
- Persistence scaling factor	0.9 (for ASC#6)
- Persistence scaling factor	0.9 (for ASC#7)
- AC-to-ASC mapping table	
- AC-to-ASC mapping	6 (AC0-9)
- AC-to-ASC mapping	5 (AC10)
- AC-to-ASC mapping	4 (AC11)
- AC-to-ASC mapping	3 (AC12)
- AC-to-ASC mapping	2 (AC13)
- AC-to-ASC mapping	1 (AC14)
- AC-to-ASC mapping	0 (AC15)
- CHOICE mode	TDD

## SYSTEM INFORMATION TYPE 5 (Step 1a) – 1.28 Mcps TDD

- PRACH system information	2PRACHs
- PRACH info (PRACH No.1)	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- SYNC_UL info	
- SYNC_UL codes bitmap	'11110000'B
- PRX <sub>UpPCHdes</sub>	10
- Power Ramping Step	3
- Max SYNC_UL Transmissions	8
- Mmax	32
- PRACH Definition	
- Timeslot Number	
- CHOICE TDD option	1.28 Mcps TDD
- Timeslot number	1
- PRACH Channelisation Code	
- Channelisation Code List	
- Channelisation Code	8/1
- Midamble shift and burst type	
- CHOICE TDD option	1.28 Mcps TDD
- Midamble Allocation Mode	Default
- Midamble Configuration	8
- Midamble Shift	Not Present
- FPACH info	
- Timeslot number	6
- Channelisation code	16/16
- Midamble Shift and burst type	
- CHOICE TDD option	1.28 Mcps TDD
- Midamble Allocation Mode	Default
- Midamble Configuration	16
- Midamble Shift	Not Present
- WT	4
- PNBSCH allocation	Not Present
- Transport Channel Identity	15
- RACH TFS	
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	
- RLC size	168
- Number of TB and TTI List	
- Transport Time Interval	Not Present
- Number of Transport Blocks	1
- CHOICE Logical Channel List	ALL
- Semi-static Transport Format information	
- Transmission time interval	10 ms
- Type of channel coding	Convolutional
- Coding Rate	½
- Rate matching attribute	150
- CRC size	16
- RACH TFCS	Not Present
- PRACH partitioning	
- Access Service Class	
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	'11110000'B (ASC#0)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	'11110000'B (ASC#1)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD

- Available SYNC_UL codes indices	'11110000'B (ASC#2)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	'11110000'B (ASC#3)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	'11110000'B (ASC#4)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	'11110000'B (ASC#5)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	'11110000'B (ASC#6)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	'11110000'B (ASC#7)
- CHOICE subchannel size	Size1
- Persistence scaling factor	
- Persistence scaling factor	0.9 (for ASC#2)
- Persistence scaling factor	0.9 (for ASC#3)
- Persistence scaling factor	0.9 (for ASC#4)
- Persistence scaling factor	0.9 (for ASC#5)
- Persistence scaling factor	0.9 (for ASC#6)
- Persistence scaling factor	0.9 (for ASC#7)
- AC-to-ASC mapping table	
- AC-to-ASC mapping	6 (AC0-9)
- AC-to-ASC mapping	5 (AC10)
- AC-to-ASC mapping	4 (AC11)
- AC-to-ASC mapping	3 (AC12)
- AC-to-ASC mapping	2 (AC13)
- AC-to-ASC mapping	1 (AC14)
- AC-to-ASC mapping	0 (AC15)
- CHOICE mode	TDD
- PRACH info (PRACH No.2)	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- SYNC_UL info	
- SYNC_UL codes bitmap	'11110000'B
- PRX <sub>UpPCHdes</sub>	10
- Power Ramping Step	1
- Max SYNC_UL Transmissions	8
- Mmax	32
- PRACH Definition	
- Timeslot Number	
- CHOICE TDD option	1.28 Mcps TDD
- Timeslot number	1
- PRACH Channelisation Code	
- Channelisation Code List	
- Channelisation Code	8/2
- Midamble shift and burst type	
- CHOICE TDD option	1.28 Mcps TDD
- Midamble Allocation Mode	Default
- Midamble Configuration	8
- Midamble Shift	Not Present
- FPACH info	
- Timeslot number	An available down-link timeslot

- Channelisation code	16/15
- Midamble Shift and burst type	
- CHOICE TDD option	1.28 Mcps TDD
- Midamble Allocation Mode	Default
- Midamble Configuration	16
- Midamble Shift	Not Present
- WT	4
- PNBSCH allocation	Not Present
- RACH TFS	
- CHOICE Transport channel type	Common transport channels
- Dynamic Transport format information	
- RLC size	168
- Number of TB and TTI List	
- Transport Time Interval	Not Present
- Number of Transport Blocks	1
- CHOICE Logical Channel List	ALL
- Semi-static Transport Format information	
- Transmission time interval	10 ms
- Type of channel coding	Convolutional
- Coding Rate	$\frac{1}{2}$
- Rate matching attribute	150
- CRC size	16
- RACH TFCS	Not Present
- PRACH partitioning	
- Access Service Class	
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	'00001111'B (ASC#0)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	'00001111'B (ASC#1)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	'00001111'B (ASC#2)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	'00001111'B (ASC#3)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	'00001111'B (ASC#4)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	'00001111'B (ASC#5)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	'00001111'B (ASC#6)
- CHOICE subchannel size	Size1
- ASC Setting	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- Available SYNC_UL codes indices	'00001111'B (ASC#7)
- CHOICE subchannel size	Size1
- Persistence scaling factor	
- Persistence scaling factor	0.9 (for ASC#2)

- Persistence scaling factor	0.9 (for ASC#3)
- Persistence scaling factor	0.9 (for ASC#4)
- Persistence scaling factor	0.9 (for ASC#5)
- Persistence scaling factor	0.9 (for ASC#6)
- Persistence scaling factor	0.9 (for ASC#7)
- AC-to-ASC mapping table	
- AC-to-ASC mapping	6 (AC0-9)
- AC-to-ASC mapping	5 (AC10)
- AC-to-ASC mapping	4 (AC11)
- AC-to-ASC mapping	3 (AC12)
- AC-to-ASC mapping	2 (AC13)
- AC-to-ASC mapping	1 (AC14)
- AC-to-ASC mapping	0 (AC15)
- CHOICE mode	TDD

### RRC CONNECTION SETUP (Step 6)

SS sends a message containing a critical extension not defined for the protocol release supported by the UE, as indicated in the IE "Access stratum release indicator":

Information Element	Value/remark
RRC transaction identifier	Arbitrarily selects an integer between 0 and 3
Integrity check info	The presence of this IE is dependent on Ixit statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.
Critical extensions	'01'H

### RRC CONNECTION REQUEST (Step 7)

Use the default message with the same message type specified in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
Protocol Error Indicator	Check to see if set to TRUE

#### 8.1.2.2.5 Test requirement

After step 2 the UE shall select either PRACH No.1 or PRACH No.2 and transmit an RRC CONNECTION REQUEST message.

After step 6 the UE shall re-send another RRC CONNECTION REQUEST message.

After step 9 the UE shall transmit an RRC CONNECTION SETUP COMPLETE message and establish an RRC connection on the DCCH logical channel.

### 8.1.2.3 RRC Connection Establishment: Failure (V300 is greater than N300)

#### 8.1.2.3.1 Definition

#### 8.1.2.3.2 Conformance requirement

The UE shall initiate the procedure when upper layers in the UE requests the establishment of a signalling connection and the UE is in idle mode (no RRC connection exists).

Upon initiation of the procedure, the UE shall:

- 1> set the IE "Initial UE identity" in the variable INITIAL\_UE\_IDENTITY according to TS 25.331 subclause 8.5.1;
- 1> submit the RRC CONNECTION REQUEST message for transmission on the uplink CCCH;
- 1> set counter V300 to 1; and
- 1> start timer T300 when the MAC layer indicates success or failure to transmit the message;
- 1> select a Secondary CCPCH according to TS 25.304;
- 1> start receiving all FACH transport channels mapped on the selected Secondary CCPCH.

The UE shall, in the transmitted RRC CONNECTION REQUEST message:

- 1> set the IE "Initial UE identity" to the value of the variable INITIAL\_UE\_IDENTITY;

...

- 1> if the UE has not yet received an RRC CONNECTION SETUP message with the value of the IE "Initial UE identity" equal to the value of the variable INITIAL\_UE\_IDENTITY; and

- 1> if cell re-selection or expiry of timer T300 occurs:

the UE shall:

- 1> check the value of V300; and

- 2> if V300 is equal to or smaller than N300:

...

- 3> set the IEs in the RRC CONNECTION REQUEST message according to TS 25.331 subclause 8.1.3.3;

...

- 3> submit a new RRC CONNECTION REQUEST message to lower layers for transmission on the uplink CCCH;

- 3> increment counter V300;

- 3> restart timer T300 when the MAC layer indicates success or failure to transmit the message.

...

- 2> if V300 is greater than N300:

- 3> enter idle mode.

- 3> consider the procedure to be unsuccessful;

- 3> Other actions the UE shall perform when entering idle mode from connected mode are specified in TS 25.331 subclause 8.5.2;

- 3> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.1.3.

### 8.1.2.3.3 Test purpose

To confirm that the UE stops retrying to establish the RRC connection if V300 is greater than N300 and goes back to idle mode.

## 8.1.2.3.4 Method of test

## Initial Condition

System Simulator: 1 cell

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

Before the test starts, SS initializes an internal counter K to 0. The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by an outgoing call operation. SS shall not respond to any RRC CONNECTION REQUEST message, instead the counter K is increased by 1 every time such a message is received. To arrive at the verdict, the SS checks that a total of (N300+1) such messages are received. SS calls for generic procedure C.1 to check that UE is in Idle Mode state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				SS initializes counter K to 0 and then prompts the operator to make an outgoing call.
2		→	RRC CONNECTION REQUEST	
3				SS increments K by 1.
4				If K is greater than N300, goes to step 5 else proceed to step 2.
5				SS monitor the uplink CCCH for a time period enough for UE to goes back to idle state. SS waits for 5s.
6		↔	CALL C.1	If the test result of C.1 indicates that UE is in Idle Mode state, the test passes, otherwise it fails.

## Specific Message Contents

None

## 8.1.2.3.5 Test requirement

After step 5, counter K shall be equal to (N300+1) and there shall be no uplink transmission in the monitoring period specified in step 5.

## 8.1.2.4 RRC Connection Establishment: Reject ("wait time" is not equal to 0)

## 8.1.2.4.1 Definition

## 8.1.2.4.2 Conformance requirement

When the UE receives an RRC CONNECTION REJECT message on the downlink CCCH, it shall compare the value of the IE "Initial UE identity" in the received RRC CONNECTION REJECT message with the value of the variable INITIAL\_UE\_IDENTITY:

If the values are different, the UE shall ignore the rest of the message;

If the values are identical, the UE shall stop timer T300 and:

1> if the IE "wait time" <> '0'; and

1> if the IE "frequency info" is present and:

- 2> if V300 is equal to or smaller than N300:
  - 3> initiate cell selection on the designated UTRA carrier;
  - 3> after having selected and camped on a cell:
    - 4> set CFN in relation to SFN of current cell according to TS 25.331 subclause 8.5.15;
    - 4> set the contents of the RRC CONNECTION REQUEST message according to TS 25.331 subclause 8.1.3.3;
    - 4> perform the mapping of the Access Class to an Access Service Class as specified in TS 25.331 subclause 8.5.13, and apply the given Access Service Class when accessing the RACH;
    - 4> transmit an RRC CONNECTION REQUEST message on the uplink CCCH;
    - 4> reset counter V300;
    - 4> start timer T300 when the MAC layer indicates success or failure in transmitting the message;
    - 4> disable cell reselection to original carrier until the time stated in the IE "wait time" has elapsed;
  - 3> if a cell selection on the designated carrier fails:
    - 4> wait for the time stated in the IE "wait time";
    - 4> set CFN in relation to SFN of current cell according to TS 25.331 subclause 8.5.15;
    - 4> set the IEs in the RRC CONNECTION REQUEST message according to TS 25.331 subclause 8.1.3.3;
    - 4> perform the mapping of the Access Class to an Access Service Class as specified in TS 25.331 subclause 8.5.13, and apply the given Access Service Class when accessing the RACH;
    - 4> then submit a new RRC CONNECTION REQUEST message to the lower layers for transmission on the uplink CCCH of the original serving cell;
    - 4> increment counter V300;
    - 4> restart timer T300 when the MAC layer indicates success or failure to transmit the message;
- 2> if V300 is greater than N300:
  - 3> enter idle mode;
  - 3> perform the actions specified in TS 25.331 subclause 8.5.2 when entering idle mode from connected mode;
  - 3> consider the RRC establishment procedure to be unsuccessful;
  - 3> the procedure ends.
- ...
- 1> If the IEs "frequency info" not present.....:
  - 2> if V300 is equal to or smaller than N300:
    - 3> wait at least the time stated in the IE "wait time";
    - 3> set the IEs in the RRC CONNECTION REQUEST message according to TS 25.331 subclause 8.1.3.2;
    - 3> perform the mapping of the Access Class to an Access Service Class as specified in TS 25.331 subclause 8.5.13, and apply the given Access Service Class when accessing the RACH;
    - 3> submit a new RRC CONNECTION REQUEST message to the lower layers for transmission on the uplink CCCH;

- 3> increment counter V300;
- 3> restart timer T300 when the MAC layer indicates success or failure to transmit the message;
- 2> if V300 is greater than N300:
  - 3> enter idle mode;
  - 3> perform the actions specified in TS 25.331 subclause 8.5.2 when entering idle mode from connected mode;
  - 3> consider the RRC establishment procedure to be unsuccessful;
  - 3> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.1.3.9.

### 8.1.2.4.3 Test purpose

To confirm that the UE retries to establish the RRC connection after the "wait time" lapses, if the UE receives an RRC CONNECTION REJECT message which includes the IE "wait time" not set to 0.

To confirm that the UE performs a cell reselection when receiving an RRC CONNECTION REJECT message, containing relevant frequency information of the target cell to be re-selected.

### 8.1.2.4.4 Method of test

#### Initial Condition

System Simulator: 2 cells – both cell 1 and cell 2 are active and suitable for camping, but cell 1 is transmitted using a larger power. Cell 1 and cell 2 are being transmitted from different 2 UARFCNs. The transmission power of cell 2 is 15 dB smaller than cell 1.

**Table 8.1.2.4**

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel Number		Ch. 1	Ch. 2
CPICH Ec (FDD)	dBm/3.84 MHz	-60	-75
P-CCPCH (TDD)	dBm	-60	-75

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by an outgoing call operation in cell 1. SS rejects the first request by transmitting an RRC CONNECTION REJECT message which indicates a non-zero wait time. In this message, frequency information for cell 2 is available. SS then waits for RRC CONNECTION REQUEST message on the uplink CCCH of cell 2. SS will also monitor the uplink of cell 1 simultaneously to ensure that all transmission activities from cell 1 have ceased. When the UE has successfully camp onto cell 2, it shall send an RRC CONNECTION REQUEST with the same establishment cause as its previous attempt in cell 1. SS responds with an RRC CONNECTION REJECT message, indicating a non-zero "wait time" and omitting the IE "Redirection Info". The UE shall observe the wait time period indicated. After the wait time has elapsed, the UE shall re-transmit RRC CONNECTION REQUEST again. Finally, SS transmits an RRC CONNECTION SETUP

message to establish an RRC connection with the UE, and the UE replies with an RRC CONNECTION SETUP COMPLETE message and enters CELL\_DCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		→	RRC CONNECTION REQUEST	SS prompts the operator to make an outgoing call in cell 1.
2		←	RRC CONNECTION REJECT	This message shall include the IE "wait time" set to 15 seconds and IE "frequency info" set to the UARFCN of cell 2.
3				SS waits for a period of time sufficient for UE to reselect to cell 2. At the same time, it monitors the uplink of cell 1 to make sure that all transmissions have ceased.
4		→	RRC CONNECTION REQUEST	UE shall attempt to re-start an RRC connection establishment procedure in cell 2. The establishment cause shall remain unchanged.
5		←	RRC CONNECTION REJECT	This message shall include the IE "wait time" set to 15 seconds, but with IE "Redirection Info" absent.
6		→	RRC CONNECTION REQUEST	SS waits until the duration specified in IE "wait time" has elapsed and then listens to the uplink CCCH for a second RRC CONNECTION REQUEST message.
7		←	RRC CONNECTION SETUP	SS sends the message to UE to setup an RRC connection with the UE.
8				The UE shall configure the layer 2 and layer 1 in order to access the uplink and downlink DCCH assigned.
9		→	RRC CONNECTION SETUP COMPLETE	

#### Specific Message Contents

##### RRC CONNECTION REQUEST (Step 1)

Use the same message type found in clause 9 of TS 34.108, with the following exception.

Information Element	Value/remark
Initial UE Identity	Same as the IMSI stored in the TEST USIM card, or the registered TMSI or P-TMSI
Establishment Cause	Must be "Originating Call"

##### RRC CONNECTION REJECT (Step 2) - FDD

Use the same message type found in Annex A, with the following exception.

Information Element	Value/remark
Wait time	15 seconds
Redirection Info	
Frequency Info	
CHOICE mode	FDD
UARFCN uplink (Nu)	Not present
UARFCN downlink (Nd)	Set to the UARFCN for uplink carrier of cell 2

RRC CONNECTION REJECT (Step 2) – TDD

Information Element	Value/remark
Wait time	15 seconds
Redirection Info	
Frequency Info	
CHOICE Mode	TDD
UARFCN (Nt)	Set to a different UARFCN from the carrier of cell 1

RRC CONNECTION REQUEST (Step 4 and step 6)

Same requirement as in step 1.

RRC CONNECTION REJECT (Step 5)

Use the same message type found in Annex A, with the following exception.

Information Element	Value/remark
Wait time	15 seconds

8.1.2.4.5 Test requirement

After step 3 the UE shall have successfully re-selected to cell 2, using information transmitted in IE "frequency info" of RRC CONNECTION REJECT message. UE shall trigger the start of RRC connection establishment by transmitting RRC CONNECTION REQUEST. The establishment cause shall be similar to the message sent in step 1.

After step 5 the UE shall observe the period specified in IE "wait time" of an RRC CONNECTION REJECT message and not transmit an RRC CONNECTION REQUEST message in this period.

After step 7 the UE shall transmit an RRC CONNECTION SETUP COMPLETE message to SS on uplink DCCH and then establish an RRC connection.

8.1.2.5 RRC Connection Establishment: Reject ("wait time" is not equal to 0 and V300 is greater than N300)

8.1.2.5.1 Definition

8.1.2.5.2 Conformance requirement

When the UE receives an RRC CONNECTION REJECT message on the downlink CCCH, it shall compare the value of the IE "Initial UE identity" in the received RRC CONNECTION REJECT message with the value of the variable INITIAL\_UE\_IDENTITY:

If the values are different, the UE shall ignore the rest of the message;

If the values are identical, the UE shall stop timer T300 and:

- 1> if the IE "wait time" <> '0'; and
- 1> if the IE "frequency info" is present and:

- 2> if V300 is equal to or smaller than N300:
  - 3> initiate cell selection on the designated UTRA carrier;
  - 3> after having selected and camped on a cell:
    - 4> set CFN in relation to SFN of current cell according to TS 25.331 subclause 8.5.15;
    - 4> set the contents of the RRC CONNECTION REQUEST message according to TS 25.331 subclause 8.1.3.3;
    - 4> perform the mapping of the Access Class to an Access Service Class as specified in TS 25.331 subclause 8.5.13, and apply the given Access Service Class when accessing the RACH;
    - 4> transmit an RRC CONNECTION REQUEST message on the uplink CCCH;
    - 4> reset counter V300;
    - 4> start timer T300 when the MAC layer indicates success or failure in transmitting the message;
    - 4> disable cell reselection to original carrier until the time stated in the IE "wait time" has elapsed;
  - 3> if a cell selection on the designated carrier fails:
    - 4> wait for the time stated in the IE "wait time";
    - 4> set CFN in relation to SFN of current cell according to TS 25.331 subclause 8.5.15;
    - 4> set the IEs in the RRC CONNECTION REQUEST message according to TS 25.331 subclause 8.1.3.3;
    - 4> perform the mapping of the Access Class to an Access Service Class as specified in TS 25.331 subclause 8.5.13, and apply the given Access Service Class when accessing the RACH;
    - 4> then submit a new RRC CONNECTION REQUEST message to the lower layers for transmission on the uplink CCCH of the original serving cell;
    - 4> increment counter V300;
    - 4> restart timer T300 when the MAC layer indicates success or failure to transmit the message;
- 2> if V300 is greater than N300:
  - 3> enter idle mode;
  - 3> perform the actions specified in TS 25.331 subclause 8.5.2 when entering idle mode from connected mode;
  - 3> consider the RRC establishment procedure to be unsuccessful;
  - 3> the procedure ends.
- ...
- 1> If the IEs "frequency info" not present.....:
  - 2> if V300 is equal to or smaller than N300:
    - 3> wait at least the time stated in the IE "wait time";
    - 3> set the IEs in the RRC CONNECTION REQUEST message according to TS 25.331 subclause 8.1.3.2;
    - 3> perform the mapping of the Access Class to an Access Service Class as specified in TS 25.331 subclause 8.5.13, and apply the given Access Service Class when accessing the RACH;
    - 3> submit a new RRC CONNECTION REQUEST message to the lower layers for transmission on the uplink CCCH;

- 3> increment counter V300;
- 3> restart timer T300 when the MAC layer indicates success or failure to transmit the message;
- 2> if V300 is greater than N300:
  - 3> enter idle mode;
  - 3> perform the actions specified in TS 25.331 subclause 8.5.2 when entering idle mode from connected mode;
  - 3> consider the RRC establishment procedure to be unsuccessful;
  - 3> the procedure ends.

#### Reference

3GPP TS 25.331 clause 8.1.3.9.

#### 8.1.2.5.3 Test purpose

To confirm that the UE retries to establish the RRC connection after the "wait time" elapses if the UE receives an RRC CONNECTION REJECT message which specifies a non-zero IE "wait time".

To confirm that the UE stops retrying to establish the RRC connection if V300 is greater than N300 and goes back to idle mode.

#### 8.1.2.5.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

## Test Procedure

Before the test starts, SS initializes an internal counter K to 0. The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH, triggered by an outgoing data call operation. SS rejects all requests by transmitting an RRC CONNECTION REJECT message which indicates a non-zero wait time and the counter K is increased by 1 every time such a message is received. To arrive at the verdict, the SS checks that a total of (N300+1) such messages are received and the UE enters idle state. SS calls for generic procedure C.1 to check that UE is in Idle Mode state.

### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				SS initializes counter K to 0 and then prompts the operator to make an outgoing data call.
2		→	RRC CONNECTION REQUEST	Shall be sent on CCCH and contain the correct establishment cause.
3		←	RRC CONNECTION REJECT	This message includes the IE "wait time" set to 15 seconds.
4				SS increments K by 1.
5				If K is greater than N300, goes to step 6. Else SS waits for 15 sec before proceeding to step 2.
6				SS monitor the uplink CCCH for a time period enough for UE to goes back to idle state. SS waits for 5s.
7		↔	CALL C.1	If the test result of C.1 indicates that UE is in Idle Mode state, the test passes, otherwise it fails.

### Specific Message Contents

#### RRC CONNECTION REQUEST (Step 2)

Use the same message type found in clause 9 of TS 34.108, with the following exception.

Information Element	Value/remark
Initial UE Identity	Same as the IMSI stored in the TEST USIM card, or the registered TMSI or P-TMSI Must be "Originating Call"
Establishment Cause	

#### RRC CONNECTION REJECT (Step 3)

Use the same message type found in Annex A, with the following exception.

Information Element	Value/remark
Wait time	15 seconds

#### 8.1.2.5.5 Test requirement

After step 6, counter K shall be equals to (N300+1) and there shall be no uplink transmission in the monitoring period specified in step 6.

## 8.1.2.6 RRC Connection Establishment: Reject ("wait time" is set to 0)

### 8.1.2.6.1 Definition

### 8.1.2.6.2 Conformance requirement

When the UE receives an RRC CONNECTION REJECT message on the downlink CCCH, it shall compare the value of the IE "Initial UE identity" in the received RRC CONNECTION REJECT message with the value of the variable INITIAL\_UE\_IDENTITY:

If the values are different, the UE shall ignore the rest of the message;

If the UE has not yet received an RRC CONNECTION SETUP message with the value of the IE "Initial UE identity" equal to the value of the variable INITIAL\_UE\_IDENTITY; and

if expiry of timer T300 occurs:

the UE shall:

1> check the value of V300; and

2> if V300 is equal to or smaller than N300:

3> set the IEs in the RRC CONNECTION REQUEST message according to TS 25.331 subclause 8.1.3.3;

3> submit a new RRC CONNECTION REQUEST message to lower layers for transmission on the uplink CCCH;

3> increment counter V300;

3> restart timer T300 when the MAC layer indicates success or failure to transmit the message.

2> if V300 is greater than N300:

...

### Reference

3GPP TS 25.331 clause 8.1.3.9.

### 8.1.2.6.3 Test purpose

To confirm that the UE goes back to idle mode, if the SS transmits an RRC CONNECTION REJECT message which includes IE "wait time" set to 0. To confirm that the UE ignores an RRC CONNECTION REJECT message not addressed to it. To confirm that the UE is capable of handling an erroneous RRC CONNECTION REJECT message correctly.

### 8.1.2.6.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by making an outgoing call. After the SS receives this message, it transmits an RRC CONNECTION REJECT message which is not addressed to the UE. The UE shall disregard this message and proceed to re-transmit RRC CONNECTION REQUEST message upon T300 timer expiry. SS answers the second RRC CONNECTION REQUEST message by transmitting an invalid RRC CONNECTION REJECT message. The UE shall continue to send the third RRC CONNECTION REQUEST message upon expiry of T300 timer. Next, the SS sends a legal RRC CONNECTION REJECT message which includes IE "wait time" which is set to '0'. To confirm that the UE goes back to idle mode immediately after receiving the reject message, SS shall monitor the uplink CCCH for the next 60 seconds and verify that there is no further transmission in the uplink direction.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		→	RRC CONNECTION REQUEST	Test operator is prompted to make an out-going call,
2		←	RRC CONNECTION REJECT	IE "Initial UE identity" contains an identity different from any of the UE identities available.
3		→	RRC CONNECTION REQUEST	UE shall send this message after T300 expires.
4		←	RRC CONNECTION REJECT	
5		→	RRC CONNECTION REQUEST	UE shall send this message after T300 expires.
6		←	RRC CONNECTION REJECT	IE "wait time" is set to 0.
7				The UE goes back to idle mode.

## Specific Message Contents

### RRC CONNECTION REQUEST (Step 1, 3 and 5)

Information Element	Value/remark
Message Type	
Initial UE Identity	Same as the IMSI stored in the TEST USIM card, or the registered TMSI or P-TMSI
Establishment Cause	Checked to see if set to one of the supported originating call types
Protocol Error Indicator	Checked to see if set to "FALSE"
Measured Results on RACH	Checked to see if it is absent

### RRC CONNECTION REJECT (Step 2)

Use the same message type found in Annex A, with the following exception.

Information Element	Value/remark
Initial UE Identity	Set to the same type as in RRC CONNECTION REQUEST message (step 1) but with a different value.

### RRC CONNECTION REJECT (Step 4)

Information Element	Value/remark
All IEs	Not Present

## RRC CONNECTION REJECT (Step 6)

Use the same message type found in Annex A, with the following exception.

Information Element	Value/remark
Initial UE Identity	Same as the type and value defined in RRC CONNECTION REQUEST message (step 5)
Reject Cause	Congestion
Wait time	0 second

## 8.1.2.6.5 Test requirement

After step 2 the UE shall transmit an RRC CONNECTION REQUEST message on uplink CCCH upon expiry of T300 timer.

After step 4 the UE shall re-transmit an RRC CONNECTION REQUEST message on the uplink CCCH upon expiry of T300 timer.

After step 6 the UE shall stop sending an RRC CONNECTION REQUEST message, go back to idle mode immediately and not transmit in the uplink direction again.

## 8.1.2.7 RRC Connection Establishment in CELL\_FACH state: Success

## 8.1.2.7.1 Definition

## 8.1.2.7.2 Conformance requirement

The UE shall initiate the procedure when upper layers in the UE requests the establishment of a signalling connection and the UE is in idle mode (no RRC connection exists).

Upon initiation of the procedure, the UE shall:

...

- 1> set the contents of the RRC CONNECTION REQUEST message according to TS 25.331 subclause 8.1.3.3;
- 1> set CFN in relation to SFN of current cell according to TS 25.331 subclause 8.5.15;
- 1> perform the mapping of the Access Class to an Access Service Class as specified in TS 25.331 subclause 8.5.13, and apply the given Access Service Class when accessing the RACH;
- 1> submit the RRC CONNECTION REQUEST message for transmission on the uplink CCCH;
- 1> set counter V300 to 1; and
- 1> start timer T300 when the MAC layer indicates success or failure to transmit the message;
- 1> select a Secondary CCPCH according to TS 25.304;
- 1> start receiving all FACH transport channels mapped on the selected Secondary CCPCH.

The UE shall, in the transmitted RRC CONNECTION REQUEST message:

- 1> set the IE "Establishment cause" to the value of the variable ESTABLISHMENT\_CAUSE;
- 1> set the IE "Initial UE identity" to the value of the variable INITIAL\_UE\_IDENTITY;

...

The UE shall compare the value of the IE "Initial UE identity" in the received RRC CONNECTION SETUP message with the value of the variable INITIAL\_UE\_IDENTITY.

If the values are different, the UE shall:

- 1> ignore the rest of the message.

If the values are identical, the UE shall:

- 1> stop timer T300, and act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified otherwise in the following:
  - 2> if the UE will be in the CELL\_FACH state at the conclusion of this procedure:
    - 3> if the IE "Frequency info" is included:
      - 4> select a suitable UTRA cell according to TS 25.304 on that frequency;
      - 3> select PRACH according to TS 25.331 subclause 8.5.17;
      - 3> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
      - 3> ignore the IE "UTRAN DRX cycle length coefficient" and stop using DRX.
  - 1> perform the physical layer synchronization procedure as specified in TS 25.214;
  - 1> enter UTRA RRC connected mode, in a state according to TS 25.331 subclause 8.6.3.3;
  - 1> submit an RRC CONNECTION SETUP COMPLETE message to the lower layers on the uplink DCCH after successful state transition per TS 25.331 subclause 8.6.3.3, with the contents set as specified below:
    - 2> set the IE "RRC transaction identifier" to:
      - 3> the value of "RRC transaction identifier" in the entry for the RRC CONNECTION SETUP message in the table "Accepted transactions" in the variable TRANSACTIONS; and
      - 3> clear that entry.
    - 2> retrieve its UTRA UE radio access capability information elements from variable UE\_CAPABILITY\_REQUESTED; and then
    - 2> include this in IE "UE radio access capability" and IE "UE radio access capability extension", provided this IE is included in variable UE\_CAPABILITY\_REQUESTED;
    - 2> retrieve its inter-RAT-specific UE radio access capability information elements from variable UE\_CAPABILITY\_REQUESTED; and then
    - 2> include this in IE "UE system specific capability".

When the RRC CONNECTION SETUP COMPLETE message has been submitted to lower layers for transmission the UE shall:

- 1> if the UE has entered CELL\_FACH state:
  - 2> start timer T305 using its initial value if periodical update has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity" in system information block type 1.
- 1> consider the procedure to be successful;

And the procedure ends.

## Reference

3GPP TS 25.331 clause 8.1.3.

### 8.1.2.7.3 Test Purpose

1. To confirm that the UE is able to enter CELL\_FACH state and setup signalling radio bearers using common physical channels.
2. To confirm that the UE indicates the requested UE radio access capabilities (used by UTRAN to decide which RAB to establish) and UE system specific capabilities (may be used by UTRAN to configure inter RAT-measurements).

## 8.1.2.7.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

The UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by attempting to make an outgoing call. After the SS receives this message, it assigns the necessary radio resources and U-RNTI to be used by the UE, and then transmits an RRC CONNECTION SETUP message to the UE within timer T300. SS then waits for the UE to transmit an RRC CONNECTION SETUP COMPLETE message on the DCCH. SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		→	RRC CONNECTION REQUEST	Test operator is requested to make an outgoing call. The UE shall transmit this message, indicating the correct establishment cause. See specific message contents.
2		←	RRC CONNECTION SETUP	See specific message contents.
3				The UE shall configure the layer 2 and layer 1.
4		→	RRC CONNECTION SETUP COMPLETE	UE shall send this message on the DCCH, carried by the assigned PRACH resources. See specific message contents. FDD
5		↔	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

## Specific Message Content

## RRC CONNECTION REQUEST

Use the same message type found in clause 9 of TS 34.108, with the following exception.

Information Element	Value/remark
Initial UE identity	Same as the IMSI stored in the TEST USIM card, or the registered TMSI or P-TMSI Originating Interactive Call or Originating Background Call or Originating Streaming Call
Establishment Cause	

## RRC CONNECTION SETUP

For this message, the contents of the message to be used are basically identical to the message sub-type entitled "RRC CONNECTION SETUP message (Transition to CELL\_FACH)" found in TS 34.108, clause 9 with the following exception:

Information Element	Value/remark
Capability update requirement	TRUE FALSE gsm
UE radio access FDD capability update requirement	
UE radio access TDD capability update requirement	
System specific capability update requirement list	

## RRC CONNECTION SETUP COMPLETE

Use the same message type found in clause 9 of TS 34.108, with the following exception.

Information Element	Value/remark
UE Radio Access Capability	Checked to see if compatible with the stated capability in PIXIT/PICS statements.
UE radio access capability extension	Checked to see if compatible with the stated capability in PIXIT/PICS statements.
UE system specific Capability	Checked to see if compatible with the stated capability in PIXIT/PICS statements.

## 8.1.2.7.5 Test requirements

After step 3 the UE shall establish the RRC connection, and transmit RRC CONNECTION SETUP COMPLETE message on the DCCH using PRACH physical resource specified in system information block messages.

## 8.1.2.8 Void

## 8.1.2.9 RRC Connection Establishment: Success after Physical channel failure and Failure after Invalid configuration

## 8.1.2.9.1 Definition

## 8.1.2.9.2 Conformance requirement

If the UE failed to establish, per TS 25.331 subclause 8.5.4, the physical channel(s) indicated in the RRC CONNECTION SETUP message.

After having received an RRC CONNECTION SETUP message with the value of the IE "Initial UE identity" equal to the value of the variable INITIAL\_UE\_IDENTITY.

Before the RRC CONNECTION SETUP COMPLETE message is delivered to lower layers for transmission, the UE shall:

- 1> clear the entry for the RRC CONNECTION SETUP message in the table "Accepted transactions" in the variable TRANSACTIONS;
- 1> check the value of V300, and:
  - 2> if V300 is equal to or smaller than N300:
    - 3> set CFN in relation to SFN of current cell according to TS 25.331 subclause 8.5.15;
    - 3> set the IEs in the RRC CONNECTION REQUEST message according to TS 25.331 subclause 8.1.3.3;
    - 3> perform the mapping of the Access Class to an Access Service Class as specified in TS 25.331 subclause 8.5.13, and apply the given Access Service Class when accessing the RACH;
    - 3> submit a new RRC CONNECTION REQUEST message to the lower layers for transmission on the uplink CCCH;
    - 3> increment counter V300; and
    - 3> restart timer T300 when the MAC layer indicates success or failure in transmitting the message.
  - 2> if V300 is greater than N300:

...

If the UE receives an RRC CONNECTION SETUP message which contains an IE "Initial UE identity" with a value which is identical to the value of the variable INITIAL\_UE\_IDENTITY; and

the variable INVALID\_CONFIGURATION becomes set to TRUE due to the received RRC CONNECTION SETUP message:

the UE shall:

- 1> clear the entry for the RRC CONNECTION SETUP message in the table "Accepted transactions" in the variable TRANSACTIONS and proceed as below;
- 1> if V300 is equal to or smaller than N300:
  - 2> set the variable PROTOCOL\_ERROR\_INDICATOR to TRUE;
  - 2> set the IEs in the RRC CONNECTION REQUEST message according to TS 25.331 subclause 8.1.3.3;
  - 2> perform the mapping of the Access Class to an Access Service Class as specified in TS 25.331 subclause 8.5.13; and
  - 2> apply the given Access Service Class when accessing the RACH;
  - 2> submit a new RRC CONNECTION REQUEST message to the lower layers for transmission on the uplink CCCH;
  - 2> increment counter V300; and
  - 2> restart timer T300 when the MAC layer indicates success or failure in transmitting the message.
- 1> if V300 is greater than N300:
  - ...

## Reference

3GPP TS 25.331 clause 8.1.3.

### 8.1.2.9.3 Test purpose

1. To confirm that the UE retries to establish the RRC connection until V300 is greater than N300 when a physical channel failure occurs because SS does not configure the physical channel that is specified in the transmitted RRC CONNECTION SETUP message.
2. To confirm that the UE retries to establish the RRC connection until V300 is greater than N300 when the transmitted RRC CONNECTION SETUP message causes invalid configuration in the UE.

### 8.1.2.9.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

#### Test Procedure

Before the test starts, an internal counter K in SS is initialised to a value = 0. Following this, the UE shall transmit an RRC CONNECTION REQUEST message to the SS on the uplink CCCH, after the operator attempts to make an outgoing call. SS increments K every time such a message is received. Then, SS shall send a RRC CONNECTION SETUP message that contains an invalid configuration. UE shall then send RRC CONNECTION REQUEST message to SS again. This cycle is repeated until K reaches N300+1. When K is equal to N300+1, the SS again transmits an RRC CONNECTION SETUP message including an invalid configuration. Upon receiving this message the UE shall not send another RRC CONNECTION REQUEST message.

Next the SS re-initialises the internal counter K to value = 0, after which the operator attempts to make another outgoing call. Following this, the UE shall transmit an RRC CONNECTION REQUEST message to the SS on the uplink CCCH. SS increments K every time such a message is received. SS transmits an RRC CONNECTION SETUP message to make the UE configure the physical channel in order to communicate on the DCCH but SS does not configure the physical channel. Then the UE detects the physical channel failure and transmits an RRC CONNECTION REQUEST message. This cycle is repeated until K reaches N300+1. When K is equal to N300+1, the SS transmits the RRC CONNECTION SETUP message and configures the physical channel. The UE shall detect "in-sync" from physical layer and then acknowledge the establishment of RRC connection by sending the RRC CONNECTION SETUP COMPLETE message on uplink DCCH.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				SS initialises counter K to 0. Operator is asked to make an outgoing call and SS starts to wait for RRC CONNECTION REQUEST on uplink CCCH.
2		→	RRC CONNECTION REQUEST	See specific message contents.
2a				SS increments K by 1 for every RRC CONNECTION REQUEST message received in step 2
2b		←	RRC CONNECTION SETUP	See specific message contents.
3				SS checks to see if K is equal to N300+1. If so, goes to step 3a. Else, continues to execute step 2.
3a				SS waits to verify that the UE does not send any further RRC CONNECTION REQUEST message
3b				SS re-initialises counter K to 0. Operator is asked to make another outgoing call and SS starts to wait for RRC CONNECTION REQUEST on uplink CCCH.
3c		→	RRC CONNECTION REQUEST	See specific message contents.
3d				SS increments K by 1 for every RRC CONNECTION REQUEST message received in step 3c
3e				SS checks to see if K is equal to N300+1. If so, goes to step 6. Else, continues to execute step 4
4		←	RRC CONNECTION SETUP	Use the default message with the same message subtype specified in clause 9 in TS 34.108. SS does not configure the physical channel.
5				The next step is step 3c.
6		←	RRC CONNECTION SETUP	Use the default message with the same message subtype specified in clause 9 in TS 34.108. SS configures the physical channel.
7				The UE configures the layer 1 and layer 2.
8		→	RRC CONNECTION SETUP COMPLETE	Use the default message with the same message subtype specified in clause 9 in TS 34.108.

## Specific Message Contents

## RRC CONNECTION REQUEST (Step 2 &amp; step 3c, K=0)

The same message sub-type found in clause 9 of TS 34.108 applies, with the following exceptions:

Information Element	Value/remark
Initial UE identity	Same as the IMSI stored in the TEST USIM card, or the registered TMSI or P-TMSI
Establishment Cause	Originating Interactive Call or Originating Background Call or Originating Streaming Call

## RRC CONNECTION REQUEST (Step 2 &amp; step 3c, K&gt;0)

The same message sub-type found in clause 9 of TS 34.108 applies, with the following exceptions:

Information Element	Value/remark
Initial UE identity	Same as the IMSI stored in the TEST USIM card, or the registered TMSI or P-TMSI
Establishment Cause	Originating Interactive Call or Originating Background Call or Originating Streaming Call
Protocol error indicator	TRUE

## RRC CONNECTION SETUP (Step 2b)

Use the same message sub-type found in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_DCH
Uplink DPCH info	Not present

## 8.1.2.9.5 Test requirement

After step 3a the UE shall not send any further RRC CONNECTION REQUEST message.

After step 8 the UE shall transmit an RRC CONNECTION SETUP COMPLETE message and establish an RRC connection.

## 8.1.2.10 RRC connection establishment in CELL\_DCH on another frequency

## 8.1.2.10.1 Definition

## 8.1.2.10.2 Conformance requirement

1. The UE shall, in the transmitted RRC CONNECTION REQUEST message:

- set the IE "Establishment cause" to the value of the variable ESTABLISHMENT\_CAUSE;
- set the IE "Initial UE identity" to the value of the variable INITIAL\_UE\_IDENTITY;
- set the IE "Protocol error indicator" to the value of the variable PROTOCOL\_ERROR\_INDICATOR;
- include a measurement report in the IE "Measured results on RACH", as specified in the IE "Intra-frequency reporting quantity for RACH reporting" and the IE "Maximum number of reported cells on RACH" in System Information Block type 11.

2. The UE shall compare the value of the IE "Initial UE identity" in the received RRC CONNECTION SETUP message with the value of the variable INITIAL\_UE\_IDENTITY.

If the values are identical, the UE shall:

- perform the physical layer synchronization procedure

#### Reference

3GPP TS 25.331 clauses 8.3.1.3, 8.3.1.6

#### 8.1.2.10.3 Test Purpose

To confirm that the UE manages to synchronize on another frequency when so required by UTRAN in the RRC CONNECTION SET UP message.

#### 8.1.2.10.4 Method of test

#### Initial condition

System simulator: 2 cells – Cell 1 on UARFCN 1 and Cell 2 on UARFCN 2.

UE: "Registered idle mode on CS" (state 2) or "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial state shall be "Registered idle mode on CS/PS" (state 7).

#### Test procedure

The UE is initially in idle mode and is camping on cell 1. SIB 11 is broadcast in cell 1, and the parameters used are as specified below.

SS prompts the operator to make an outgoing call of a supported traffic class. The UE shall transmit an RRC CONNECTION REQUEST on the CCCH, and SS replies with the RRC CONNECTION SETUP, in which the IEs are set as described below. The UE shall send the RRC CONNECTION SETUP COMPLETE back to SS in cell 2 on the DPCH described in the RRC CONNECTION SET UP message received from the SS. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1	→		RRC CONNECTION REQUEST	By outgoing call operation
2	←		RRC CONNECTION SETUP	
3				The UE configures the layer 2 and layer 1.
4	→		RRC CONNECTION SETUP COMPLETE	This message is sent to on the frequency indicated in the RRC CONNECTION SETUP message
5	↔		CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

#### Specific message content

All messages indicated below shall use the same content as described in the default message content, with the following exceptions:

## System Information Block type 11

Information Element	Value/Remark
SIB12 indicator	FALSE
FACH measurement occasion info	Not Present
Measurement control system information	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency info list	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	256 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 1
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection	Not present
- Cell for measurement	Not present
- Intra-frequency measurement quantity	Not present
- Intra-frequency measurement for RACH reporting	
- SFN-SFN observed time difference	No report
- Reporting quantity	CPICH Ec/No
- Maximum number of reported cells on RACH	Current Cell
- Reporting information for state CELL_DCH	Not present

## RRC CONNECTION REQUEST (Step 2)

Use the same message type found in clause 9 of TS 34.108, with the following exception.

Information Element	Value/remark
Measured results on RACH	Check that the Ec/No for the cell 1 is reported.

## RRC CONNECTION SETUP (Step 3)

Use the same message type found in clause 9 of TS 34.108, with the following exception.

Information Element	Value/remark
Frequency info	
- UARFCN uplink(Nu)	UARFCN uplink of cell 2
- UARFCN downlink(Nd)	UARFCN downlink of cell 2

## 8.1.2.10.5 Test requirement

In step 4, the UE shall send the RRC CONNECTION SETUP COMPLETE message on the frequency indicated in the RRC CONNECTION SETUP message.

### 8.1.2.11 RRC Connection Establishment in FACH state (Frequency band modification): Success

#### 8.1.2.11.1 Definition

#### 8.1.2.11.2 Conformance requirement

The UE shall compare the value of the IE "Initial UE identity" in the received RRC CONNECTION SETUP message with the value of the UE storing "Initial UE identity".

If the values are different, the UE shall:

- 1> ignore the rest of the message.

If the values are identical, the UE shall:

- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified otherwise in the following:
  - 2> if the UE will be in the CELL\_FACH state at the conclusion of this procedure:
    - 3> if the IE "Frequency info" is included:
      - 4> select a suitable UTRA cell according to TS25.304 on that frequency;
      - 3> select PRACH according to TS25.331 subclause 8.5.17;
      - 3> select Secondary CCPCCH according to TS5.331 subclause 8.5.19;
      - 3> ignore the IE "UTRAN DRX cycle length coefficient" and stop using DRX.
    - 1> enter UTRA RRC connected mode, in a state according to TS25.331 subclause 8.6.3.3;
  - 1> submit an RRC CONNECTION SETUP COMPLETE message to the lower layers on the uplink DCCH after successful state transition per TS25.331 subclause 8.6.3.3;

And the procedure ends.

#### Reference

3GPP TS 25.331 clause 8.1.3.

#### 8.1.2.11.3 Test purpose

To confirm that the UE enters to CELL\_FACH state and correctly establishes signalling radio bearers using common physical channels of a cell within the frequency band specified by SS in RRC CONNECTION SETUP message.

#### 8.1.2.11.4 Method of test

#### Initial Condition

System Simulator: 2 cells–Cells 1 is active and cell 6 is inactive.

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

Table 8.1.2.11

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-72	Off	-72

Table 8.1.2.11 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in Idle mode of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.1.2.11. The SS switches its downlink transmission power settings to columns "T1" and the UE transmits an RRC CONNECTION REQUEST message to the SS on the uplink CCCH by attempting to make an outgoing call. After SS receives this message, it assigns the necessary radio resources and U-RNTI to be used by the UE. The SS then transmits an RRC CONNECTION SETUP message containing an IE "frequency info" IE "Frequency info" set to uplink/downlink UARFCN as used for cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6. The SS monitors all uplink RACH channels of cell 6. The UE transmitting an RRC CONNECTION SETUP COMPLETE message on the DCCH (mapped onto RACH) of cell 6.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The initial state of UE is in Idle mode of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.1.2.11.
2				The SS switches its downlink transmission power settings to columns "T1" in table 8.1.2.11.
3		→	RRC CONNECTION REQUEST	Operator makes an outgoing call. The UE shall transmit this message, indicating the proper establishment cause.
4		←	RRC CONNECTION SETUP	Including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6
5		→	RRC CONNECTION SETUP COMPLETE	UE shall send this message on the DCCH, carried by the assigned PRACH resources in cell 6.

#### Specific Message Content

##### RRC CONNECTION REQUEST (Step 3)

Use the same message type found in clause 9 of TS 34.108, with the following exception:

Information Element	Value/remark
Initial UE identity	Same as the IMSI stored in the TEST USIM card, or the registered TMSI or P-TMSI
Establishment Cause	Originating Interactive Call or Originating Background Call or Originating Streaming Call
Measured results on RACH	Check to see if set in accordance with the IE "Intra-frequency reporting quantity for RACH Reporting" included in SYSTEM INFORMATION BLOCK Type 511
- Measurement result for current cell	
- CHOICE mode	
- FDD	
- CHOICE measurement quantity	
- CPICH Ec/N0	The actual reported value is not checked

#### RRC CONNECTION SETUP (Step 4)

For this message, the contents of the message to be used are basically identical to the message sub-type entitled "RRC CONNECTION SETUP message (Transition to CELL\_FACH)" found in [9] TS 34.108 clause 9 with the following exception:

Information Element	Value/remark
Frequency info <ul style="list-style-type: none"> <li>- UARFCN uplink(Nu)</li> <li>- UARFCN downlink(Nd)</li> </ul>	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
Downlink information for each radio links <ul style="list-style-type: none"> <li>- Primary CPICH info</li> <li>- Primary Scrambling Code</li> </ul>	Set to same code as used for cell 6

#### RRC CONNECTION SETUP COMPLETE (Step 5)

Use the same message type found in clause 9 of TS 34.108, with the following exception.

Information Element	Value/remark
UE Radio Access Capability	Checked to see if compatible with the stated capability in PIXIT/PICS statements.
UE radio access capability extension	Checked to see if compatible with the stated capability in PIXIT/PICS statements.
UE system specific Capability	Checked to see if compatible with the stated capability in PIXIT/PICS statements.

#### 8.1.2.11.5 Test requirement

After step 5 the UE shall transmit RRC CONNECTION SETUP COMPLETE message on the uplink DCCH in cell 6.

### 8.1.3 RRC Connection Release

#### 8.1.3.1 RRC Connection Release in CELL\_DCH state: Success

##### 8.1.3.1.1 Definition

##### 8.1.3.1.2 Conformance requirement

1. The UE shall receive and act on an RRC CONNECTION RELEASE message in states CELL\_DCH and CELL\_FACH. Furthermore this procedure can interrupt any ongoing procedures with the UE in the above listed states.

When the UE receives the first RRC CONNECTION RELEASE message, it shall:

- ...
- in state CELL\_DCH:
  - initialise the counter V308 to zero;
  - ...
  - submit an RRC CONNECTION RELEASE COMPLETE message to the lower layers for transmission using UM RLC on the DCCH to the UTRAN;
  - ...
  - start timer T308 when the RRC CONNECTION RELEASE COMPLETE message is sent on the radio interface.
- 2. When in state CELL\_DCH and the timer T308 expires, the UE shall:
  - increment V308 by one;
  - if V308 is equal to or smaller than N308:
    - retransmit the RRC CONNECTION RELEASE COMPLETE message, without incrementing "Uplink RRC Message sequence number" for signalling radio bearer RB1 in the variable INTEGRITY\_PROTECTION\_INFO;
  - if V308 is greater than N308:
    - release all its radio resources;
    - ...
    - enter idle mode;
    - perform the actions specified in TS 25.331 clause 8.5.2 when entering idle mode;
    - and the procedure ends.

## Reference

3GPP TS 25.331 clause 8.1.4.3, 8.1.4.6

### 8.1.3.1.3 Test purpose

To verify:

1. that the UE when receiving an RRC CONNECTION RELEASE message transmits N308+1 RRC CONNECTION RELEASE COMPLETE messages before release of radio resources and entering into idle mode
2. that the time between UE transmissions of the RRC CONNECTION RELEASE COMPLETE message is equal to the value of the T308 timer.

### 8.1.3.1.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: CELL\_DCH state (state 6-1 or state 6-3) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

#### Test Procedure

The UE is brought to the CELL\_DCH state by prompting the operator to initiate an outgoing call. After the DCCH is established, SS transmits an RRC CONNECTION RELEASE message to the UE to disconnect the connection. SS then

waits for the UE to transmit an RRC CONNECTION RELEASE COMPLETE message using unacknowledged mode. SS checks to see if UE re-transmit this message at each expiry of T308 timer and if N308+1 RRC CONNECTION RELEASE COMPLETE message have been received. SS calls for generic procedure C.1 to check that UE is in Idle Mode state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_DCH state after a successful RRC connection establishment by virtue of the operator making an outgoing call.
2		←	RRC CONNECTION RELEASE	SS disconnect the connection established. The value in IE "N308" is arbitrarily chosen from 1 to 8.
3		→	RRC CONNECTION RELEASE COMPLETE	SS waits for the arrival of N308 + 1 such message with an interarrival time of T308, using unacknowledged mode.
4				SS verifies that the UE release its L2 signalling radio bearer and dedicated resources and enters idle mode.
5		↔	CALL C.1	If the test result of C.1 indicates that UE is in Idle Mode state, the test passes, otherwise it fails.

#### Specific Message Content

##### RRC CONNECTION RELEASE (Step 2)

Use the same message type found in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
N308	Arbitrarily chosen between 1 and 8

##### 8.1.3.1.5 Test requirement

After step 2 the UE shall transmit N308 + 1 RRC CONNECTION RELEASE COMPLETE messages. The time between the transmissions shall be equal to the T308 timer value.

After step 3 the UE shall initiate the release of the L2 signalling radio bearer and dedicated resources and enter idle mode.

##### 8.1.3.2 RRC Connection Release using on DCCH in CELL\_FACH state: Success

###### 8.1.3.2.1 Definition

###### 8.1.3.2.2 Conformance requirement

The UE shall receive and act on an RRC CONNECTION RELEASE message in states CELL\_DCH and CELL\_FACH. Furthermore this procedure can interrupt any ongoing procedures with the UE in the above listed states.

When the UE receives the first RRC CONNECTION RELEASE message; and

- 1> if the message is received on the CCCH, and IE "U-RNTI" is present and has the same value as the variable U\_RNTI; or

1> if the message is received on DCCH:

the UE shall:

...

1> in state CELL\_FACH:

2> if the RRC CONNECTION RELEASE message was received on the DCCH:

- 3> set the IE "RRC transaction identifier" in the RRC CONNECTION RELEASE COMPLETE message to the value of "RRC transaction identifier" in the entry for the RRC CONNECTION RELEASE message in the table "Accepted transactions" in the variable TRANSACTIONS;
- 3> submit an RRC CONNECTION RELEASE COMPLETE message to the lower layers for transmission using AM RLC on the DCCH to the UTRAN.
- 3> when the successful transmission of the RRC CONNECTION RELEASE COMPLETE message has been confirmed by the lower layers:
  - 4> release all its radio resources; and
  - 4> indicate the release of the established signalling connections (as stored in the variable ESTABLISHED\_SIGNALLING\_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED\_RABS) to upper layers; and
  - 4> clear any entry for the RRC CONNECTION RELEASE message in the tables "Accepted transactions" and "Rejected transactions" in the variable TRANSACTIONS;
  - 4> clear the variable ESTABLISHED\_SIGNALLING\_CONNECTIONS;
  - 4> clear the variable ESTABLISHED\_RABS;
  - 4> pass the value of the IE "Release cause" received in the RRC CONNECTION RELEASE message to upper layers;
  - 4> enter idle mode;
  - 4> perform the actions specified in TS 25.331 subclause 8.5.2 when entering idle mode.
- 3> and the procedure ends.

...

## Reference

3GPP TS 25.331 clause 8.1.4.3.

### 8.1.3.2.3 Test purpose

To confirm that the UE releases the L2 signalling radio bearer and resources and goes back to the idle state after it receives an RRC CONNECTION RELEASE message on downlink DCCH from the SS. It shall transmit an RRC CONNECTION RELEASE COMPLETE message using acknowledged mode on uplink DCCH to the SS.

### 8.1.3.2.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: CELL\_FACH state (state 6-2 or state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

The UE is brought to an initial state of CELL\_FACH. After the successful establishment of the RRC connection, the SS transmits an RRC CONNECTION RELEASE message to the UE to disconnect the radio link. When the UE receives this message the UE transmits an RRC CONNECTION RELEASE COMPLETE message using acknowledged mode to the SS. Finally, SS checks that the UE performs proper release of all radio resources and then goes back to idle mode.

### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_FACH state.
2		←	RRC CONNECTION RELEASE	SS sends this message using unacknowledged mode RLC operations on the uplink DCCH.
3		→	RRC CONNECTION RELEASE COMPLETE	The UE transmits this message using acknowledged mode.
4				The UE releases L2 signalling radio bearer and radio resources. Then the UE goes to idle mode.

### Specific Message Contents

None.

#### 8.1.3.2.5 Test requirement

After step 2 the UE shall transmit an RRC CONNECTION RELEASE COMPLETE message using acknowledged mode then it shall receive a response for this message from the SS-RLC.

After step 3 the UE shall release its L2 signalling radio bearers and radio resources, then it shall go back to idle mode.

### 8.1.3.3 RRC Connection Release using on CCCH in CELL\_FACH state: Success

#### 8.1.3.3.1 Definition

#### 8.1.3.3.2 Conformance requirement

The UE shall receive and act on an RRC CONNECTION RELEASE message in states CELL\_DCH and CELL\_FACH. Furthermore this procedure can interrupt any ongoing procedures with the UE in the above listed states.

When the UE receives the first RRC CONNECTION RELEASE message; and

1> if the message is received on the CCCH, and IE "U-RNTI" is present and has the same value as the variable U\_RNTI; or

1> if the message is received on DCCH:

the UE shall:

...

1> in state CELL\_FACH:

...

2> if the RRC CONNECTION RELEASE message was received on the CCCH:

3> release all its radio resources;

- 3> indicate the release of the established signalling connections (as stored in the variable ESTABLISHED\_SIGNALLING\_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED\_RABS) to the upper layers;
- 3> clear any entry for the RRC CONNECTION RELEASE message in the tables "Accepted transactions" and "Rejected transactions" in the variable TRANSACTIONS;
- 3> clear the variable ESTABLISHED\_SIGNALLING\_CONNECTIONS;
- 3> clear the variable ESTABLISHED\_RABS;
- 3> pass the value of the IE "Release cause" received in the RRC CONNECTION RELEASE message to upper layers;
- 3> enter idle mode;
- 3> perform the actions specified in TS 25.331 subclause 8.5.2 when entering idle mode;
- 3> and the procedure ends.

## Reference

3GPP TS 25.331 clause 8.1.4.3.

### 8.1.3.3.3 Test purpose

To confirm that the UE releases all its radio resources upon the reception of a RRC CONNECTION RELEASE message on the downlink CCCH, without transmitting RRC CONNECTION RELEASE COMPLETE message on the uplink.

### 8.1.3.3.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CELL\_FACH state (state 6-2 or state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

The UE is brought to an initial state of CELL\_FACH. After the successful establishment of the RRC connection, SS transmits an RRC CONNECTION RELEASE message on the downlink CCCH. The UE shall terminate the RRC connection and release all radio resources allocated to it. SS monitors the uplink DCCH and CCCH to verify that no transmission is detected. SS calls for generic procedure C.1 to check that UE is in Idle Mode state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_FACH state.
2		←	RRC CONNECTION RELEASE	SS transmits this message with the contents identical to that found in TS 34.108 clause 9 on downlink CCCH.
3				SS waits for a period equivalent to 60 seconds. The UE shall not send any response message on uplink direction during this period. It shall release the radio resources allocated and return to idle mode.
4		↔	CALL C.1	If the test result of C.1 indicates that UE is in Idle Mode state, the test passes, otherwise it fails.

### Specific Message Contents

None.

#### 8.1.3.3.5 Test requirement

After step 2 the UE shall release all its radio resources, return to idle mode, without transmitting RRC CONNECTION RELEASE COMPLETE message on the uplink direction.

#### 8.1.3.4 RRC Connection Release in CELL\_FACH state: Failure

##### 8.1.3.4.1 Definition

##### 8.1.3.4.2 Conformance requirement

When acknowledged mode was used and RLC does not succeed in transmitting the RRC CONNECTION RELEASE COMPLETE message, the UE shall:

- 1> release all its radio resources;
- 1> indicate the release of the established signalling connections (as stored in the variable ESTABLISHED\_SIGNALLING\_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED\_RABS) to upper layers;
- 1> clear the variable ESTABLISHED\_SIGNALLING\_CONNECTIONS;
- 1> clear the variable ESTABLISHED\_RABS;
- 1> enter idle mode;
- 1> perform the actions specified in TS 25.331 subclause 8.5.2 when entering idle mode;
- 1> and the procedure ends.

### Reference

3GPP TS 25.331 clause 8.1.4.9.

#### 8.1.3.4.3 Test purpose

To confirm that the UE releases all its radio resources and enters idle mode when the UE does not succeed in transmitting the RRC CONNECTION RELEASE COMPLETE message using acknowledged mode to the SS (i.e. the

UE-RLC cannot receive acknowledgement for the transmission of the RRC CONNECTION RELEASE COMPLETE message from SS).

#### 8.1.3.4.4 Method of test

##### Initial Condition

System Simulator: 1 cell

UE: CELL\_FACH state (state 6-2 or state 6-4) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

##### Test Procedure

At the start of the test, the UE is brought to CELL\_FACH state. When the RRC connection has been established, the SS transmits an RRC CONNECTION RELEASE message to the UE to disconnect the radio link. When the UE receives this message the UE transmits an RRC CONNECTION RELEASE COMPLETE message using acknowledged mode to the SS. The SS ignores the message and does not transmit a STATUS PDU of RLC for this message. SS checks to see that UE continues to release all its radio resources and then enters idle mode.

##### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought into CELL_FACH state by asking the operator to perform an outgoing call attempt.
2		←	RRC CONNECTION RELEASE	SS ask to disconnect the radio link
3		→	RRC CONNECTION RELEASE COMPLETE	The UE transmits this message using acknowledged mode. The SS ignores this message and shall not transmit a STATUS PDU of RLC for this message.
4				SS checks to make sure that UE releases its all radio resources and enter idle mode.

##### Specific Message Contents

None

#### 8.1.3.4.5 Test requirement

After step 3 the UE shall release its L2 signalling radio bearers and radio resources then it shall go to idle mode.

### 8.1.3.5 RRC Connection Release in CELL\_FACH state: Invalid message

#### 8.1.3.5.1 Definition

#### 8.1.3.5.2 Conformance requirement

If the RRC CONNECTION RELEASE message contains a protocol error causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE according to TS 25.331 clause 9, and if the "protocol error cause" in PROTOCOL\_ERROR\_INFORMATION is set to any cause value except "ASN.1 violation or encoding error", the UE shall perform procedure specific error handling as follows:

The UE shall:

- 1> ignore any IE(s) causing the error but treat the rest of the RRC CONNECTION RELEASE message as normal according to TS 25.331 subclause 8.1.4.3, with an addition of the following actions:
  - 2> if the RRC CONNECTION RELEASE message was received on the DCCH:
    - 3> set the IE "RRC transaction identifier" in the RRC CONNECTION RELEASE COMPLETE message to the value of "RRC transaction identifier" in the entry for the RRC CONNECTION RELEASE message in the table "Rejected transactions" in the variable TRANSACTIONS;
    - 3> include the IE "Error indication" in the RRC CONNECTION RELEASE COMPLETE message with:
      - 4> the IE "Failure cause" set to the cause value "Protocol error"; and
      - 4> the IE "Protocol error information" set to the value of the variable PROTOCOL\_ERROR\_INFORMATION.

## Reference

3GPP TS 25.331 clause 8.1.4

### 8.1.3.5.3 Test purpose

When the UE receives an invalid RRC CONNECTION RELEASE message on the downlink DCCH, it shall transmit an RRC STATUS message that includes the appropriate error cause on the uplink DCCH.

### 8.1.3.5.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

#### Test Procedure

The UE is initially at idle mode. The System Information Block type 11 messages are modified with respect to the default. In the System Information type 11 messages, reporting of CPICH RSCP is required for intra-frequency reporting when transmitting RACH messages.

SS prompts the operator to make an outgoing call for one of the traffic classes supported by the UE. SS and UE shall execute procedure P6. Next SS and UE shall execute procedure P10. Then SS and UE shall execute procedure P14. The UE shall transmit a RRC CONNECTION REQUEST message on the uplink CCCH, SS replies with RRC CONNECTION SETUP message and allocates PRACH and S-CCPCH physical channels for uplink and downlink usage. UE shall then enter CELL\_FACH state. SS starts timer T305 and waits until timer T305 expires, the UE shall send a CELL UPDATE message on the CCCH which includes the measurement reading of current cell CPICH RSCP values in IE "Measured results on RACH". SS then replies with CELL UPDATE CONFIRM message on the downlink DCCH. SS transmits an invalid RRC CONNECTION RELEASE message on the DCCH to request to disconnect the RRC connection. The UE shall transmit an RRC STATUS message on the uplink DCCH, which includes the IE "Protocol Error Information". This IE shall contain "Protocol error information" IE which is set to "ASN.1 violation or encoding error". Then SS waits until timer T305 expires, the UE shall send a CELL UPDATE message on the CCCH which includes the measurement reading of current cell CPICH RSCP values in IE "Measured results on RACH". SS then replies with CELL UPDATE CONFIRM message on the downlink DCCH.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	Master Information Block System Information Block type 1, System Information Block type 11	The UE is idle mode and camped onto cell 1. System Information Block type 1 and 11 to be transmitted are different from the default settings (see specific message contents)
2		↔	SS executes procedure P6 (clause 7.4.2.2.2) specified in TS 34.108.	SS prompts the test operator to make an outgoing call.
3		↔	SS executes procedure P10 (clause 7.4.2.4.2) specified in TS 34.108.	
4		↔	SS executes procedure P14 (clause 7.4.2.6.2) specified in TS 34.108.	
5				SS waits for 5 minutes (for the expiry of T305 timer).
6		→	CELL UPDATE	This message shall contain IE "Measured results on RACH" reporting the readings of CPICH RSCP for current cell.
7		←	CELL UPDATE CONFIRM	
8		←	RRC CONNECTION RELEASE	See specific message contents for this message
9		→	RRC STATUS	The IE "Protocol error cause" found in IE "Protocol error information" shall be set to "ASN.1 violation or encoding error". This message is sent using acknowledge mode.
10				SS waits for 5 minutes (for the expiry of T305 timer).
11		→	CELL UPDATE	This message shall contain IE "Measured results on RACH" reporting the readings of CPICH RSCP for current cell.
12		←	CELL UPDATE CONFIRM	

#### Specific Message Contents

##### Master Information Block (Step 1)

Information Element	Value/Remarks
MIB Value tag	2

## System Information Block type 1 (Step 1)

Information Element	Value/Remarks
UE Timers and constants in connected mode	
- T305	5 minutes.

## System Information Block type 11 (Step 1)

Information Element	Value/remark
SIB12 indicator	FALSE
FACH measurement occasion info	
- FACH Measurement occasion cycle length coefficient	2
- Inter-frequency FDD measurement indicator	FALSE
- Inter-frequency TDD measurement indicator	FALSE
- Inter-RAT measurement indicators	Not Present
Measurement control system information	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	5
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency info list	
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 2
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection info	
- Qoffset <sub>s,n</sub>	0 dB
- Maximum allowed UL TX power	0 dBm
- HCS neighbouring cell information	Not Present
- Qqualmin	-20dB
- Qrxlevmin	-115dBm
- Cells for measurement	Not Present
- Intra-frequency Measurement quantity	
- Filter Coefficient	0
- Measurement quantity	CPICH RSCP
- Intra-frequency measurement for RACH reporting	
- SFN-SFN observed time difference	No report
- Reporting quantity	CPICH RSCP
- Maximum number of reported cells on RACH	Current cell
- Reporting information for state CELL_DCH	
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting	No report
indicator	
- Cell synchronisation information reporting indicator	FALSE
indicator	
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting indicator	No report
indicator	
- Cell synchronisation information reporting indicator	FALSE
indicator	
- Cell identity reporting indicator	TRUE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected set cells	Not present
- Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged mode RLC
- Periodic Reporting/Event Trigger Reporting Mode	Periodic Reporting
- CHOICE report criteria	Intra-frequency measurementreporting criteria
- Parameters required for each event	
- Intra-frequency event identity	1a
- Triggering condition 1	Not Present

- Triggering condition 2	Not Present
- Reporting Range Constant	20.0 dB
- Cells forbidden to affect reporting range	Not Present
- CHOICE mode	FDD
- Primary CPICH info	
- Primary Scrambling Code	Set to same code as used for cell 2
- W	0.0
- Hysteresis	1.0 dB
- Threshold used frequency	-85 dBm
- Reporting deactivation threshold	0
- Replacement activation threshold	Not Present
- Time to trigger	0msec
- Amount of reporting	Infinity
- Reporting interval	12 seconds
- Reporting Cell Status	
- CHOICE reported cell	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- Maximum number of reported cells	2
- Inter-frequency measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

## CELL UPDATE (Step 6 and 11)

Information Element	Value/remark
U-RNTI	Check to see if set to same U-RNTI value assigned in the execution of procedure P6.
Cell update cause	Check to see if set to 'Periodic cell updating'
Protocol error indicator	Check to see if set to 'FALSE'
Measured results on RACH	
- Measurement result for current cell	
- CHOICE measurement quantity	Check to see if set to 'CPICH RSCP'
- CPICH RSCP	Checked to see if set to within an acceptable range.
- Measurement results for monitored cells	Checked to see if this IE is absent.
Protocol error information	Check to see if set to 'FALSE'

## RRC CONNECTION RELEASE (Step 8)

Information Element	Value/remark
All IEs	Not Present

## RRC STATUS (Step 9)

Check to see if the same message type found in clause A is received, with the following exceptions:

Information Element	Value/remark
Protocol error information	
Protocol error cause	ASN.1 violation or encoding error

## 8.1.3.5.5 Test requirement

After step 5 and 10, the UE shall initiate cell update procedure by transmitting CELL UPDATE message on CCCH. In this message, IE "cell update cause" shall be set to "periodic cell updating". It shall include IE "measured results on RACH", containing the measurement value for current cell CPICH RSCP.

After step 8 the UE shall transmit an RRC STATUS message which includes the appropriate cause values in IE "Protocol error information".

### 8.1.3.6 RRC Connection Release in CELL\_DCH state (Frequency band modification): Success

#### 8.1.3.6.1 Definition

#### 8.1.3.6.2 Conformance requirement

If the UE first receives an RRC CONNECTION RELEASE message in CELL\_DCH state, it shall:

- initialize the counter V308 to zero;
- submit an RRC CONNECTION RELEASE COMPLETE message to the lower layers for transmission using UM RLC on the DCCH to the UTRAN;
- start timer T308 when the RRC CONNECTION RELEASE COMPLETE message is sent on the radio interface.

If the timer T308 expires, the UE shall:

- increment V308 by one;
- if V308 is equal to or smaller than N308:
  - retransmit the RRC CONNECTION RELEASE COMPLETE message;
- if V308 is greater than N308:
  - release all its radio resources;
  - enter idle mode;
  - perform cell-selection according to TS25.304;
  - procedure end;

#### Reference

3GPP TS 25.331 clause 8.1.4.

#### 8.1.3.6.3 Test purpose

To confirm that when the UE receives an RRC CONNECTION RELEASE message the UE transmits N308+1 RRC CONNECTION RELEASE COMPLETE messages using UM on DCCH.

To confirm that the UE enters into idle mode with performing cell-selection and selecting new cell configured by SS.

#### 8.1.3.6.4 Method of test

##### Initial Condition

System Simulator: 2 cells–Cell 1 is active and cell 6 is inactive

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE

## Test Procedure

Table 8.1.3.6

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-55	Off	-55

Table 8.1.3.6 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in CELL\_DCH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.1.3.6. The SS switches its downlink transmission power settings to columns "T1" and transmits MEASUREMENT CONTROL message and add cell 6 into the IE "inter-frequency cell info". The SS modify contents of SIB3 in cell 1 and cell 6. The SS transmits an RRC CONNECTION RELEASE message. After the SS transmits an RRC CONNECTION RELEASE message to the UE, the SS waits for the UE to transmit RRC CONNECTION RELEASE COMPLETE messages using UM on DCCH and checks to see if N308+1 such messages has been received. The UE leaves connected mode and enters idle mode in cell 1. The UE shall perform cell reselection and camp on cell 6 after reading the system information. The SS calls for generic procedure C.3 to check that UE is in Idle state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_DCH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.1.3.6.
2				The SS switches its downlink transmission power settings to columns "T1" in table 8.1.3.6.
3		←	MEASUREMENT CONTROL	The SS specifies inter-frequency measurement for cell 6.
4		←	System Information Block type 3	The SS modifies SIB 3 in cell 6.
5		←	System Information Block type 3	The SS modifies SIB 3 in cell 1 to indicate that the cell is barred.
6				The SS waits for 5 s.
7		←	RRC CONNECTION RELEASE	
8		→	RRC CONNECTION RELEASE COMPLETE	The SS waits for the arrival of N308+1 such messages send on UM RLC.
9				The UE releases signalling radio bearer and dedicated resources. Then the UE goes to idle mode in cell 1.
10				The UE select s cell 6 and camp on it.
11				The SS waits for 15 s after receiving the last RRC CONNECTION RELEASE COMPLETE message.
12		↔	CALL C.1	If the test result of C.1 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Content

## MEASUREMENT CONTROL (Step 3)

Use the same message sub-type found in [9] TS 34.108 clause 9, with the following exceptions in the IE(s) concerned:

Information Element	Value/remark
Measurement Identity	15
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Event Trigger
Additional measurements list	Not Present
CHOICE measurement type	Inter-frequency measurement
- Inter-frequency measurement object list	
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency cells	
- Inter-frequency cell id	6
- Frequency info	
- UARFCN uplink (Nu)	UARFCN of the uplink frequency for cell 6
- UARFCN downlink (Nd)	UARFCN of the downlink frequency for cell 6
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	350
- Primary CPICH TX power	Not Present
- Primary CPICH TX power	
- TX Diversity Indicator	Not Present
- Cell for measurement	Not Present
- Inter-frequency measurement quantity	
- CHOICE reporting criteria	Inter-frequency reporting criteria
- Filter Coefficient	0
- CHOICE Mode	FDD
- Measurement quantity for frequency quality estimate	CPICH RSCP
- Inter-frequency reporting quantity	
- UTRA Carrier RSSI	FALSE
- Frequency quality estimate	FALSE
- Non frequency related cell reporting quantities	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell Identity reporting indicator	TRUE
- COICE Mode	FDD
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting cell status	Not present
- CHOICE reported cell	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- Maximum number of reported cells	2
- Measurement validity	
- UE state	CELL_DCH
- Inter-frequency set update	Not Present
- CHOICE report criteria	Inter-frequency measurement reporting criteria
- Parameters required for each event	
- Inter-frequency event identity	2c
- Threshold used frequency	Not present
- W used frequency	Not present
- Hysteresis	1.0 dB
- Time to trigger	10 [s]

<ul style="list-style-type: none"> <li>- Reporting cell status</li> <li>- CHOICH reported cell</li>   <li>- Maximum number of reported cells</li> <li>- Parameters required for each non-used frequency</li> <li>- Threshold non used frequency</li> <li>- W non-used frequency</li> </ul>	<p>Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency</p> <p>2</p> <p>-85dbm</p> <p>0.0</p>
--	--

## System Information Block type 3 (Step 4)

Use the same message type found in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
- Cell identity	0000 0000 0000 0000 0000 0000 0110B

## System Information Block type 3 (Step 5)

Use the same message type found in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
- Cell Access Restriction	
- Cell barred	Barred
- Intra-frequency cell re-selection indicator	Not allowed
- T <sub>barred</sub>	10[s]
- Cell Reserved for operator use	Not reserved
- Cell Reservation Extension	Not reserved
- Access Class Barred List	
- Access Class Barred0	barred
- Access Class Barred1	barred
- Access Class Barred2	barred
- Access Class Barred3	barred
- Access Class Barred4	barred
- Access Class Barred5	barred
- Access Class Barred6	barred
- Access Class Barred7	barred
- Access Class Barred10	barred
- Access Class Barred11	barred
- Access Class Barred12	barred
- Access Class Barred13	barred
- Access Class Barred14	barred
- Access Class Barred15	barred

## RRC CONNECTION RELEASE (Step 6)

Use the same message type found in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
N308	Arbitrarily chosen between 1 and 8

## 8.1.3.6.5 Test requirement

After step 6 the UE shall start to transmit N308 + 1 times RRC CONNECTION RELEASE COMPLETE messages using UM on DCCH.

After step 11 the UE shall be in Idle mode in cell 6.

### 8.1.3.7 RRC Connection Release in CELL\_FACH state (Frequency band modification): Success

#### 8.1.3.7.1 Definition

#### 8.1.3.7.2 Conformance requirement

When the UE receives the first RRC CONNECTION RELEASE message

the UE shall:

- 1> in state CELL\_FACH:
- 2> if the RRC CONNECTION RELEASE message was received on the DCCH:
  - 3> when the successful transmission of the RRC CONNECTION RELEASE COMPLETE message has been confirmed by the lower layers:
    - 4> release all its radio resources; and
    - 4> indicate the release of the established signalling connections ; and
    - 4> pass the value of the IE "Release cause" received in the RRC CONNECTION RELEASE message to upper layers;
    - 4> enter idle mode;
    - 4> perform the actions specified in TS25.331 subclause 8.5.2 when entering idle mode.
  - a) 3> and the procedure ends.

#### Reference

3GPP TS 25.331 clause 8.1.4.

#### 8.1.3.7.3 Test purpose

To confirm that when the UE receives an RRC CONNECTION RELEASE message, the UE releases signalling radio bearer and its radio resources and goes back to the idle.

To confirm that the UE enters into idle mode withby performing cell-selection and selecting other cell than the UE selecting cell in connected mode.

#### 8.1.3.7.4 Method of test

##### Initial Condition

System Simulator: 2 cells – Cell 1 is active and cell 6 is inactive

UE: "Registered idle mode on CS" (state 2) or "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

##### Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

System Information Block type 11

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	Not Present
- Inter-frequency measurement system information	
- Inter-frequency cell info list	
- New inter-frequency cell id	
- Inter frequency cell id	1
- Frequency info	
- UARFCN uplink(Nu)	Same uplink UARFCN as used for cell 6
- UARFCN downlink(Nd)	Same downlink UARFCN as used for cell 6
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not present
- Read SFN indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Set to same code as used for cell 6
- Primary CPICH Tx power	Not present
- Cell Selection and Re-selection Info	
- Qoffset1s,n	0dB
- Qoffset2s,n	Not present
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	Not present
- CHOICE mode	FDD
- Qqualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

Test Procedure

Table 8.1.3.7

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-60	-60	off	-60

Table 8.1.3.7 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in idle mode of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.1.3.7. SS request operator to make an outgoing call. The SS and UE execute procedure P4 or P6. Next The SS and the UE execute procedure P8 or P10. The SS switches its downlink transmission power settings to columns "T1" and then modifies SIB 3 to indicate that cell 1 is barred. The SS transmits an RRC CONNECTION RELEASE message. The UE shall transmit an RRC CONNECTION RELEASE COMPLETE message using UM on DCCH and try to enter idle mode state in cell 1. On selecting cell 1 the UE reads system information block 3 and is aware that cell 1 is barred cell. Hence the UE selects cell 6 and camp on cell 6. Upon completion of the procedure, the SS calls for generic procedure C.1 to check that UE is in idle mode.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_FACH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.1.3.7. SS requests operator to make an outgoing call.
2			SS executes procedure P4 (clause 7.4.2.1.2) or P6 (clause 7.4.2.2.2) specified in TS 34.108.	
3			SS executes procedure P8 (clause 7.4.2.3.2) or P10 (clause 7.4.2.4.2) specified in TS 34.108.	
4				The SS switches its downlink transmission power settings to columns "T1" in table 8.1.3.7.
5			System Information Block type 3	The SS modifies SIB 3 in cell 1 to indicate that the cell is barred.
6				The SS waits for 5 s
7		←	RRC CONNECTION RELEASE	
8		→	RRC CONNECTION RELEASE COMPLETE	
9				The SS waits for 5s
10		←→	CALL C.1	If the test result of C.1 indicates that UE is in idle mode, the test passes, otherwise it fails.

## Specific Message Content

## System Information Block type 3 (Step 5)

Use the same message type found in clause 6 of TS 34.108, with the following exceptions:

Information Element	Value/remark
- Cell Access Restriction	
- Cell barred	Barred
- Intra-frequency cell re-selection indicator	Not allowed
- T <sub>barred</sub>	10[s]
- Cell Reserved for operator use	Not reserved
- Cell Reservation Extension	Not reserved
- Access Class Barred List	
- Access Class Barred0	barred
- Access Class Barred1	barred
- Access Class Barred2	barred
- Access Class Barred3	barred
- Access Class Barred4	barred
- Access Class Barred5	barred
- Access Class Barred6	barred
- Access Class Barred7	barred
- Access Class Barred10	barred
- Access Class Barred11	barred
- Access Class Barred12	barred
- Access Class Barred13	barred
- Access Class Barred14	barred
- Access Class Barred15	barred

#### 8.1.3.7.5 Test requirement

After step 3 the UE shall transmit RRC CONNECTION RELEASE COMPLETE messages using AM on DCCH.

After step 9 the UE shall be in idle mode of cell 6.

### 8.1.4 Void

### 8.1.5 UE capability

#### 8.1.5.1 UE Capability in CELL\_DCH state: Success

##### 8.1.5.1.1 Definition

##### 8.1.5.1.2 Conformance requirement

The UE shall initiate the UE capability update procedure in the following situations:

1> the UE receives a UE CAPABILITY ENQUIRY message from the UTRAN;

...

If the UE CAPABILITY INFORMATION message is sent in response to a UE CAPABILITY ENQUIRY message, the UE shall:

1> include the IE "RRC transaction identifier"; and

1> set it to the value of "RRC transaction identifier" in the entry for the UE CAPABILITY ENQUIRY message in the table "Accepted transactions" in the variable TRANSACTIONS;

1> retrieve its UTRA UE radio access capability information elements from variable UE\_CAPABILITY\_REQUESTED; and

1> include this in IE "UE radio access capability" and in IE "UE radio access capability extension", provided this IE is included in variable UE\_CAPABILITY\_REQUESTED;

1> retrieve its inter-RAT-specific UE radio access capability information elements from variable UE\_CAPABILITY\_REQUESTED; and

1> include this in IE "UE system specific capability".

The UE RRC shall submit the UE CAPABILITY INFORMATION message to the lower layers for transmission on the uplink DCCH using AM RLC. When the message has been delivered to lower layers for transmission the UE RRC shall start timer T304 and set counter V304 to 1.

Upon reception of a UE CAPABILITY INFORMATION CONFIRM message, the UE shall:

1> stop timer T304;

...

1> and the procedure ends.

If the UE receives a UE CAPABILITY INFORMATION CONFIRM message, which contains a protocol error causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows:

1> stop timer T304;

1> transmit an RRC STATUS message on the uplink DCCH using AM RLC;

1> include the IE "Identification of received message"; and

- 1> set the IE "Received message type" to UE CAPABILITY INFORMATION CONFIRM; and
- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the UE CAPABILITY INFORMATION CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;
- 1> include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL\_ERROR\_INFORMATION;
- 1> when the RRC STATUS message has been submitted to lower layers for transmission:
  - 2> restart timer T304 and continue with any ongoing procedures or processes as if the invalid UE CAPABILITY INFORMATION CONFIRM message has not been received.

...

If the UE receives an RRC message on the DCCH, or addressed to the UE on the CCCH or on the SHCCH, or sent via a radio access technology other than UTRAN, containing an undefined critical message extension, the UE shall:

- 1> set the variable PROTOCOL\_ERROR\_REJECT to TRUE;
- 1> set the IE "Protocol error cause" in the variable PROTOCOL\_ERROR\_INFORMATION to "Message extension not comprehended";
- 1> if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:
  - 2> store the IE "Message type" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS; and
  - 2> set the IE "RRC transaction identifier" to zero in that table entry.
- 1> perform procedure specific error handling according to TS 25.331 clause 8.

## Reference

3GPP TS 25.331 clauses 8.1.6 and 8.1.7.9.3b.

### 8.1.5.1.3 Test purpose

1. To confirm that the UE transmits a UE CAPABILITY INFORMATION message after it receives a UE CAPABILITY ENQUIRY message from the SS.
2. To confirm that the UE indicates an invalid message reception when invalid UE CAPABILITY ENQUIRY and UE CAPABILITY INFORMATION CONFIRM messages are received. The UE shall transmit RRC STATUS message with the correct error cause value to SS.

### 8.1.5.1.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CELL\_DCH state (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

The UE is brought to the CELL\_DCH state after a successful outgoing call attempt. The SS transmits a UE CAPABILITY ENQUIRY message containing an unexpected critical message extension. After receiving such a message, the UE shall report the error using RRC STATUS message with the appropriate error cause specified. Then SS transmits a correct UE CAPABILITY ENQUIRY message, the UE receives this message and transmits a UE

CAPABILITY INFORMATION message on the uplink DCCH which includes the requested capabilities. The SS transmits a UE CAPABILITY INFORMATION CONFIRM message to the UE to complete the UE capability enquiry procedure.

Then SS initiates another UE capability enquiry procedure. The UE shall reply with a UE CAPABILITY INFORMATION message on the uplink DCCH. When SS receives this message, it transmits a UE CAPABILITY INFORMATION CONFIRM message containing an unexpected critical message extension. The UE shall detect an error and send an RRC STATUS message to report this event. After submitting this message to lower layers for transmission, the UE shall re-transmit a UE CAPABILITY INFORMATION message on the uplink DCCH after the expiry of restarted T304. SS then transmits an error-free UE CAPABILITY INFORMATION CONFIRM message similar to the message sent in step 6.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_DCH state after an outgoing call has been established successfully.
2		←	UE CAPABILITY ENQUIRY	See specific message contents for this message
3		→	RRC STATUS	See specific message contents for this message
4		←	UE CAPABILITY ENQUIRY	See specific message contents for this message.
5		→	UE CAPABILITY INFORMATION	See specific message contents for this message.
6		←	UE CAPABILITY INFORMATION CONFIRM	Use default message.
7		←	UE CAPABILITY ENQUIRY	Same as in step 4.
8		→	UE CAPABILITY INFORMATION	Shall be the same message content as in step 5.
9		←	UE CAPABILITY INFORMATION CONFIRM	See specific message contents for this message
10		→	RRC STATUS	UE shall detect an error and then transmit this message.
11		→	UE CAPABILITY INFORMATION	UE shall re-transmit this message after the restarted T304 expires.
12		←	UE CAPABILITY INFORMATION CONFIRM	SS sends an error-free message to acknowledge the receipt of the uplink message.

#### Specific Message Contents

##### UE CAPABILITY ENQUIRY (Step 2)

SS sends a message containing a critical extension not defined for the protocol release supported by the UE, as indicated in the IE "Access stratum release indicator":

Information Element	Value/remark
Message Type	
RRC transaction identifier Integrity check info	Arbitrarily selects an integer between 0 and 3 The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.
Critical extensions	'01'H

### RRC STATUS (Step 3)

Check to see if the same message type found in TS 34.108, clause 9 is received, with the following exceptions:

Information Element	Value/remark
Identification of received message - Received message type - RRC transaction identifier	UE Capability Enquiry Checked to see if the value is identical to the same IE in the downlink UE CAPABILITY ENQUIRY message.
Protocol Error Information - Protocol Error Cause	Message extension not comprehended

Information Element	Value/remark
Identification of received message - Received message type - RRC transaction identifier	UE Capability Enquiry Checked to see if the value is identical to the same IE in the downlink UE CAPABILITY ENQUIRY message.
Protocol Error Information - Protocol Error Cause	Message extension not comprehended

### UE CAPABILITY ENQUIRY (Steps 4)

Use the UE CAPABILITY ENQUIRY message as defined in [9] (TS 34.108) Clause 9, with the following exceptions:

Information Element	Value/remark
Capability update requirement - UE radio access FDD capability update requirement	TRUE
- UE radio access TDD capability update requirement	FALSE
- System specific capability update requirement list	Gsm

### UE CAPABILITY INFORMATION (Step 5)

Check to see if the same message type found in [9] (TS 34.108) Clause 9 is received, with the following exceptions:

Information Element	Value/remark
UE system specific capability	Presence and value will be checked. Stated capability must be compatible with 34.123-2 (ICS statements) and the user settings

## UE CAPABILITY INFORMATION CONFIRM (Step 9)

SS sends a message containing a critical extension not defined for the protocol release supported by the UE, as indicated in the IE "Access stratum release indicator". Use the UE CAPABILITY INFORMATION CONFIRM message as defined in [9] (TS 34.108) Clause 9, with the following addition:

Information Element	Value/remark
Critical extensions	'01'H

## RRC STATUS (Step 10)

Check to see if the same message type found in TS 34.108, clause 9 is received, with the following exceptions:

Information Element	Value/remark
Identification of received message - Received message type - RRC transaction identifier	UE Capability Information Confirm Checked to see if the value is identical to the same IE in the downlink UE CAPABILITY INFORMATION CONFIRM message.
Protocol Error Information - Protocol Error Cause	Message extension not comprehended

### 8.1.5.1.5 Test requirement

After step 2, the UE shall transmit a RRC STATUS message on the uplink DCCH, reporting the error with protocol error cause set to "Message extension not comprehended" correct transaction identifier.

After step 4 and 7 the UE shall transmit a UE CAPABILITY INFORMATION message on the uplink DCCH to respond to the UE CAPABILITY ENQUIRY message with correct contents.

After step 9, the UE shall transmit a RRC STATUS message on the uplink DCCH. The protocol error cause shall be set to "Message extension not comprehended" and the transaction identifier set to the same value as used in the UE CAPABILITY ENQUIRY message of step 7.

After step 10, the UE shall re-transmit the UE CAPABILITY INFORMATION message with a similar content as in step 8 after the expiry of restarted T304.

### 8.1.5.2 UE Capability in CELL\_DCH state: Success after T304 timeout

#### 8.1.5.2.1 Definition

#### 8.1.5.2.2 Conformance requirement

The UE shall initiate the UE capability update procedure in the following situations:

- 1> the UE receives a UE CAPABILITY ENQUIRY message from the UTRAN on the DCCH using UM or AM RLC;
- 1> while in connected mode the UE capabilities change compared to those stored in the variable UE\_CAPABILITY\_TRANSFERRED.

If the UE CAPABILITY INFORMATION message is sent in response to a UE CAPABILITY ENQUIRY message, the UE shall:

- 1> include the IE "RRC transaction identifier"; and
- 1> set it to the value of "RRC transaction identifier" in the entry for the UE CAPABILITY ENQUIRY message in the table "Accepted transactions" in the variable TRANSACTIONS;
- 1> retrieve its UTRA UE radio access capability information elements from variable UE\_CAPABILITY\_REQUESTED; and

- 1> include this in IE "UE radio access capability" and in IE "UE radio access capability extension", provided this IE is included in variable UE\_CAPABILITY\_REQUESTED;
- 1> retrieve its inter-RAT-specific UE radio access capability information elements from variable UE\_CAPABILITY\_REQUESTED; and
- 1> include this in IE "UE system specific capability".

If the UE CAPABILITY INFORMATION message is sent because one or more of the UE capabilities change compared to those stored in the variable UE\_CAPABILITY\_TRANSFERRED while in connected state, the UE shall include the information elements associated with the capabilities that have changed in the UE CAPABILITY INFORMATION message.

...

The UE RRC shall submit the UE CAPABILITY INFORMATION message to the lower layers for transmission on the uplink DCCH using AM RLC. When the message has been delivered to lower layers for transmission the UE RRC shall start timer T304 and set counter V304 to 1.

Upon expiry of timer T304, the UE shall check the value of V304 and:

- 1> if V304 is smaller than or equal to N304:
  - 2> prior to retransmitting the UE CAPABILITY INFORMATION message:
    - 3> if the IE "Status" in the variable INTEGRITY\_PROTECTION\_INFO has the value "Started":
      - 4> include the same IEs as in the last unsuccessful attempt of this message, except for the IE "Integrity check info", which is modified as follows:
        - 5> increment the "Uplink RRC Message sequence number" for signalling radio bearer RB2 in the variable INTEGRITY\_PROTECTION\_INFO by one;
        - 5> set the IE "RRC Message sequence number" in the IE "Integrity check info" by the value of the "Uplink RRC Message sequence number" for signalling radio bearer RB2 in the variable INTEGRITY\_PROTECTION\_INFO in this message;
        - 5> recalculate the IE "Message authentication code" in the IE "Integrity check info" in this message, in accordance with TS 25.331 subclause 8.5.10.3.
    - 3> else:
      - 4> include the same IEs as in the last unsuccessful attempt of this message.
  - 2> send the UE CAPABILITY INFORMATION message on signalling radio bearer RB2;
  - 2> restart timer T304;
  - 2> increment counter V304.

...

## Reference

3GPP TS 25.331 clause 8.1.6 and 8.1.7.

### 8.1.5.2.3 Test purpose

To confirm that the UE re-transmits a UE CAPABILITY INFORMATION message until V304 is greater than N304, after the expiry of timer T304 when the UE cannot receive a UE CAPABILITY INFORMATION CONFIRM message in response to a UE CAPABILITY INFORMATION message.

## 8.1.5.2.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: CELL\_DCH state (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

The UE is brought to CELL\_DCH state. When the SS transmits a UE CAPABILITY ENQUIRY message which includes the "Capability update requirement" IE, the UE shall reply with a UE CAPABILITY INFORMATION message on the uplink DCCH which includes the "UE radio access capability" IE. The SS does not transmit a UE CAPABILITY INFORMATION CONFIRM message to the UE, resulting in the T304 timer to expire. SS shall observe that the UE attempts to transmit a UE CAPABILITY INFORMATION message again. The UE shall re-transmit N304 times, and SS transmits a UE CAPABILITY INFORMATION CONFIRM message to answer the last request and completes this test procedure.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_DCH state. SS sets internal counter K =0
2		←	UE CAPABILITY ENQUIRY	Including the IE "Capability update requirement".
3		→	UE CAPABILITY INFORMATION	Including the "UE radio access capability".
4				If K is equal to N304, then proceed to step 6.
5				The SS does not transmit a response and wait for T304 timer to expire. K=K+1 and goes to step 3.
6		←	UE CAPABILITY INFORMATION CONFIRM	Use default message contents

## Specific Message Contents

None

## 8.1.5.2.5 Test requirement

After step 3 the UE shall re-transmits a UE CAPABILITY INFORMATION message on the uplink DCCH, after each expiry of timer T304. The UE CAPABILITY INFORMATION message shall contain IE "UE radio access capability" indicating the settings found in PIC/PIXIT statements. After (N304) re-transmissions, the UE shall receive a UE CAPABILITY INFORMATION CONFIRM message.

## 8.1.5.3 UE Capability in CELL\_DCH state: Failure (After N304 re-transmissions)

## 8.1.5.3.1 Definition

## 8.1.5.3.2 Conformance requirement

The UE shall initiate the UE capability update procedure in the following situations:

- 1> the UE receives a UE CAPABILITY ENQUIRY message from the UTRAN on the DCCH using UM or AM RLC;
- 1> while in connected mode the UE capabilities change compared to those stored in the variable UE\_CAPABILITY\_TRANSFERRED.

If the UE CAPABILITY INFORMATION message is sent in response to a UE CAPABILITY ENQUIRY message, the UE shall:

- 1> include the IE "RRC transaction identifier"; and
- 1> set it to the value of "RRC transaction identifier" in the entry for the UE CAPABILITY ENQUIRY message in the table "Accepted transactions" in the variable TRANSACTIONS;
- 1> retrieve its UTRA UE radio access capability information elements from variable UE\_CAPABILITY\_REQUESTED; and
- 1> include this in IE "UE radio access capability" and in IE "UE radio access capability extension", provided this IE is included in variable UE\_CAPABILITY\_REQUESTED;
- 1> retrieve its inter-RAT-specific UE radio access capability information elements from variable UE\_CAPABILITY\_REQUESTED; and
- 1> include this in IE "UE system specific capability".

If the UE CAPABILITY INFORMATION message is sent because one or more of the UE capabilities change compared to those stored in the variable UE\_CAPABILITY\_TRANSFERRED while in connected state, the UE shall include the information elements associated with the capabilities that have changed in the UE CAPABILITY INFORMATION message.

...

The UE RRC shall submit the UE CAPABILITY INFORMATION message to the lower layers for transmission on the uplink DCCH using AM RLC. When the message has been delivered to lower layers for transmission the UE RRC shall start timer T304 and set counter V304 to 1.

Upon expiry of timer T304, the UE shall check the value of V304 and:

- 1> if V304 is smaller than or equal to N304:
  - 2> prior to retransmitting the UE CAPABILITY INFORMATION message:
    - 3> if the IE "Status" in the variable INTEGRITY\_PROTECTION\_INFO has the value "Started":
      - 4> include the same IEs as in the last unsuccessful attempt of this message, except for the IE "Integrity check info", which is modified as follows:
        - 5> increment the "Uplink RRC Message sequence number" for signalling radio bearer RB2 in the variable INTEGRITY\_PROTECTION\_INFO by one;
        - 5> set the IE "RRC Message sequence number" in the IE "Integrity check info" by the value of the "Uplink RRC Message sequence number" for signalling radio bearer RB2 in the variable INTEGRITY\_PROTECTION\_INFO in this message;
        - 5> recalculate the IE "Message authentication code" in the IE "Integrity check info" in this message, in accordance with TS 25.331 subclause 8.5.10.3.
    - 3> else:
      - 4> include the same IEs as in the last unsuccessful attempt of this message.
  - 2> send the UE CAPABILITY INFORMATION message on signalling radio bearer RB2;
  - 2> restart timer T304;

- 2> increment counter V304.
- 1> if V304 is greater than N304:
  - 2> initiate the Cell update procedure as specified in TS 25.331 subclause 8.3.1, using the cause "Radio link failure".

#### Reference

3GPP TS 25.331 clauses 8.1.6 and 8.1.7.

#### 8.1.5.3.3 Test purpose

To confirm that the UE stops retrying to transmit a UE CAPABILITY INFORMATION message if V304 is greater than N304. It then initiates cell update procedure.

#### 8.1.5.3.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CELL\_DCH state (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

The UE is brought to CELL\_DCH state. When the SS transmits a UE CAPABILITY ENQUIRY message which includes the "Capability update requirement" IE, the UE receives this message and transmits a UE CAPABILITY INFORMATION message on the uplink DCCH which includes the "UE radio access capability" IE. The SS does not respond with a UE CAPABILITY INFORMATION CONFIRM message but keeps a count on the number of messages received. When the T304 timer expires, the UE shall transmit a UE CAPABILITY INFORMATION message again. After sending (N304+1) messages, the UE shall stop sending UE CAPABILITY INFORMATION messages and initiates the cell update procedure. SS allows UE to return to "connected state" by issuing CELL UPDATE CONFIRM message on the downlink DCCH. Then UE shall reconfigure its physical channel according to the CELL UPDATE CONFIRM message and respond with PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to SS.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE starts from CELL_DCH state. SS sets counter K to 0
2		←	UE CAPABILITY ENQUIRY	Use default message
3		→	UE CAPABILITY INFORMATION	Use default message
4				The SS does not transmit a response and allows T304 timer to expire. SS increments counter K If K is greater than N304, proceeds to step 5 else returns to 3.
5		→	CELL UPDATE	The UE assumes that radio link failure has occurred and transmits this message which includes IE "Cell update cause" set to "radio link failure".
6		←	CELL UPDATE CONFIRM	This message include IE "Physical channel information elements".
7				The SS configure the dedicated physical channel according to the IE "Physical channel information elements" included in the CELL UPDATE CONFIRM message.
8		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	

## Specific Message Contents

## CELL UPDATE CONFIRM (Step 6) - FDD

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex A with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 5
RRC State indicator	CELL_DCH
Frequency info	
- CHOICE mode	FDD
- UARFCN uplink(Nu)	Reference to TS34.108 clause 5.1 Test frequencies
- UARFCN downlink(Nd)	Reference to TS34.108 clause 5.1 Test frequencies
Maximum allowed UL TX power	33dBm
CHOICE Mode	FDD
Downlink information for each radio links	
- Primary CPICH info	
- Primary scrambling code	100
- PDSCH with SHO DCH info	Not Present
- PDSCH code mapping	Not Present
- Downlink DPCH info for each RL	
- CHOICE mode	FDD
- Primary CPICH usage for channel estimation	Primary CPICH may be used
- DPCH frame offset	0 chips
- Secondary CPICH info	Not Present
- DL channelisation code	
- Secondary scrambling code	2
- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
- Code number	SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
- Scrambling code change	No change
- TPC combination index	0
- SSDT Cell Identity	-a
- Closed loop timing adjustment mode	Not Present
- SCCPCH information for FACH	Not Present

## CELL UPDATE CONFIRM (Step 6) – 3.84 Mcps TDD

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 5
RRC State indicator	CELL_DCH
Frequency info	
- CHOICE mode	TDD
- UARFCN (Nt)	Reference to TS34.108 clause 5.1 Test frequencies
Maximum allowed UL TX power	30dBm
CHOICE Mode	TDD
Downlink information for each radio links	
- Primary CCPCH info	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- CHOICE SyncCase	Not Present
- Cell Parameters ID	Not Present
- Block STTD indicator	FALSE
- Downlink DPCH info for each RL	
- CHOICE mode	TDD
- DL CCTrCh List	
- TFCS ID	1
- Time info	
- Activation time	Not Present (default)
- Duration	Not Present (default)
- Common timeslot info	Not Present (default)
- Downlink DPCH timeslots and codes	Not Present (default)
- UL CCTrCh TPC List	Not Present (default)

## CELL UPDATE CONFIRM (Step 6) – 1.28 Mcps TDD

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex A with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 5
RRC State indicator	CELL_DCH
Frequency info	
- CHOICE mode	TDD
- UARFCN (Nt)	Reference to TS34.108 clause 5.1 Test frequencies
Maximum allowed UL TX power	30dBm
CHOICE Mode	TDD
Downlink information for each radio links	
- Primary CCPCH info	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- TSTD indicator	FALSE
- Cell Parameters ID	Not Present
- Block STTD indicator	FALSE
- Downlink DPCH info for each RL	
- CHOICE mode	TDD
- DL CCTrCh List	
- TFCS ID	1
- Time info	
- Activation time	Not Present (default)
- Duration	Not Present (default)
- Common timeslot info	Not Present (default)
- Downlink DPCH timeslots and codes	Not Present (default)
- UL CCTrCh TPC List	Not Present (default)

#### 8.1.5.3.5 Test requirement

After step 2, the UE shall transmit a UE CAPABILITY INFORMATION message on the uplink DCCH. The UE shall re-transmit this message for N304 times.

After step 4, the UE shall initiate the cell update procedure.

After step 6, UE shall respond with a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message after it has configured L1 according to the CELL UPDATE CONFIRM message in step 6.

#### 8.1.5.4 UE Capability in CELL\_FACH state: Success

##### 8.1.5.4.1 Definition

##### 8.1.5.4.2 Conformance requirement

The UE shall initiate the UE capability update procedure in the following situations:

- 1> the UE receives a UE CAPABILITY ENQUIRY message from the UTRAN;

...

If the UE CAPABILITY INFORMATION message is sent in response to a UE CAPABILITY ENQUIRY message, the UE shall:

- 1> include the IE "RRC transaction identifier"; and
- 1> set it to the value of "RRC transaction identifier" in the entry for the UE CAPABILITY ENQUIRY message in the table "Accepted transactions" in the variable TRANSACTIONS;
- 1> retrieve its UTRA UE radio access capability information elements from variable UE\_CAPABILITY\_REQUESTED; and
- 1> include this in IE "UE radio access capability" and in IE "UE radio access capability extension", provided this IE is included in variable UE\_CAPABILITY\_REQUESTED;

- 1> retrieve its inter-RAT-specific UE radio access capability information elements from variable UE\_CAPABILITY\_REQUESTED; and
- 1> include this in IE "UE system specific capability".

The UE RRC shall submit the UE CAPABILITY INFORMATION message to the lower layers for transmission on the uplink DCCH using AM RLC. When the message has been delivered to lower layers for transmission the UE RRC shall start timer T304 and set counter V304 to 1.

Upon reception of a UE CAPABILITY INFORMATION CONFIRM message, the UE shall:

- 1> stop timer T304;
- ...
- 1> and the procedure ends.

If the UE receives a UE CAPABILITY INFORMATION CONFIRM message, which contains a protocol error causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows:

- 1> stop timer T304;
- 1> transmit an RRC STATUS message on the uplink DCCH using AM RLC;
- 1> include the IE "Identification of received message"; and
- 1> set the IE "Received message type" to UE CAPABILITY INFORMATION CONFIRM; and
- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the UE CAPABILITY INFORMATION CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;
- 1> include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL\_ERROR\_INFORMATION;
- 1> when the RRC STATUS message has been submitted to lower layers for transmission:
  - 2> restart timer T304 and continue with any ongoing procedures or processes as if the invalid UE CAPABILITY INFORMATION CONFIRM message has not been received.

...

If the UE receives an RRC message on the DCCH, or addressed to the UE on the CCCH or on the SHCCH, or sent via a radio access technology other than UTRAN, containing an undefined critical message extension, the UE shall:

- 1> set the variable PROTOCOL\_ERROR\_REJECT to TRUE;
- 1> set the IE "Protocol error cause" in the variable PROTOCOL\_ERROR\_INFORMATION to "Message extension not comprehended";
- 1> if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:
  - 2> store the IE "Message type" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS; and
  - 2> set the IE "RRC transaction identifier" to zero in that table entry.
- 1> perform procedure specific error handling according to TS 25.331 clause 8.

## Reference

3GPP TS 25.331 clauses 8.1.6 and 8.1.7.9.3b.

#### 8.1.5.4.3 Test purpose

1. To confirm that the UE transmits a UE CAPABILITY INFORMATION message after it receives a UE CAPABILITY ENQUIRY message from the SS.
2. To confirm that the UE indicates an invalid message reception when invalid UE CAPABILITY ENQUIRY and UE CAPABILITY INFORMATION CONFIRM messages are received. The UE shall transmit RRC STATUS message with the correct error cause value to SS.

#### 8.1.5.4.4 Method of test

##### Initial Condition

System Simulator: 1 cell.

UE: CELL\_FACH state (state 6-11) as specified in clause 7.4 of TS 34.108.

##### Test Procedure

The UE is brought to the CELL\_FACH state after a successful outgoing call attempt. The SS transmits a UE CAPABILITY ENQUIRY message containing an unexpected critical message extension. After receiving such a message, the UE shall report an error using RRC STATUS message with the appropriate error cause specified. Then SS transmits a UE CAPABILITY ENQUIRY message which includes the IE "Capability update requirement". After UE receives this message, it transmits a UE CAPABILITY INFORMATION message on the uplink DCCH, which includes the requested capabilities. The SS transmits a UE CAPABILITY INFORMATION CONFIRM message to the UE to complete the UE capability enquiry procedure.

Then SS initiates another UE capability enquiry procedure. The UE shall reply with a UE CAPABILITY INFORMATION message on the uplink DCCH. When SS receives this message, it transmits a UE CAPABILITY INFORMATION CONFIRM message containing an unexpected critical message extension. The UE shall detect an error and send an RRC STATUS message to report this event. After submitting this message to lower layers for transmission, the UE shall re-transmit a UE CAPABILITY INFORMATION message on the uplink DCCH upon the expiry of restarted T304. SS completes this test by sending an error-free UE CAPABILITY INFORMATION CONFIRM message similar to the message sent in step 6.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_FACH state after an outgoing call has been established successfully.
2		←	UE CAPABILITY ENQUIRY	See specific message contents for this message
3		→	RRC STATUS	See specific message contents for this message.
4		←	UE CAPABILITY ENQUIRY	Use default message.
5		→	UE CAPABILITY INFORMATION	Use default message.
6		←	UE CAPABILITY INFORMATION CONFIRM	Use default message.
7		←	UE CAPABILITY ENQUIRY	Same as in step 4.
8		→	UE CAPABILITY INFORMATION	The message content shall be the same as in step 5.
9		←	UE CAPABILITY INFORMATION CONFIRM	See specific message contents for this message
10		→	RRC STATUS	UE shall detect an error and then transmit this message on uplink DCCH.
11		→	UE CAPABILITY INFORMATION	UE shall re-transmit this message after the restarted T304 expires.
12		←	UE CAPABILITY INFORMATION CONFIRM	SS sends an error-free message to acknowledge the receipt of the uplink message.

Specific Message Contents

UE CAPABILITY ENQUIRY (Step 2)

Use the UE CAPABILITY ENQUIRY message as defined in [9] (TS 34.108) Clause 9, with the following exceptions:

Information Element	Value/remark
Message Type	
RRC transaction identifier	Arbitrarily selects an integer between 0 and 3
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
- Message authentication code	SS calculates the value of MAC-I for this message and writes to this IE.
- RRC Message sequence number	SS provides the value of this IE, from its internal counter.
Critical extensions	'01'H

RRC STATUS (Step 3)

Check to is the same message type found in TS 34.108, clause 9 is received, with the following exceptions:


Information Element	Value/remark
Identification of received message - Received message type RRC transaction identifier  Protocol Error Information - Protocol Error Cause	UE Capability Enquiry Checked to see if the value is identical to the same IE in the downlink UE CAPABILITY ENQUIRY message.  Message extension not comprehended

#### UE CAPABILITY INFORMATION CONFIRM (Step 9)

SS sends a message containing a critical extension not defined for the protocol release supported by the UE, as indicated in the IE "Access stratum release indicator". Use the UE CAPABILITY INFORMATION CONFIRM message as defined in [9] (TS 34.108) Clause 9, with the following addition:

Information Element	Value/remark
Critical extensions	'01'H

#### RRC STATUS (Step 10)

Check to see if the same message type found in TS 34.108, clause 9 is received, with the following exceptions:

Information Element	Value/remark
Identification of received message - Received message type - RRC transaction identifier  Protocol Error Information - Protocol Error Cause	UE Capability Information Confirm Checked to see if the value is identical to the same IE in the downlink UE CAPABILITY INFORMATION CONFIRM message.  Message extension not comprehended

#### 8.1.5.4.5 Test requirement

After step 2, the UE shall transmit a RRC STATUS message on the uplink DCCH, reporting the error with protocol error cause set to "Message extension not comprehended" correct transaction identifier.

After step 4 and 7 the UE shall transmit a UE CAPABILITY INFORMATION message on the uplink DCCH to respond to the downlink UE CAPABILITY ENQUIRY message with correct contents.

After step 9, the UE shall transmit a RRC STATUS message on the uplink DCCH. The protocol error cause shall be set to "Message extension not comprehended" and the transaction identifier set to the same value as used in the UE CAPABILITY ENQUIRY message of step 7.

After step 10, the UE shall re-transmit the UE CAPABILITY INFORMATION message with a similar content as in step 8 upon the expiry of restarted T304.

#### 8.1.5.5 UE Capability in CELL\_FACH state: Success after T304 timeout

##### 8.1.5.5.1 Definition

##### 8.1.5.5.2 Conformance requirement

The UE shall initiate the UE capability update procedure in the following situations:

- 1> the UE receives a UE CAPABILITY ENQUIRY message from the UTRAN on the DCCH using UM or AM RLC;
- 1> while in connected mode the UE capabilities change compared to those stored in the variable UE\_CAPABILITY\_TRANSFERRED.

If the UE CAPABILITY INFORMATION message is sent in response to a UE CAPABILITY ENQUIRY message, the UE shall:

- 1> include the IE "RRC transaction identifier"; and
- 1> set it to the value of "RRC transaction identifier" in the entry for the UE CAPABILITY ENQUIRY message in the table "Accepted transactions" in the variable TRANSACTIONS;
- 1> retrieve its UTRA UE radio access capability information elements from variable UE\_CAPABILITY\_REQUESTED; and
- 1> include this in IE "UE radio access capability" and in IE "UE radio access capability extension", provided this IE is included in variable UE\_CAPABILITY\_REQUESTED;
- 1> retrieve its inter-RAT-specific UE radio access capability information elements from variable UE\_CAPABILITY\_REQUESTED; and
- 1> include this in IE "UE system specific capability".

If the UE CAPABILITY INFORMATION message is sent because one or more of the UE capabilities change compared to those stored in the variable UE\_CAPABILITY\_TRANSFERRED while in connected state, the UE shall include the information elements associated with the capabilities that have changed in the UE CAPABILITY INFORMATION message.

...

The UE RRC shall submit the UE CAPABILITY INFORMATION message to the lower layers for transmission on the uplink DCCH using AM RLC. When the message has been delivered to lower layers for transmission the UE RRC shall start timer T304 and set counter V304 to 1.

Upon expiry of timer T304, the UE shall check the value of V304 and:

- 1> if V304 is smaller than or equal to N304:
  - 2> prior to retransmitting the UE CAPABILITY INFORMATION message:
    - 3> if the IE "Status" in the variable INTEGRITY\_PROTECTION\_INFO has the value "Started":
      - 4> include the same IEs as in the last unsuccessful attempt of this message, except for the IE "Integrity check info", which is modified as follows:
        - 5> increment the "Uplink RRC Message sequence number" for signalling radio bearer RB2 in the variable INTEGRITY\_PROTECTION\_INFO by one;
        - 5> set the IE "RRC Message sequence number" in the IE "Integrity check info" by the value of the "Uplink RRC Message sequence number" for signalling radio bearer RB2 in the variable INTEGRITY\_PROTECTION\_INFO in this message;
        - 5> recalculate the IE "Message authentication code" in the IE "Integrity check info" in this message, in accordance with TS 25.331 subclause 8.5.10.3.
    - 3> else:
      - 4> include the same IEs as in the last unsuccessful attempt of this message.
  - 2> send the UE CAPABILITY INFORMATION message on signalling radio bearer RB2;
  - 2> restart timer T304;
  - 2> increment counter V304.

...

## Reference

3GPP TS 25.331 clauses 8.1.6 and 8.1.7.

## 8.1.5.5.3 Test purpose

To confirm that the UE re-transmits a UE CAPABILITY INFORMATION message until V304 is greater than N304, after the expiry of timer T304 when it fails to receive a downlink UE CAPABILITY INFORMATION CONFIRM message in response to the uplink UE CAPABILITY INFORMATION message sent.

## 8.1.5.5.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: CELL\_FACH state (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is brought to CELL\_FACH state. When the SS transmits a UE CAPABILITY ENQUIRY message which includes the IE "Capability update requirement", the UE shall reply with a UE CAPABILITY INFORMATION message on the uplink DCCH that contains the IE "UE radio access capability". The SS waits and does not transmit a UE CAPABILITY INFORMATION CONFIRM message to the UE, resulting in the T304 timer to expire. SS shall observe that the UE attempts to transmit a UE CAPABILITY INFORMATION message again. The UE shall re-transmit N304 times, and SS transmits a UE CAPABILITY INFORMATION CONFIRM message to answer the last request and completes this test procedure.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_FACH state. SS sets internal counter K =0
2		←	UE CAPABILITY ENQUIRY	Including the IE "Capability update requirement".
3		→	UE CAPABILITY INFORMATION	Including the IE "UE radio access capability".
4				If K equals N304, then proceeds to step 6. Else, continue with step 5.
5				The SS does not transmit a response and wait for T304 timer to expire. K=K+1 and goes to step 3.
6		←	UE CAPABILITY INFORMATION CONFIRM	Use default message contents

## Specific Message Contents

None

## 8.1.5.5.5 Test requirement

After step 3 the UE shall re-transmit a UE CAPABILITY INFORMATION message on the uplink DCCH, after each expiry of timer T304. The UE CAPABILITY INFORMATION message shall contain IE "UE radio access capability" with the value matching those stated in the ICS/IXIT statements. After (N304) re-transmissions, the UE shall receive a UE CAPABILITY INFORMATION CONFIRM message.

## 8.1.6 Direct Transfer

### 8.1.6.1 Direct Transfer in CELL DCH state (invalid message reception and no signalling connection exists)

#### 8.1.6.1.1 Definition

#### 8.1.6.1.2 Conformance requirement

If the UE receives a DOWNLINK DIRECT TRANSFER message, which contains a protocol error causing the variable `PROTOCOL_ERROR_REJECT` to be set to `TRUE` according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows:

- 1> transmit an RRC STATUS message on the uplink DCCH using AM RLC;
- 1> include the IE "Identification of received message"; and
- 1> set the IE "Received message type" to `DOWNLINK DIRECT TRANSFER`; and
- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the DOWNLINK DIRECT TRANSFER message in the table "Rejected transactions" in the variable `TRANSACTIONS`; and
- 1> clear that entry;
- 1> include the IE "Protocol error information" with contents set to the value of the variable `PROTOCOL_ERROR_INFORMATION`.

If the UE receives a DOWNLINK DIRECT TRANSFER message, and the signalling connection identified with the IE "CN domain identity" does not exist according to the variable `ESTABLISHED_SIGNALLING_CONNECTIONS`, the UE shall:

- 1> ignore the content of the DOWNLINK DIRECT TRANSFER message;
- 1> transmit an RRC STATUS message on the uplink DCCH using AM RLC;
- 1> include the IE "Identification of received message"; and
- 1> set the IE "Received message type" to `DOWNLINK DIRECT TRANSFER`; and
- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the DOWNLINK DIRECT TRANSFER message in the table "Accepted transactions" in the variable `TRANSACTIONS`; and
- 1> clear that entry;
- 1> include the IE "Protocol error information" with the IE "Protocol error cause" set to "Message not compatible with receiver state".

When the RRC STATUS message has been submitted to lower layers for transmission, the UE shall:

- 1> continue with any ongoing processes and procedures as if the DOWNLINK DIRECT TRANSFER message has not been received.

#### Reference

3GPP TS 25.331 clause 8.1.9.

#### 8.1.6.1.3 Test purpose

To confirm that the UE transmits an RRC STATUS message on the DCCH using AM RLC if it receives a DOWNLINK DIRECT TRANSFER message which does not include any IEs except IE "Message Type". To confirm

that the UE transmits an RRC STATUS message on the DCCH using AM RLC if it receives a DOWNLINK DIRECT TRANSFER message which includes an invalid IE "CN domain identity".

#### 8.1.6.1.4 Method of test

##### Initial Condition

System Simulator: 1 cell.

UE: CELL\_DCH (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

##### Test Procedure

The UE is in the CELL\_DCH state. The SS transmits an invalid DOWNLINK DIRECT TRANSFER message to the UE. The UE shall transmit an RRC STATUS message on the DCCH using AM RLC. The error type "ASN.1 violation or encoding error" shall also be indicated in IE "Protocol error cause". The SS transmits a DOWNLINK DIRECT TRANSFER message that contains an invalid IE "CN domain identity" to the UE. The UE shall transmit an RRC STATUS message on the DCCH using AM RLC. The error type "Message not compatible with receiver state" shall also be indicated in IE "Protocol error cause".

##### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	DOWNLINK DIRECT TRANSFER	Only message type is provided.
2		→	RRC STATUS	
3		←	DOWNLINK DIRECT TRANSFER	
4		→	RRC STATUS	

##### Specific Message Contents

###### DOWNLINK DIRECT TRANSFER (Step 1)

Information Element	Value/remark
All IEs	Not Present

###### RRC STATUS (Step 2)

Check to see if same message type found in Annex A is received, with the following exceptions:

Information Element	Value/remark
Protocol error information - Protocol error cause	ASN.1 violation or encoding error

###### DOWNLINK DIRECT TRANSFER (Step 3)

Use the same message type found in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
CN domain identity NAS message	CS domain or PS domain as unselected domain Arbitrary message.

#### RRC STATUS (Step 4)

Check to see if same message type found in Annex A is received, with the following exceptions:

Information Element	Value/remark
Message Type Identification of received message type - Received message type - RRC transaction identifier	DOWNLINK DIRECT TRANSFER Same value in the DOWNLINK DIRECT TRANSFER message in step 3.
Protocol error information - Protocol error cause	Message not compatible with receiver state

#### 8.1.6.1.5 Test requirement

After step 1 the UE shall transmit an RRC STATUS message on the DCCH using AM RLC setting "ASN.1 violation or encoding error" in IE "Protocol error cause".

After step 3 the UE shall transmit a n RRC STATUS message on the DCCH using AM RLC setting "Message not compatible with receiver state" in IE "Protocol error cause".

#### 8.1.6.2 Direct Transfer in CELL FACH state (invalid message reception and no signalling connection exists)

##### 8.1.6.2.1 Definition

##### 8.1.6.2.2 Conformance requirement

If the UE receives a DOWNLINK DIRECT TRANSFER message, which contains a protocol error causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows:

- 1> transmit an RRC STATUS message on the uplink DCCH using AM RLC;
- 1> include the IE "Identification of received message"; and
- 1> set the IE "Received message type" to DOWNLINK DIRECT TRANSFER; and
- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the DOWNLINK DIRECT TRANSFER message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;
- 1> include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL\_ERROR\_INFORMATION.

If the UE receives a DOWNLINK DIRECT TRANSFER message, and the signalling connection identified with the IE "CN domain identity" does not exist according to the variable ESTABLISHED\_SIGNALLING\_CONNECTIONS, the UE shall:

- 1> ignore the content of the DOWNLINK DIRECT TRANSFER message;
- 1> transmit an RRC STATUS message on the uplink DCCH using AM RLC;
- 1> include the IE "Identification of received message"; and

- 1> set the IE "Received message type" to DOWNLINK DIRECT TRANSFER; and
- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the DOWNLINK DIRECT TRANSFER message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;
- 1> include the IE "Protocol error information" with the IE "Protocol error cause" set to "Message not compatible with receiver state".

When the RRC STATUS message has been submitted to lower layers for transmission, the UE shall:

- 1> continue with any ongoing processes and procedures as if the DOWNLINK DIRECT TRANSFER message has not been received.

## Reference

3GPP TS 25.331 clause 8.1.9.

### 8.1.6.2.3 Test purpose

To confirm that the UE transmits an RRC STATUS message on the DCCH using AM RLC if it receives a DOWNLINK DIRECT TRANSFER message which does not include any IEs except IE "Message Type". To confirm that the UE transmits an RRC STATUS message on the DCCH using AM RLC if it receives a DOWNLINK DIRECT TRANSFER message which includes an invalid IE "CN domain identity".

### 8.1.6.2.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CELL\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in the CELL\_FACH state. The SS transmits a DOWNLINK DIRECT TRANSFER message to the UE and does not include all IEs except IE "Message Type". The UE shall transmit an RRC STATUS message on the DCCH using AM RLC. The error type "ASN.1 violation or encoding error" shall also be indicated in IE "Protocol error cause". The SS transmits a DOWNLINK DIRECT TRANSFER message that contains an invalid IE "CN domain identity" to the UE. The UE shall transmit an RRC STATUS message on the DCCH using AM RLC. The error type "Message not compatible with receiver state" shall also be indicated in IE "Protocol error cause".

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	DOWNLINK DIRECT TRANSFER	Only message type is provided
2		→	RRC STATUS	
3		←	DOWNLINK DIRECT TRANSFER	
4		→	RRC STATUS	

Specific Message Contents

DOWNLINK DIRECT TRANSFER (Step 1)

Information Element	Value/remark
All IEs	Not Present

RRC STATUS (Step 2)

Check to see if the same message type found in Annex A is received, with the following exceptions:

Information Element	Value/remark
Protocol error information – Protocol error cause	ASN.1 violation or encoding error

DOWNLINK DIRECT TRANSFER (Step 3)

Information Element	Value/remark
CN domain identity NAS message	CS domain or PS domain as unselected domain Arbitrary message.

RRC STATUS (Step 4)

Check to see if the same message type found in Annex A is received, with the following exceptions:

Information Element	Value/remark
Identification of received message type - Received message type - RRC transaction identifier	DOWNLINK DIRECT TRANSFER Same value in the DOWNLINK DIRECT TRANSFER message in step 3.
Protocol error information – Protocol error cause	Message not compatible with receiver state

#### 8.1.6.2.5 Test requirement

After step 1 the UE shall transmit an RRC STATUS message on the DCCH using AM RLC setting "ASN.1 violation or encoding error" in IE "Protocol error cause".

After step 3 the UE shall transmit a n RRC STATUS message on the DCCH using AM RLC setting "Message not compatible with receiver state" in IE "Protocol error cause".

### 8.1.6.3 Measurement Report on INITIAL DIRECT TRANSFER message and UPLINK DIRECT TRANSFER message

#### 8.1.6.3.1 Definition

#### 8.1.6.3.2 Conformance requirement

In CELL\_FACH state, the UE shall:

- 1> include a measurement report in the IE "Measured results on RACH", as specified in the IE "Intra-frequency reporting quantity for RACH reporting" and the IE "Maximum number of reported cells on RACH" in System

Information Block type 12 (or "System Information Block Type 11" if "System Information Block Type 12" is not being broadcast);

- 1> include in the IE "Measured results on RACH" all requested reporting quantities for cells for which measurements are reported.

#### Reference

3GPP TS 25.331, clause 8.1.8.2, 8.1.10.2

#### 8.1.6.3.3 Test Purpose

To confirm that the UE reports measured results on RACH messages, if it receives IE "Intra-frequency reporting quantity for RACH reporting" and IE "Maximum number of reported cells on RACH" from System Information Block Type 11 or 12 upon a transition from idle mode to CELL\_FACH state.

#### 8.1.6.3.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

#### Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

#### System Information Block type 11 (Step 1)

Use the same message sub-type found in clause 6.1 of TS 34.108, with the following exception:

Information Element	Value/Remark
SIB12 indicator	FALSE
FACH measurement occasion info	Not Present
Measurement control system information	
- Use of HCS	Not used
- Cell selection and reselection quality measure	CPICH RSCP
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	5
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	0
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	Not present
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 1
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection info	Not present
- Intra-frequency Measurement quantity	
- Filter Coefficient	0
- Measurement quantity	CPICH RSCP
- Intra-frequency measurement for RACH reporting	
- SFN-SFN observed time difference	No report
- Reporting quantity	CPICH RSCP
- Maximum number of reported cells on RACH	Current cell
- Reporting information for state CELL_DCH	
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	TRUE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected set cells	Not present
- Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged mode RLC
- Periodic Reporting/Event Trigger Reporting Mode	Event trigger
- CHOICE report criteria	Intra-frequency measurement reporting criteria
- Parameters required for each event	
- Intra-frequency event identity	1a
- Triggering condition 1	Not Present
- Triggering condition 2	Monitored set cells
- Reporting Range Constant	15 dB
- Cells forbidden to affect reporting range	Not Present
- W	0.0
- Hysteresis	1.0 dB
- Threshold used frequency	Not Present
- Reporting deactivation threshold	0

Information Element	Value/Remark
- Replacement activation threshold	Not Present
- Time to trigger	60 ms
- Amount of reporting	Infinity
- Reporting interval	16 seconds
- Reporting Cell Status	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- CHOICE reported cell	
- Maximum number of reported cells	2
- Inter-frequency measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

### Test Procedure

The UE is initially in idle mode and camps on cell 1. SS prompts the operator to make an outgoing call for one of the traffic classes supported by the UE. SS and UE shall execute out going call procedure. During this procedure UE transmits INITIAL DIRECT TRANSFER and UPLINK DIRECT TRANSFER messages with IE"Measured results on RACH" which is set to measured CPICH RSCP in the current cell.

### Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in idle mode and camps onto cell 1.
2				SS prompts the test operator to make an outgoing call.
3		→	RRC CONNECTION REQUEST	
4		←	RRC CONNECTION SETUP	See default default message content ( Transition to CELL_FACH)
5		→	RRC CONNECTION SETUP COMPLETE	See default message content
6		→	INITIAL DIRECT TRANSFER ( SERVICE REQUEST )	See specific message content
7		←	DOWNLINK DIRECT TRANSFER( AUTHENTICATION AND CIPHERING REQUEST )	See default default message content
8		→	UPLINK DIRECT TRANSFER( AUTHENTICATION AND CIPHERING RESPONSE )	See specific message content
9		←	SECURITY MODE COMMAND	See default default message content
10		→	SECURITY MODE COMPLETE	See default default message content
11		→	UPLINK DIRECT TRANSFER( ACTIVATE PDP CONTEXT REQUEST )	See specific message content
12		←	RADIO BEARER SETUP	See default default message content ( Transition from CELL_FACH to CELL_FACH)
13		→	RADIO BEARER SETUP COMPLETE	See default default message content
14		←	DOWNLINK DIRECT TRANSFER( ACTIVATE PDP CONTEXT ACCEPT )	See default default message content

## Specific Message Content

## RRC CONNECTION REQUEST (Step 3)

Use the default message with the same message type specified in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
Measured results on RACH - Measurement result for current cell - CHOICE measurement quantity - CPICH RSCP - Measurement results for monitored cells	Check to see if set to 'CPICH RSCP' Checked to see if set to within an acceptable range. Checked to see if this IE is absent.

## INITIAL DIRECT TRANSFER ( SERVICE REQUEST ) (Step 6)

Use the default message with the same message type specified in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
Measured results on RACH - Measurement result for current cell - CHOICE measurement quantity - CPICH RSCP - Measurement results for monitored cells	Check to see if set to 'CPICH RSCP' Checked to see if set to within an acceptable range. Checked to see if this IE is absent.

## UPLINK DIRECT TRANSFER( AUTHENTICATION AND CIPHERING RESPONSE ) (Step 8)

Use the default message with the same message type specified in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
Measured results on RACH - Measurement result for current cell - CHOICE measurement quantity - CPICH RSCP - Measurement results for monitored cells	Check to see if set to 'CPICH RSCP' Checked to see if set to within an acceptable range. Checked to see if this IE is absent.

## UPLINK DIRECT TRANSFER( ACTIVATE PDP CONTEXT REQUEST ) (Step 11)

Use the default message with the same message type specified in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
Measured results on RACH - Measurement result for current cell - CHOICE measurement quantity - CPICH RSCP - Measurement results for monitored cells	Check to see if set to 'CPICH RSCP' Checked to see if set to within an acceptable range. Checked to see if this IE is absent.

## 8.1.6.3.5 Test Requirement

After step 2 the UE shall transmit a RRC CONNECTION REQUEST message which includes IE "measured results on RACH", containing the measurement value for cell 1's CPICH RSCP.

After step 5 the UE shall transmit a INITIAL DIRECT TRANSFER ( SERVICE REQUEST) message which includes IE "measured results on RACH", containing the measurement value for cell 1's CPICH RSCP.

After step 7 the UE shall transmit a UPLINK DIRECT TRANSFER( AUTHENTICATION AND CIPHERING RESPONSE ) message which includes IE "measured results on RACH", containing the measurement value for cell 1's CPICH RSCP.

After step 10 the UE shall transmit a UPLINK DIRECT TRANSFER( ACTIVATE PDP CONTEXT REQUEST ) message which includes IE "measured results on RACH", containing the measurement value for cell 1's CPICH RSCP.

#### 8.1.6.4 Initial Direct Transfer (RLC re-establishment)

8.1.6.4.1 Definition

8.1.6.4.2 Conformance requirement

If a re-establishment of RLC on signalling radio bearer RB3 occurs before the successful delivery of the INITIAL DIRECT TRANSFER message has been confirmed by RLC, the UE shall:

- 1> retransmit the INITIAL DIRECT TRANSFER message on the uplink DCCH using AM RLC on signalling radio bearer RB3.

#### Reference

3GPP TS 25.331 clause 8.1.8.2a.

8.1.6.4.3 Test purpose

FFS

8.1.6.4.4 Method of test

FFS

8.1.6.4.5 Test requirement

FFS

#### 8.1.7 Security mode command

8.1.7.1 Security mode command in CELL\_DCH state (CS Domain)

8.1.7.1.1 Definition

8.1.7.1.2 Conformance requirement

1. This procedure is used to trigger or start of ciphering or to command the restart of ciphering with the new ciphering configuration for the signalling radio bearers and any radio bearers of a particular CN Domain. It is also used to start integrity protection or modify integrity protection configuration for the signalling radio bearers.
2. When the UE receives a SECURITY MODE COMMAND message from the UTRAN, which indicates a downlink activation time for each effected SRB and RB, and new ciphering mode configuration, the UE shall apply the old ciphering configuration, for a particular SRB or RB, before the stated downlink activation time. It shall start to decipher using the new ciphering configuration at the downlink activation time.
3. After the UE has transmitted a SECURITY MODE COMPLETE message using the new integrity protection configuration which includes uplink activation time, it shall start to cipher transmission in the uplink using the new configuration at the respective uplink activation time for each SRB or RB.

#### Reference

3GPP TS 25.331 clauses 8.1.12, 8.6.3.4, 8.6.3.5.

### 8.1.7.1.3 Test purpose

To confirm that the UE activates the new ciphering configurations after the stated activation time. To confirm that after the UE receives a SECURITY MODE COMMAND message, it transmits a SECURITY MODE COMPLETE message to the UTRAN using the old ciphering configuration together with the application of the new integrity protection configuration. To confirm that UE send SECURITY MODE FAILURE message when SS transmits a SECURITY MODE COMMAND message that causes an invalid configuration. To confirm that the UE sends a SECURITY MODE FAILURE message when the UE receives an invalid SECURITY MODE COMMAND message.

### 8.1.7.1.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CELL\_DCH (state 6-9) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_DCH state. The SS initiates an Authentication procedure, which will result in the generation of a new security keyset (CK/IK). The SS transmits a SECURITY MODE COMMAND message which contains an unexpected critical message extension. The UE shall respond by sending SECURITY MODE FAILURE message on the DCCH. Then SS transmits a SECURITY MODE COMMAND message with IE's "Ciphering mode info" and "Integrity protection mode info both omitted". Again the UE shall not trigger any ciphering algorithm and it shall respond by sending SECURITY MODE FAILURE message on the DCCH. Next, the SS transmits a valid SECURITY MODE COMMAND message which includes the correct downlink activation times and "Integrity check info" IE. Then the UE shall check the integrity check info and shall start to configure ciphering in downlink according to the first valid SECURITY MODE COMMAND message. The UE shall transmit a SECURITY MODE COMPLETE message which contains the correct uplink activation times and also "Integrity check info" IE using the new integrity protection configuration. The SS records the uplink ciphering activation time for RB 2. Next, the SS transmits UE CAPABILITY ENQUIRY message repeatedly on the downlink DCCH using RLC-AM mode. The UE shall respond to each downlink message with a UE CAPABILITY INFORMATION message on the uplink DCCH using RLC-AM. SS then send UE CAPABILITY INFORMATION CONFIRM message to the UE. This cycle repeats itself until both the uplink and downlink ciphering activation time for RB 2 has elapsed. SS checks all uplink UE CAPABILITY INFORMATION messages are integrity-protected by UIA algorithm, and that the messages contain the correct values for "Integrity check info" IE. This can be verified in the SS through the reception of a correctly ciphered and integrity-protected UE CAPABILITY INFORMATION message.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				RRC connected state on DCH_state.
1a		←	AUTHENTICATION REQUEST	MM message which will result in the generation of a new security keyset
1b		→	AUTHENTICATION RESPONSE	MM
2		←	SECURITY MODE COMMAND	See message content.
3		→	SECURITY MODE FAILURE	IE "Failure Cause" shall be set to "Protocol Error" and IE "Protocol Error Information" shall be set to "Message extension not comprehended".
4		←	SECURITY MODE COMMAND	See message content.
5		→	SECURITY MODE FAILURE	IE "Failure Cause" shall be set to "invalid configuration".
6		←	SECURITY MODE COMMAND	See specific message contents.
7			Void	
8			Void	
9		→	SECURITY MODE COMPLETE	SS verifies that this message is sent using the old ciphering configuration. SS records the uplink ciphering activation time for RB 2.
10		←	UE CAPABILITY ENQUIRY	SS repeats step 10, 11 and 12 until its internal uplink and downlink RLC SN have both surpassed the uplink and downlink ciphering activation time specified for RB2. This message is sent on the downlink DCCH using RLC-AM.
11		→	UE CAPABILITY INFORMATION	UE shall send this message on the uplink DCCH using RLC-AM. SS verifies that the last UE CAPABILITY INFORMATION message is both integrity-protected and ciphered correctly.
12		←	UE CAPABILITY INFORMATION CONFIRM	

## Specific Message Contents

## SECURITY MODE COMMAND (Step 2)

Information Element	Value/remark
Integrity check info	
Message authentication code	Calculated result in SS
RRC Message sequence number	Next RRC SN
Critical extensions	'01'H

## SECURITY MODE FAILURE (Step 3)

The same message found in TS 34.108, clause 9 shall be transmitted by the UE on the uplink DCCH, with the exception of the following IEs:

Information Element	Value/remark
Failure cause	
Failure cause	Protocol error
Protocol error information	
Protocol error cause	Message extension not comprehended

## SECURITY MODE COMMAND (Step 4)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
Message authentication code	Calculated result in SS
RRC Message sequence number	Next RRC SN
Security Capability	Same as originally sent by UE (and stored in SS)
Ciphering mode info	Not Present
- Ciphering mode command	
Integrity protection mode info	Not Present
CN domain identity	CS Domain

## SECURITY MODE FAILURE (Step 5)

The same message found in TS 34.108, clause 9 shall be transmitted by the UE on the uplink DCCH, with the exception of the following IEs:

Information Element	Value/remark
Failure cause	
Failure cause	Invalid configuration

## SECURITY MODE COMMAND (Step 6)

See notes below for the value of Y.

Information Element	Value/remark
RRC transaction identifier	X
Integrity check info	
Message authentication code	Calculated result in SS
RRC Message sequence number	Next RRC SN
Security Capability	Same as originally sent by UE (and stored in SS)
Ciphering mode info	
Ciphering mode command	Start/restart
Ciphering algorithm	UEA1
Activation time for DPCH	$(256 + \text{CFN} - (\text{CFN} \bmod 8 + 8)) \bmod 256$
Radio bearer downlink ciphering activation time info	
RB Identity	1
RLC sequence number	Current RLC SN + Y
RB Identity	2
RLC sequence number	Current RLC SN + 4
RB Identity	3
RLC sequence number	Current RLC SN + Y
RB Identity	4
RLC sequence number	Current RLC SN + Y
Integrity protection mode info	
Integrity protection mode command	Modify
Downlink integrity protection activation info	
	Current RRC SN for SRB0 + 2
	Current RRC SN for SRB1 + 2
	Current RRC SN for SRB2 + 2
	Current RRC SN for SRB3 + 2
	Current RRC SN for SRB4 + 2
Integrity protection algorithm	UIA1
CN domain identity	CS Domain

Note X = 0 (Step 6), and Y = 1 (Step 6)

### SECURITY MODE COMPLETE (Step 9)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
- Message Authentication code	Checked to see if present
- RRC Message sequence number	Checked to see if present
Uplink integrity protection activation info	
- RRC message sequence number list	Check to see if the RRC SN for RB 0 to RB 4 are present
Radio bearer uplink ciphering activation info	
- RB Identity other than RB2	Check to see if the RLC SN for RB1, 3 and 4 are present
- RB Identity	2
- RLC sequence number	SS records this value. See step 10 in 'expected sequence'

#### 8.1.7.1.5 Test requirement

After step 2 the UE shall transmit a SECURITY MODE FAILURE message to report the protocol error detected in the first SECURITY MODE COMMAND message.

After step 4 the UE shall transmit a SECURITY MODE FAILURE message to report on the invalid configuration detected in the second SECURITY MODE COMMAND message.

After step 8 the SS checks that the SECURITY MODE COMPLETE message is received ciphered using the old configuration and that the calculated "integrity check info" IE is correct.

After step 9 SS verifies that all uplink signalling messages on RB2 are integrity protected with UIA1 algorithm.

After uplink ciphering activation time has lapsed, SS verifies that the UE CAPABILITY INFORMATION message received is integrity protected with UIA algorithm and ciphered with the new ciphering configuration and algorithm indicated in the SECURITY MODE COMMAND (Step 6) message.

After downlink ciphering activation time has lapsed, SS shall apply ciphering to all downlink messages using the new configuration. At least one more cycle between step 10 and step 12 shall be repeated correctly after activation time on both directions has lapsed and the messages on both direction shall be ciphered and integrity protected..

#### 8.1.7.1b Security mode command in CELL\_DCH state (PS Domain)

##### 8.1.7.1b.1 Definition

##### 8.1.7.1b.2 Conformance requirement

1. This procedure is used to trigger the start of ciphering or to command the restart of ciphering with the new ciphering configuration for the signalling radio bearers and any radio bearers of a particular CN Domain. It is also used to start integrity protection or modify integrity protection configuration for the signalling radio bearers.
2. When the UE receives a SECURITY MODE COMMAND message from the UTRAN, which indicates a downlink activation time for each effected SRB and RB, and new ciphering mode configuration, the UE shall apply the old ciphering configuration, for each particular SRB or RB, before the stated downlink activation time. It shall start to decipher using the new ciphering configuration at the downlink activation time.
3. After the UE has transmitted a SECURITY MODE COMPLETE message using the new integrity protection configuration which includes uplink activation time, it shall start to cipher transmission in the uplink using the new configuration at the respective uplink activation time for each SRB or RB.

## Reference

3GPP TS 25.331 clauses 8.1.12, 8.6.3.4, 8.6.3.5.

### 8.1.7.1b.3 Test purpose

To confirm that the UE activates the new ciphering configurations after the stated activation time. To confirm that after the UE receives a SECURITY MODE COMMAND message, it transmits a SECURITY MODE COMPLETE message to the UTRAN using the old ciphering configuration together with the application of the new integrity protection configuration. To confirm that UE send SECURITY MODE FAILURE message when SS transmits a SECURITY MODE COMMAND message that causes an invalid configuration. To confirm that the UE sends a SECURITY MODE FAILURE message when UE receives an invalid SECURITY MODE COMMAND message.

### 8.1.7.1b.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CELL\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_DCH state. The SS initiates an Authentication and Ciphering procedure, which will result in the generation of a new security keyset (CK/IK). The SS transmits a SECURITY MODE COMMAND message which contains an unexpected critical message extension . The UE shall respond by sending SECURITY MODE FAILURE message on the DCCH. Then SS transmits a SECURITY MODE COMMAND message with IEs "Ciphering mode info" and "Integrity protection mode info both omitted". Again the UE shall not trigger any ciphering algorithm and it shall respond by sending SECURITY MODE FAILURE message on the DCCH. Next, the SS transmits a valid SECURITY MODE COMMAND message which includes the correct downlink activation times and "Integrity check info" IE. Following that, the SS immediately transmits another valid SECURITY MODE COMMAND message to the UE. Then the UE shall check the integrity check info and shall start to configure ciphering in downlink according to the first valid SECURITY MODE COMMAND message. Then UE shall transmit a SECURITY MODE COMPLETE message which contains the correct uplink activation times and also "Integrity check info" IE using the new integrity protection configuration. SS records the uplink ciphering activation time for RB 2. Next, the SS transmits UE CAPABILITY ENQUIRY message repeatedly on the downlink DCCH using RLC-AM mode. The UE shall respond to each downlink message with a UE CAPABILITY INFORMATION message on the uplink DCCH using RLC-AM. SS then send UE CAPABILITY INFORMATION CONFIRM message to the UE. This cycle repeats itself until both the uplink and downlink ciphering activation time for RB 2 has elapsed. SS checks all uplink UE CAPABILITY INFORMATION messages are integrity-protected by UIA algorithm, and that the messages contain the correct values for "Integrity check info" IE. This can be verified in the SS through the reception of a correctly ciphered and integrity-protected UE CAPABILITY INFORMATION message.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				RRC connected state on DCH_state.
1a		←	AUTHENTICATION AND CIPHERING REQUEST	GMM message which will result in the generation of a new security keyset
1b		→	AUTHENTICATION AND CIPHERING RESPONSE	GMM
2		←	SECURITY MODE COMMAND	See message content.
3		→	SECURITY MODE FAILURE	IE "Failure Cause" shall be set to "Protocol Error" and IE "Protocol Error Information" shall be set to "Message extension not comprehended".
4		←	SECURITY MODE COMMAND	See message content.
5		→	SECURITY MODE FAILURE	IE "Failure Cause" shall be set to "invalid configuration".
6		←	SECURITY MODE COMMAND	See specific message contents.
7		→	SECURITY MODE COMPLETE	SS verifies that this message is sent using the old ciphering configuration. SS records the uplink ciphering activation time for RB 2.
8		←	UE CAPABILITY ENQUIRY	SS repeats step 8, 9 and 10 until its internal uplink and downlink RLC SN have both surpassed the uplink and downlink ciphering activation time specified for RB2. This message is sent on the downlink DCCH using RLC-AM.
9		→	UE CAPABILITY INFORMATION	UE shall send this message on the uplink DCCH using RLC-AM. SS verifies that the last UE CAPABILITY INFORMATION message is both integrity-protected and ciphered correctly.
10		←	UE CAPABILITY INFORMATION CONFIRM	

## Specific Message Contents

## SECURITY MODE COMMAND (Step 2)

Information Element	Value/remark
Integrity check info	
Message authentication code	Calculated result in SS
RRC Message sequence number	Next RRC SN
Critical extensions	'01'H

## SECURITY MODE FAILURE (Step 3)

The same message found in [9] (TS 34.108) Clause 9 shall be transmitted by the UE on the uplink DCCH, with the exception of the following IEs:

Information Element	Value/remark
Failure cause	
Failure cause	Protocol error
Protocol error information	
Protocol error cause	Message extension not comprehended

## SECURITY MODE COMMAND (Step 4)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
Message authentication code	Calculated result in SS
RRC Message sequence number	Next RRC SN
Security Capability	Same as originally sent by UE (and stored in SS)
Ciphering mode info	Not Present
Integrity protection mode info	Not Present
CN domain identity	PS Domain

## SECURITY MODE FAILURE (Step 5)

The same message found in [9] (TS 34.108) Clause 9 shall be transmitted by the UE on the uplink DCCH, with the exception of the following IEs:

Information Element	Value/remark
Failure cause	
Failure cause	Invalid configuration

## SECURITY MODE COMMAND (Step 6)

See notes below for the value of Y.

Information Element	Value/remark
RRC transaction identifier	X
Integrity check info	
Message authentication code	Calculated result in SS
RRC Message sequence number	Next RRC SN
Security Capability	Same as originally sent by UE (and stored in SS)
Ciphering mode info	
Ciphering mode command	Start/restart
Ciphering algorithm	UEA1
Activation time for DPCH	Not Present
Radio bearer downlink ciphering activation time info	
RB Identity	1
RLC sequence number	Current RLC SN + Y
RB Identity	2
RLC sequence number	Current RLC SN + 4
RB Identity	3
RLC sequence number	Current RLC SN + Y
RB Identity	4
RLC sequence number	Current RLC SN + Y
RB Identity	20
RLC sequence number	Current RLC SN + Y
Integrity protection mode info	
Integrity protection mode command	Modify
Downlink integrity protection activation info	
	Current RRC SN for SRB0 + 2
	Current RRC SN for SRB1 + 2
	Current RRC SN for SRB2 + 2
	Current RRC SN for SRB3 + 2
	Current RRC SN for SRB4 + 2
Integrity protection algorithm	UIA1
CN domain identity	PS Domain

Note X = 0 (Step 6), and Y=1 (Step 6),

SECURITY MODE COMPLETE (Step 7)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	
- Message Authentication code	Checked to see if present
- RRC Message sequence number	Checked to see if present
Uplink integrity protection activation info	
- RRC message sequence number listRadio	Check to see if the RRC SN for RB 0 to RB 4 are present
bearer uplink ciphering activation info	
- RB Identity other than RB2	Check to see if the RLC SN for RB1, 3, 4 and 20 are present
	2
- RB Identity	
- RLC sequence number	SS records this value. See step 8 in 'expected sequence'

8.1.7.1b.5 Test requirement

After step 2 the UE shall transmit a SECURITY MODE FAILURE message to report the protocol error detected in the first SECURITY MODE COMMAND message.

After step 4 the UE shall transmit a SECURITY MODE FAILURE message to report on the invalid configuration detected in the second SECURITY MODE COMMAND message.

At step 7 SS checks that the SECURITY MODE COMPLETE message is received ciphered using the old configuration and that the calculated "integrity check info" IE is correct.

After step 7 SS verifies that all uplink signalling messages on RB2 are integrity protected with UIA1 algorithm.

After uplink ciphering activation time has lapsed, SS verifies that the UE CAPABILITY INFORMATION message received is integrity protected with UIA algorithm and ciphered with the new ciphering configuration and algorithm indicated in the SECURITY MODE COMMAND (Step 6) message.

After downlink ciphering activation time has lapsed, SS shall apply ciphering to all downlink messages using the new configuration. At least one more cycle between step 8 and step 10 shall be repeated correctly after activation time on both directions has lapsed and the messages on both direction shall be ciphered and integrity protected.

## 8.1.7.2 Security mode command in CELL\_FACH state

### 8.1.7.2.1 Definition

### 8.1.7.2.2 Conformance requirement

1. This procedure is used to trigger the start of ciphering, or to command the restart of ciphering with the new ciphering configuration for the signalling radio bearers and any radio bearers of a particular CN Domain. It is also used to start integrity protection or modify integrity protection configuration for signalling radio bearers.
2. When the UE receives a SECURITY MODE COMMAND message from the UTRAN, which indicates the downlink activation time for each effected SRB and RB, and new ciphering mode configuration, the UE shall apply the old ciphering configuration, for a particular SRB or RB, before the stated downlink activation time. It shall start to decipher using the new ciphering configuration at the downlink activation time.
3. The UE shall transmit SECURITY MODE COMPLETE message using the new integrity protection configuration stated in the received SECURITY MODE COMMAND message. The SECURITY MODE COMPLETE message shall include the ciphering uplink activation time. The UE shall start to apply the new ciphering configuration on the uplink direction, after the uplink activation time has elapsed respectively for each SRB or RB.

### Reference

3GPP TS 25.331 clauses 8.1.12, 8.6.3.4, 8.6.3.5.

### 8.1.7.2.3 Test purpose

To confirm that after the UE receives a SECURITY MODE COMMAND message, it transmits a SECURITY MODE COMPLETE message to the UTRAN using the old ciphering configuration together with the application of the new integrity protection configuration. To confirm that the UE applies the old ciphering configuration in the downlink prior to the activation time; and uses the new ciphering configuration on and after the activation time. To confirm that the UE starts to cipher its uplink transmissions after the uplink activation time stated in SECURITY MODE COMPLETE message is reached. To confirm that the UE sends a SECURITY MODE FAILURE message when the UE receives an invalid SECURITY MODE COMMAND message.

### 8.1.7.2.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CELL\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state. The SS initiates an Authentication and Ciphering procedure, which will result in the generation of a new security keyset (CK/IK). The SS transmits a SECURITY MODE COMMAND message which contains an unexpected critical message extension. The UE shall respond by sending SECURITY MODE FAILURE message on the DCCH. Next, SS transmits a valid SECURITY MODE COMMAND message which includes the correct downlink activation times and IE "Integrity check info". The UE shall check the integrity check info. It shall start to configure ciphering in downlink and transmit a SECURITY MODE COMPLETE message, which contains the correct uplink activation times using the new integrity protection configuration. This message shall contain the IE

"Integrity check info". SS records the uplink ciphering activation time for RB 2. Next, SS transmits UE CAPABILITY ENQUIRY message repeatedly on the downlink DCCH using RLC-AM mode. The UE shall respond to each downlink message with a UE CAPABILITY INFORMATION message on the uplink DCCH using RLC-AM. SS checks all uplink messages are integrity-protected by UIA1 algorithm, and that the messages contain the correct values for "Integrity check info" IE by sending a UE CAPABILITY INFORMATION CONFIRM. This cycle repeats itself until both the uplink and downlink ciphering activation time for RB 2 have elapsed. After both the uplink and downlink ciphering activation time for RB 2 have passed, the UE shall be able to communicate with the SS using the new ciphering configurations. This can be verified in SS through the reception of a correctly ciphered and integrity-protected UE CAPABILITY INFORMATION message.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				UE is initially in CELL_FACH state.
1a		←	AUTHENTICATION AND CIPHERING REQUEST	GMM message which will result in the generation of a new security keyset
1b		→	AUTHENTICATION AND CIPHERING RESPONSE	GMM
2		←	SECURITY MODE COMMAND	See specific message content
3		→	SECURITY MODE FAILURE	IE "Failure Cause" shall be set to "Protocol Error" and IE "Protocol Error Information" shall be set to "Message extension not comprehended".
4			Void	
5			Void	
6			Void	
7			Void	
8		←	SECURITY MODE COMMAND	See specific message contents.
9		→	SECURITY MODE COMPLETE	SS verifies that this message is sent using the old ciphering configuration. SS records the uplink ciphering activation time for RB 2.
10		←	UE CAPABILITY ENQUIRY	SS repeats step 10,11 and 12 until its internal uplink and downlink RLC SN have both surpassed the uplink and downlink ciphering activation time specified for RB2. This message is sent on the downlink DCCH using RLC-AM.
11		→	UE CAPABILITY INFORMATION	UE shall send this message on the uplink DCCH using RLC-AM. SS verifies that the last UE CAPABILITY INFORMATION message is both integrity-protected and ciphered correctly.
12		←	UE CAPABILITY INFORMATION CONFIRM	

## Specific Message Contents

## SECURITY MODE COMMAND (Step 2)

Information Element	Value/remark
Integrity check info Message authentication code RRC Message sequence number Critical extensions	Calculated result in SS Next RRC SN '01'H

## SECURITY MODE COMMAND (Step 8)

See notes below for the value of Y.

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info Message authentication code RRC Message sequence number	Calculated result in SS Next RRC SN
Security Capability	Same as originally sent by UE (and stored in SS)
Ciphering mode info Ciphering mode command Ciphering algorithm Activation time for DPCH Radio bearer downlink ciphering activation time info	Start/restart UEA1 Not Present
RB Identity	1
RLC sequence number	Current RLC SN + Y
RB Identity	2
RLC sequence number	Current RLC SN + 4
RB Identity	3
RLC sequence number	Current RLC SN + Y
RB Identity	4
RLC sequence number	Current RLC SN + Y
RB Identity	20
RLC sequence number	Current RLC SN + Y
Integrity protection mode info Integrity protection mode command Downlink integrity protection activation info	Modify  Current RRC SN for SRB0 + 2 Current RRC SN for SRB1 + 2 Current RRC SN for SRB2 + 2 Current RRC SN for SRB3 + 2 Current RRC SN for SRB4 + 2
Integrity protection algorithm	UIA1
CN domain identity	PS Domain

Y=1 (Step 8)

## SECURITY MODE COMPLETE (Step 9)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info - Message Authentication code - RRC Message sequence number	Checked to see if present Checked to see if present
Uplink integrity protection activation info - RRC message sequence number list	Check to see if it the RRC SN for RB 0 to RB 4 are present
Radio bearer uplink ciphering activation info - RB Identity other than RB2	Check to see if the RLC SN for RB1, 3 and 4 are present
- RB Identity	2
- RLC sequence number	SS records this value. See step 10 in 'expected sequence'

#### 8.1.7.2.5 Test requirement

After step 2 the UE shall transmit a SECURITY MODE FAILURE message to report the protocol error detected in the first SECURITY MODE COMMAND message.

After step 8 the SS checks that the SECURITY MODE COMPLETE message is received ciphered using the old configuration and that the calculated MAC-I values in "integrity check info" IE is correct.

After step 9 SS verifies that all uplink signalling messages on RB2 are integrity protected with UIA1 algorithm.

After uplink ciphering activation time has lapsed, SS verifies that the UE CAPABILITY INFORMATION message received is integrity protected with UIA algorithm and ciphered with the new ciphering configuration and algorithm indicated in the SECURITY MODE COMMAND (Step 8) message.

After downlink ciphering activation time has lapsed, SS shall apply ciphering to all downlink messages using the new configuration. At least one more cycle between step 10 and step 12 shall be repeated correctly after activation time on both directions has lapsed and the messages on both directions shall be ciphered and integrity protected.

### 8.1.8 Counter check

#### 8.1.8.1 Counter check in CELL\_DCH state

##### 8.1.8.1.1 Definition

##### 8.1.8.1.2 Conformance requirement

When the UE receives a COUNTER CHECK message it shall compare the COUNT-C MSB values received in the IE "RB COUNT-C MSB information" in the COUNTER CHECK message to the COUNT-C MSB values of the corresponding radio bearers.

The UE shall:

- 1> set the IE "RRC transaction identifier" in the COUNTER CHECK RESPONSE message to the value of "RRC transaction identifier" in the entry for the COUNTER CHECK message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry.

If:

- there is one or more radio bearer(s) using UM or AM RLC mode stored in the variable ESTABLISHED\_RABS, which is (are) not included in the IE "RB COUNT-C MSB information"; or
- there is one or more radio bearer(s) included in the IE "RB COUNT-C MSB information", which is (are) not stored in the variable ESTABLISHED\_RABS; or
- for any radio bearer (excluding signalling radio bearers) using UM or AM RLC mode stored in the variable ESTABLISHED\_RABS and included in the IE "RB COUNT-C MSB information" with COUNT-C MSB values different from the MSB part of the COUNT-C values in the UE:

the UE shall:

- 1> include these radio bearers in the IE "RB COUNT-C information" in the COUNTER CHECK RESPONSE message. For any RB which is included in the IE "RB COUNT-C MSB information" in the COUNTER CHECK message but not stored in the variable ESTABLISHED\_RABS in the UE, the MSB part of COUNT-C values in the COUNTER CHECK RESPONSE message shall be set identical to COUNT-C-MSB values in the COUNTER CHECK message. The LSB part shall be filled with zeroes.

The UE shall:

- 1> submit a COUNTER CHECK RESPONSE message to lower layers for transmission on the uplink DCCH using AM RLC.

When the COUNTER CHECK RESPONSE message has been submitted to lower layers for transmission the procedure ends.

If the UE receives a COUNTER CHECK message, which contains a protocol error causing the variable `PROTOCOL_ERROR_REJECT` to be set to TRUE according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

- 1> transmit an RRC STATUS message on the uplink DCCH using AM RLC;
- 1> include the IE "Identification of received message"; and
- 1> set the IE "Received message type" to COUNTER CHECK; and
- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the UE COUNTER CHECK message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;
- 1> include the IE "Protocol error information" with contents set to the value of the variable `PROTOCOL_ERROR_INFORMATION`;
- 1> when the RRC STATUS message has been submitted to lower layers for transmission:
  - 2> continue with any ongoing processes and procedures as if the invalid COUNTER CHECK message has not been received.

## Reference

3GPP TS 25.331 clause 8.1.15.

### 8.1.8.1.3 Test purpose

To confirm that the UE transmits a COUNTER CHECK RESPONSE message after it receives a COUNTER CHECK message from the SS. To confirm that the UE responds to the reception of an invalid downlink COUNTER CHECK message by transmitting a RRC STATUS message on the uplink DCCH, stating the correct error cause value in message.

### 8.1.8.1.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: CELL\_DCH state (state 6-10) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is brought to the CELL\_DCH state after a successful outgoing call attempt. The SS transmits an invalid COUNTER CHECK message. This message lacks all IEs except IE "Message Type". The UE shall detect a protocol error and send RRC STATUS message to report this event. Next, the SS transmits a COUNTER CHECK message that includes the current COUNT-C MSB information in each radio access bearer. The UE shall react by sending a COUNTER CHECK RESPONSE message on the uplink DCCH, which does not include "RB COUNT-C information" IE. The SS transmits a COUNTER CHECK message which includes the current COUNT-C MSB information reversed all the bits in each radio bearer. The UE shall send a COUNTER CHECK RESPONSE message on the uplink DCCH, specifying the current COUNT-C information for each radio access bearer established. The SS transmits a COUNTER CHECK message which includes a different radio bearer. The UE shall send a COUNTER CHECK RESPONSE message on the uplink DCCH, specifying the current COUNT-C information for each radio access bearer established.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_DCH state after an outgoing call has been established successfully.
2		←	COUNTER CHECK	See specific message contents for this message
3		→	RRC STATUS	UE shall detect a protocol error and then transmit this message.
4		←	COUNTER CHECK	See specific message content.
5		→	COUNTER CHECK RESPONSE	The message shall not include the IE "RB COUNT-C information".
6		←	COUNTER CHECK	See specific message content.
7		→	COUNTER CHECK RESPONSE	The message shall include the IE "RB COUNT-C information".
8		←	COUNTER CHECK	See specific message content.
9		→	COUNTER CHECK RESPONSE	The message shall include the IE "RB COUNT-C information".

Specific Message Contents

COUNTER CHECK (Step 2)

Information Element	Value/remark
All IEs	Not Present

RRC STATUS (Step 3)

Use the same message type found in Annex A, with the following exception.

Information Element	Value/remark
Protocol Error Information - Protocol Error Cause	Checked to see if set to "ASN.1 violation or encoding error"

COUNTER CHECK (Step 4)

Information Element	Value/remark
Message Type	0
RRC transaction identifier	Calculated value
Integrity check info	
RB COUNT-C MSB information	
- RB identity	20
- COUNT-C MSB uplink	Current COUNT-C MSB for RB#20 in uplink
- COUNT-C MSB downlink	Current COUNT-C MSB for RB#20 in downlink

## COUNTER CHECK RESPONSE (Step 5)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	Check to if this IE is absent

## COUNTER CHECK (Step 6)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	Check to see if set to 20
- COUNT-C MSB uplink	Toggle all bits of the current COUNT-C MSB in uplink for RB#20
- COUNT-C MSB downlink	Toggle all bits of the current COUNT-C MSB in downlink for RB#20

## COUNTER CHECK RESPONSE (Step 7)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	
- RB identity	Check to see if set to 20
- COUNT-C uplink	Check to see if set to Current COUNT-C for RB#20 in uplink
- COUNT-C downlink	Check to see if set to COUNT-C for RB#20 in downlink

## COUNTER CHECK (Step 8)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	Check to see if set to 25
- COUNT-C MSB uplink	Arbitrary COUNT-C MSB in uplink for RB#25
- COUNT-C MSB downlink	Arbitrary COUNT-C MSB in downlink for RB#25

## COUNTER CHECK RESPONSE (Step 9)

Information Element	Value/remark
Message Type	0
RRC transaction identifier	Not checked
Integrity check info	
RB COUNT-C information	
- RB identity	Check to see if set to 20
- COUNT-C uplink	Check to see if set to Current COUNT-C for RB#20 in uplink
- COUNT-C downlink	Check to see if set to COUNT-C for RB#20 in downlink
- RB identity	Check to see if set to 25
- COUNT-C uplink	Check to see if COUNT-C MSB is set to COUNT-C MSB in uplink for RB#25 in step 8 and LSB is fill with '0'
- COUNT-C downlink	Check to see if COUNT-C MSB is set to COUNT-C MSB in downlink for RB#25 in step 8 and LSB is fill with '0'

## 8.1.8.1.5 Test requirement

After step 2, the UE shall transmit a RRC STATUS message on the uplink DCCH. The protocol error cause shall be set to "ASN.1 violation or encoding error".

After step 4 the UE shall transmit a COUNTER CHECK RESPONSE message which does not includes the IE "RB COUNT-C information" to indicates that a matched comparison result is obtained.

After step 6, the UE shall transmit a COUNTER CHECK RESPONSE message which includes the IE "RB COUNT-C information" to report that a mismatch in COUNT-C value is detected in RB#20.

After step 8, the UE shall transmit a COUNTER CHECK RESPONSE message which includes the IE "RB COUNT-C information" to report that RB#25 is not found in variable ESTABLISHED\_RABS and RB#20 is not found in IE "RB COUNT-C MSB information".

## 8.1.8.2 Counter check in CELL\_FACH state

## 8.1.8.2.1 Definition

## 8.1.8.2.2 Conformance requirement

When the UE receives a COUNTER CHECK message it shall compare the COUNT-C MSB values received in the IE "RB COUNT-C MSB information" in the COUNTER CHECK message to the COUNT-C MSB values of the corresponding radio bearers.

The UE shall:

1> set the IE "RRC transaction identifier" in the COUNTER CHECK RESPONSE message to the value of "RRC transaction identifier" in the entry for the COUNTER CHECK message in the table "Accepted transactions" in the variable TRANSACTIONS; and

1> clear that entry.

If:

- there is one or more radio bearer(s) using UM or AM RLC mode stored in the variable ESTABLISHED\_RABS, which is (are) not included in the IE "RB COUNT-C MSB information"; or
- there is one or more radio bearer(s) included in the IE "RB COUNT-C MSB information", which is (are) not stored in the variable ESTABLISHED\_RABS; or
- for any radio bearer (excluding signalling radio bearers) using UM or AM RLC mode stored in the variable ESTABLISHED\_RABS and included in the IE "RB COUNT-C MSB information" with COUNT-C MSB values different from the MSB part of the COUNT-C values in the UE:

the UE shall:

- 1> include these radio bearers in the IE "RB COUNT-C information" in the COUNTER CHECK RESPONSE message. For any RB which is included in the IE "RB COUNT-C MSB information" in the COUNTER CHECK message but not stored in the variable ESTABLISHED\_RABS in the UE, the MSB part of COUNT-C values in the COUNTER CHECK RESPONSE message shall be set identical to COUNT-C-MSB values in the COUNTER CHECK message. The LSB part shall be filled with zeroes.

The UE shall:

- 1> submit a COUNTER CHECK RESPONSE message to lower layers for transmission on the uplink DCCH using AM RLC.

When the COUNTER CHECK RESPONSE message has been submitted to lower layers for transmission the procedure ends.

If the UE receives a COUNTER CHECK message, which contains a protocol error causing the variable `PROTOCOL_ERROR_REJECT` to be set to TRUE according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

- 1> transmit an RRC STATUS message on the uplink DCCH using AM RLC;
- 1> include the IE "Identification of received message"; and
- 1> set the IE "Received message type" to COUNTER CHECK; and
- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the UE COUNTER CHECK message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;
- 1> include the IE "Protocol error information" with contents set to the value of the variable `PROTOCOL_ERROR_INFORMATION`;
- 1> when the RRC STATUS message has been submitted to lower layers for transmission:
  - 2> continue with any ongoing processes and procedures as if the invalid COUNTER CHECK message has not been received.

## Reference

3GPP TS 25.331 clause 8.1.15.

### 8.1.8.2.3 Test purpose

To confirm that the UE transmits a COUNTER CHECK RESPONSE message after it receives a COUNTER CHECK message from the SS. To confirm that the UE responds to the reception of an invalid downlink COUNTER CHECK message by transmitting a RRC STATUS message on the uplink DCCH, stating the correct error cause value in message.

### 8.1.8.2.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CELL\_FACH state (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is brought to the CELL\_FACH state after a successful outgoing call attempt. The SS transmits an invalid COUNTER CHECK message. This message lacks all IEs. The UE shall detect a protocol error and send RRC STATUS message to report this event. Next, the SS transmits a COUNTER CHECK message that includes the current COUNT-C MSB information in each radio access bearer. The UE shall react by sending a COUNTER CHECK RESPONSE

message on the uplink DCCH, which does not include "RB COUNT-C information" IE. The SS transmits a COUNTER CHECK message, which includes the current COUNT-C MSB information for each radio bearer but with all the bits reversed. The UE shall send a COUNTER CHECK RESPONSE message on the uplink DCCH, specifying the current COUNT-C information for each radio access bearer established. The SS transmits a COUNTER CHECK message which includes a different radio bearer. The UE shall send a COUNTER CHECK RESPONSE message on the uplink DCCH, specifying the current COUNT-C information for each radio access bearer established.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_FACH state after an outgoing call has been established successfully.
2		←	COUNTER CHECK	See specific message contents for this message
3		→	RRC STATUS	UE shall detect a protocol error and then transmit this message.
4		←	COUNTER CHECK	See specific message content.
5		→	COUNTER CHECK RESPONSE	The message shall not include the IE "RB COUNT-C information".
6		←	COUNTER CHECK	See specific message content.
7		→	COUNTER CHECK RESPONSE	The message shall include the IE "RB COUNT-C information".
8		←	COUNTER CHECK	See specific message content.
9		→	COUNTER CHECK RESPONSE	The message shall include the IE "RB COUNT-C information".

#### Specific Message Contents

##### COUNTER CHECK (Step 2)

Information Element	Value/remark
All IEs	Not Present

##### RRC STATUS (Step 3)

Information Element	Value/remark
Message Type	
Protocol Error Information	
- Protocol Error Cause	Checked to see if set to "ASN.1 violation or encoding"

## COUNTER CHECK (Step 4)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	20
- COUNT-C MSB uplink	Current COUNT-C MSB for RB#20 in uplink
- COUNT-C MSB downlink	Current COUNT-C MSB for RB#20 in downlink

## COUNTER CHECK RESPONSE (Step 5)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	Check to if this IE is absent

## COUNTER CHECK (Step 6)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	20
- COUNT-C MSB uplink	Toggle all bits of the current COUNT-C MSB in uplink for RB#20
- COUNT-C MSB downlink	Toggle all bits of the current COUNT-C MSB in downlink for RB#20

## COUNTER CHECK RESPONSE (Step 7)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	
- RB identity	Check to see if set to 20
- COUNT-C uplink	Check to see if set to Current COUNT-C for RB#20 in uplink
- COUNT-C downlink	Check to see if set to COUNT-C for RB#20 in downlink

## COUNTER CHECK (Step 8)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB identity	Check to see if set to 25
- COUNT-C MSB uplink	Arbitrary COUNT-C MSB in uplink for RB#25
- COUNT-C MSB downlink	Arbitrary COUNT-C MSB in downlink for RB#25

## COUNTER CHECK RESPONSE (Step 9)

Information Element	Value/remark
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	
- RB identity	Check to see if set to 20
- COUNT-C uplink	Check to see if set to Current COUNT-C for RB#20 in uplink
- COUNT-C downlink	Check to see if set to COUNT-C for RB#20 in downlink
- RB identity	Check to see if set to 25
- COUNT-C uplink	Check to see if COUNT-C MSB is set to COUNT-C MSB in uplink for RB#25 in step 8 and LSB is fill with '0'
- COUNT-C downlink	Check to see if COUNT-C MSB is set to COUNT-C MSB in downlink for RB#25 in step 8 and LSB is fill with '0'

## 8.1.8.2.5 Test requirement

After step 2, the UE shall transmit a RRC STATUS message on the uplink DCCH. The protocol error cause shall be set to "ASN.1 violation or encoding error".

After step 4 the UE shall transmit a COUNTER CHECK RESPONSE message which does not includes the IE "RB COUNT-C information" to indicates that a matched comparison result is obtained.

After step 6, the UE shall transmit a COUNTER CHECK RESPONSE message which includes the IE "RB COUNT-C information" to report that a mismatch in COUNT-C value is detected in RB#20.

After step 8, the UE shall transmit a COUNTER CHECK RESPONSE message which includes the IE "RB COUNT-C information" to report that RB#25 is not found in variable ESTABLISHED\_RABS and RB#20 is not found in IE "RB COUNT-C MSB information".

## 8.1.8.3 Counter check in CELL\_DCH state

## 8.1.8.3.1 Definition

## 8.1.8.3.2 Conformance requirement

When the UE receives a COUNTER CHECK message it shall compare the COUNT-C MSB values received in the IE "RB COUNT-C MSB information" in the COUNTER CHECK message to the COUNT-C MSB values of the corresponding radio bearers.

The UE shall:

- 1> if no COUNT-C exists for a radio bearer for a given direction (uplink or downlink) because:
  - 2> it is a uni-directional radio bearer configured only for the other direction (downlink or uplink respectively),  
or
  - 2> has been configured to RLC-TM mode in one direction (uplink or downlink) and RLC-UM in the other (downlink or uplink respectively),
  - 3> set the COUNT-C in the IE "RB COUNT-C information" in the COUNTER CHECK RESPONSE message, to any value;
- 1> submit a COUNTER CHECK RESPONSE message to lower layers for transmission on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.1.15.

## 8.1.8.3.3 Test purpose

To confirm that the UE transmits a COUNTER CHECK RESPONSE message even if COUNT-C does not exist for a radio bearer for a given direction for reasons given in the above section.

## 8.1.8.3.4 Method of test

## Initial Condition

System Simulator: 1 cell

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the domain supported by the UE.

## Test Procedure

The UE is brought to the CELL\_DCH state after a successful outgoing call attempt. SS sends a RADIO BEARER SETUP message to set up an asymmetric radio bearer. UE shall configure accordingly and then reply with a RADIO BEARER SETUP COMPLETE message. Then SS transmits a COUNTER CHECK message. The UE shall send a COUNTER CHECK RESPONSE message on the uplink DCCH, specifying the current COUNT-C information for RB9.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_DCH state after an outgoing call has been established successfully.
2		←	RADIO BEARER SETUP	See specific message contents for this message
3		→	RADIO BEARER SETUP COMPLETE	
4		←	COUNTER CHECK	See specific message content.
5		→	COUNTER CHECK RESPONSE	The message shall include the IE "RB COUNT-C information".

## Specific Message Contents

## RADIO BEARER SETUP

The contents of RADIO BEARER SETUP message in this test case is identical to the message sub-type indicated by "Non speech from CELL\_DCH to CELL\_DCH in CS" or "Speech from CELL\_DCH to CELL\_DCH in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" in [9] TS 34.108 clause 9, with the following exception:

Information Element	Value/remark
RAB information for setup <ul style="list-style-type: none"> <li>- RAB info</li> <li>- RAB identity</li> <li>- CN domain identity</li> <li>- NAS Synchronization Indicator</li> <li>- Re-establishment timer</li> <li>- RB information to setup</li> <li>- RB identity</li> <li>- PDCP info</li> <li>- Support for lossless SRNS relocation</li> <li>- Max PDCP SN window size</li> <li>- PDCP PDU header</li> <li>- Header compression information</li> <li>- CHOICE RLC info type</li> <li>- CHOICE Uplink RLC mode               <ul style="list-style-type: none"> <li>- Transmission RLC discard</li> <li>- CHOICE SDU discard mode</li> <li>- Segmentation indication</li> <li>- CHOICE Downlink RLC mode</li> </ul> </li> <li>- RB mapping info               <ul style="list-style-type: none"> <li>- Information for each multiplexing option</li> <li>- RLC logical channel mapping indicator</li> <li>- Number of uplink RLC logical channels</li> <li>- Uplink transport channel type</li> <li>- UL Transport channel identity</li> <li>- Logical channel identity</li> <li>- CHOICE RLC size list</li> <li>- MAC logical channel priority</li> <li>- Downlink RLC logical channel info                   <ul style="list-style-type: none"> <li>- Number of downlink RLC logical channels</li> <li>- Downlink transport channel type</li> <li>- DL DCH Transport channel identity</li> <li>- DL DSCH Transport channel identity</li> <li>- Logical channel identity</li> <li>- RLC logical channel mapping indicator</li> <li>- Number of uplink RLC logical channels</li> <li>- Uplink transport channel type</li> <li>- UL Transport channel identity</li> <li>- Logical channel identity</li> <li>- CHOICE RLC size list                       <ul style="list-style-type: none"> <li>- RLC size index</li> </ul> </li> <li>- MAC logical channel priority</li> <li>- Downlink RLC logical channel info                   <ul style="list-style-type: none"> <li>- Number of downlink RLC logical channels</li> <li>- Downlink transport channel type</li> <li>- DL DCH Transport channel identity</li> <li>- DL DSCH Transport channel identity</li> <li>- Logical channel identity</li> </ul> </li> </ul> </li> </ul> </li> </ul>	0000 1111B PS domain or CS domain (depending on the domain supported by the UE) Not Present UseT315 (for PS domain) or UseT314 (for CS domain) 9 FALSE Not present Absent Not present RLC info TM RLC Not Present False UM RLC 2 RBMuxOptions Not Present 1 DCH 4 Not Present Configured 8 1 DCH 9 Not Present Not Present Not Present 1 RACH Not Present 7 Explicit List Reference to TS34.108 clause 6 Parameter Set 8 1 FACH Not Present Not Present 7
Added or Reconfigured TrCH information list <ul style="list-style-type: none"> <li>- Added or Reconfigured UL TrCH information               <ul style="list-style-type: none"> <li>- Uplink transport channel type</li> <li>- UL Transport channel identity</li> <li>- TFS</li> <li>- CHOICE Transport channel type</li> <li>- Dynamic Transport format information                   <ul style="list-style-type: none"> <li>- RLC Size</li> <li>- Number of TBs and TTI List</li> <li>- Transmission Time Interval</li> <li>- Number of Transport blocks</li> </ul> </li> <li>- CHOICE Logical Channel list</li> <li>- Semi-static Transport Format information                   <ul style="list-style-type: none"> <li>- Transmission time interval</li> <li>- Type of channel coding</li> <li>- Coding Rate</li> <li>- Rate matching attribute</li> <li>- CRC size</li> </ul> </li> </ul> </li> </ul>	1 DCH added DCH 4 Dedicated transport channels Reference to TS34.108 clause 6.10 Parameter Set (This IE is repeated for TFI number.) Not Present Reference to TS34.108 clause 6.10 Parameter Set All Reference to TS34.108 clause 6.10 Parameter Set Reference to TS34.108 clause 6.10 Parameter Set

Added or Reconfigured TrCH information list	1 DCH
Added or Reconfigured DL TrCH information	
- Downlink transport channel type	DCH
- DL Transport channel identity	9
- CHOICE DL parameters	Same as UL
- Uplink transport channel type	DCH
- UL TrCH identity	1
- DCH quality target	
- BLER Quality value	-2.0

## COUNTER CHECK (Step 4)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Calculated value
RB COUNT-C MSB information	
- RB COUNT-C MSB information	
- RB identity	9
- COUNT-C MSB uplink	Arbitrary
- COUNT-C MSB downlink	Set to current COUNT-C for RB#9 in downlink

## COUNTER CHECK RESPONSE (Step 7)

Information Element	Value/remark
Message Type	
RRC transaction identifier	0
Integrity check info	Not checked
RB COUNT-C information	
- RB identity	Check to see if set to 9
- COUNT-C uplink	Not checked
- COUNT-C downlink	Check to see if set to COUNT-C for RB#9 in downlink

## 8.1.8.3.5 Test requirement

After step 2, the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the uplink DCCH.

After step 4, the UE shall transmit a COUNTER CHECK RESPONSE message which includes the IE "COUNT-C downlink" to report COUNT-C value of RB#9.

## 8.1.9 Signalling Connection Release Indication

## 8.1.9.1 Definition

## 8.1.9.2 Conformance requirement

The UE shall, on receiving a request to release (abort) the signalling connection from upper layers for a specific CN domain:

- 1> if a signalling connection in the variable ESTABLISHED\_SIGNALLING\_CONNECTIONS for the specific CN domain identified with the IE "CN domain identity" exists:
  - 2> initiate the signalling connection release indication procedure.
- 1> otherwise:

...

The UE shall:

- 1> set the IE "CN Domain Identity" to the value indicated by the upper layers. The value of the IE indicates the CN domain whose associated signalling connection the upper layers are indicating to be released;
- 1> remove the signalling connection with the identity indicated by upper layers from the variable ESTABLISHED\_SIGNALLING\_CONNECTIONS;
- 1> transmit a SIGNALLING CONNECTION RELEASE INDICATION message on DCCH using AM RLC.

When the SIGNALLING CONNECTION RELEASE INDICATION message has been submitted to lower layers for transmission the procedure ends.

## Reference

3GPP TS 25.331 clause 8.1.14.

### 8.1.9.3 Test purpose

To confirm that the UE transmits a SIGNALLING CONNECTION RELEASE INDICATION message after it fails to receive a response for the LOCATION UPDATING REQUEST message.

### 8.1.9.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: Switched off (state 1) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is turned on and it shall find a suitable cell to camp on. The UE shall initiate a location updating procedure. The UE shall establish an RRC connection and transmit a ATTACH REQUEST message or a LOCATION UPDATING REQUEST message using the INITIAL DIRECT TRANSFER message depending on supported CN domain. The SS does not respond to this message, and the UE shall send a SIGNALLING CONNECTION RELEASE INDICATION message which includes the CN domain identity with the same value as that in the INITIAL DIRECT TRANSFER message.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is powered on.
2		→	RRC CONNECTION REQUEST	UE shall initiate the location updating procedure.
3		←	RRC CONNECTION SETUP	
4				The UE configures the layer 2 and layer 1.
5		→	RRC CONNECTION SETUP COMPLETE	
6		→	INITIAL DIRECT TRANSFER	Depending on supported CN domain, includes ATTACH REQUEST message ( PS domain ) or LOCATION UPDATE REQUEST ( CS domain ) message is emdedded in INITIAL DIRECT TRANSFER message.
7				The SS does not respond and waits until the timer for location update procedure or attach procedure expires.
8		→	SIGNALLING CONNECTION RELEASE INDICATION	

## Specific Message Content

## SIGNALLING CONNECTION RELEASE INDICATION (Step 8)

Information Element	Value/remark
CN domain identity	Check to see if this value is the same as in the uplink INITIAL DIRECT TRANSFER message.

## 8.1.9.5 Test requirement

After step 1 the UE shall initiate the LOCATION UPDATING procedure or ATTACH procedure and establish an RRC connection.

After step 7 the UE shall transmit a SIGNALLING CONNECTION RELEASE INDICATION message which includes the same CN domain identity as that found in the INITIAL DIRECT TRANSFER message.

## 8.1.9a Signalling Connection Release Indication (RLC re-establishment)

## 8.1.9a.1 Definition

## 8.1.9a.2 Conformance requirement

If a re-establishment of RLC on signalling radio bearer RB2 occurs before the successful delivery of the SIGNALLING CONNECTION RELEASE INDICATION message has been confirmed by RLC, the UE shall:

- 1> retransmit the SIGNALLING CONNECTION RELEASE INDICATION message on the uplink DCCH using AM RLC on signalling radio bearer RB2.

## Reference

3GPP TS 25.331 clause 8.1.14.2a.

## 8.1.9a.3 Test purpose

FFS

## 8.1.9a.4 Method of test

FFS

## 8.1.9a.5 Test requirement

FFS

## 8.1.10 Broadcast of system information

## 8.1.10.1 Dynamic change of segmentation, concatenation &amp; scheduling and handling of unsupported information blocks

## 8.1.10.1.1 Definition

## 8.1.10.1.2 Conformance requirement

- 1. The RRC layer in the UE shall perform re-assembly of segments. All segments belonging to the same master information block, scheduling block or system information block shall be assembled in ascending order with

respect to the segment index. When all segments of the master information block, scheduling block or a system information block have been received, the UE shall perform decoding of the complete master information block, scheduling block or system information block.

2. For all system information blocks or scheduling blocks that are supported by the UE referenced in the master information block or the scheduling blocks, the UE shall perform the following actions:

.....

- read and store the IEs of that system information block;

NOTE: There are options with and without scheduling blocks.

3. For system information blocks, not supported by the UE.....

- skip reading this system information block;
- skip monitoring changes to this system information block.

4. However, to enable future introduction of new system information blocks, the UE shall also be able to receive system information blocks other than the ones indicated within the scheduling information. The UE may ignore contents of such system information block.

## Reference

3GPP TS 25.331 clause 8.1.1.1.3, 8.1.1.1.4, 8.1.1.1.5, 8.1.1.5 and 8.1.1.6.

### 8.1.10.1.4 Test Purpose

1. To verify that dynamic change of System Information is identified, new information read and used.
2. To verify that the UE can support all segment types and "all" segment combinations.
3. To verify that the UE can dynamically use different configurations
4. To verify that the UE properly uses combinations of Default and assigned values.

NOTE: There are 4 segment types and 11 different SYSTEM INFORMATION messages to interpret when re-assembling segments. There are many alternative SIB position offsets and repetition rates.

The allowed segment types are:

- First segment
- Subsequent segment
- Last segment
- Complete

The allowed segment combinations are:

1. No segment
2. First segment
3. Subsequent segment
4. Last segment
5. Last segment + First segment
6. Last segment + one or several Complete
7. Last segment + one or several Complete + First segment

8. One or several Complete
9. One or several Complete + First segment
10. One Complete of size 215 to 226 (not tested)
11. Last segment of size 215 to 222 (not tested)

#### 8.1.10.1.5 Method of test

Alternate two sets of System Information and generate a call after one or the other set has been broadcasted.

These two sets of System Information are based on the System Information specified in 34.108, section 6.

A "Minimum" configuration and a "Maximum" configuration of System Information are defined. The "Minimum" configuration does not contain all of the Information Blocks defined for Configuration 1 in section 6 of 34.108, while the "Maximum" configuration does. The contents of the SIBs remains the same (for the "Minimum" configuration, the contents of SIB11 changes for the "Maximum" configuration) while the contents of the MIB and SB is altered depending on the nature of the test, i.e. the schedule changes between the "Minimum" and "Maximum" configurations.

The four segment types and nine of the eleven segment combinations are tested using the two configurations (segment combinations 10 and 11 are not tested).

**NOTE:** The decoding of system information in the UE is only measurable by functional tests. A large number of functions utilize system information. An extensive test of the system information decoding thus creates a large number of functional tests, which is impractical. This test specification uses a "sample test", where only a few functions are invoked.

#### Initial Condition

System Simulator: 3 cells (C1, C2, C3)

UE: Idle state (state 2 or state 3 or state 7) as specified in clause 7.4 of TS 34.108 with a CN UE identity (set to IMSI), depending on the CN domain(s) supported by the UE.

#### Test procedure

- a) SS broadcasts the "Minimum" system information. The UE selects C1, set the parameters (cell selection/reselection parameters in SIB3) associated with the S criteria to ensure that C1 is selected.
- b) Call setup according to clause 7.2.3.2 in TS 34.108.
- c) Disconnect call according to clause 10.1.2.6.4. UE shall enter IDLE state and performs cell reselection. C1 is selected again.
- d) SS broadcasts the "Maximum" system information and notifies the UE as described in clause 8.1.1.5. The UE reads all relevant new/changed Information Blocks. Set the cell selection/reselection parameters in SIB3 and those associated with C2 in SIB11 to ensure that C2 is a better option for the UE. The UE performs a cell reselection (selects C2).
- e) Call Setup according to clause 10.1.3, procedure 1.

#### Specific message content for "Minimum" configuration

The Minimum configuration is the same as the Configuration 1 System Information on 34.108, section 6 with some differences:

- Only SIB1, SIB3, SIB5, SIB7, SIB11 are used, i.e. the Minimum number of SIBs is used.
- No SB is used, all scheduling information is contained in the MIB. The contents of this changed MIB are shown below.
- A different schedule is used. Details below.

- SIB11 lists eight cells (one serving cell and seven neighbouring cells). Only the first three of these are considered relevant.

Other characteristics of the "minimum" configuration are:

- no "unknown future" blocks
- First Segment, First Segment (short), Last Segment and Last Segment (short) are used

The following tables show (based on SIB\_REP and SIB\_POS in the MIB and SB) the schedule used for these tests.

**Table 1: The schedule in this table incorporates segment combinations 1, 2, 3, 4, 7, 8.**

Block Type	MIB	SB1	SIB1	SIB2	SIB3	SIB4	SIB5	SIB6	SIB7	SIB11	SIB12	SIB18
SIB_REP	8	16	64	64	64	64	64	64	16	64	64	64
SEG_COUNT	1	1	1	1	1	1	3	3	1	3	3	1

Frame No / SIB_POS	0	2	4	6	8	10	12	14
Block Type	MIB		SIB7		MIB			

Frame No / SIB_POS	16	18	20	22	24	26	28	30
Block Type	MIB		SIB7/SIB3	SIB1	MIB			SIB11

Frame No / SIB_POS	32	34	36	38	40	42	44	46
Block Type	MIB	SIB11	SIB11/SIB7/SIB5	SIB5	MIB	SIB5		

Frame No / SIB_POS	48	50	52	54	56	58	60	62
Block Type	MIB		SIB7		MIB			

## Contents of Master Information Block PLMN type is the case of GSM-MAP

- MIB value tag	1
- Supported PLMN types	
- PLMN type	GSM-MAP
- PLMN identity	
- MCC digit	Set to the same Mobile Country Codes stored in the test USIM card (TS 34.108 clause 8.3.2.2 EF IMSI(IMSI)).
- MNC digit	Set to the same Mobile Network Codes stored in the test USIM card (TS 34.108 clause 8.3.2.2 EF IMSI(IMSI)).
- ANSI-41 Core Network information	Not Present
- References to other system information blocks and scheduling blocks	
- References to other system information blocks	
- Scheduling information	
- CHOICE Value tag	PLMN Value tag
- PLMN Value tag	1
- SEG_COUNT	1
- SIB_REP	64
- SIB_POS	22
- SIB_POS offset info	Not Present – use default
- SIB type	System Information Type 1
- Scheduling information	
- CHOICE Value tag	Cell Value tag
- Cell Value tag	1
- SEG_COUNT	1
- SIB_REP	64
- SIB_POS	20
- SIB_POS offset info	Not Present – use default
- SIB type	System Information Type 3
- Scheduling information	
- CHOICE Value tag	Cell Value tag
- Cell Value tag	1
- SEG_COUNT	3
- SIB_REP	64
- SIB_POS	36
- SIB_POS offset info	
- SIB_OFF	2
- SIB_OFF	4
- SIB type	System Information Type 5
- Scheduling information	
- CHOICE Value tag	Not Present
- SEG_COUNT	1
- SIB_REP	16
- SIB_POS	4
- SIB_POS offset info	Not Present
- SIB and SB type	System Information Type 7
- Scheduling information	
- CHOICE Value tag	Cell Value tag
- Cell Value tag	1
- SEG_COUNT	3
- SIB_REP	64
- SIB_POS	30
- SIB_POS offset info	
- SIB_OFF	4
- SIB_OFF	2
- SIB and SB type	System Information Type 11

## Specific message content for "Maximum" configuration

The "Maximum" configuration is the same as the Configuration 1 System Information on 34.108, section 6 with some differences:

- A different schedule is used. Details below.

- SIB11 lists eight cells (one serving cell and seven neighbouring cells). Only the first three of these are considered relevant.

Other characteristics of the maximum configuration are:

- one "unknown future" block. A "dummy" SIB (SIB50) is added. This is used to ensure that the UE can receive an Information Block that it does not support and still process the Information Blocks that it does support in the correct way.
- First Segment, First Segment (short), Last Segment and Last Segment (short) are used

The following tables show (based on SIB\_REP and SIB\_POS in the MIB and SB) the schedule used for these tests.

**Table 2: The schedule in this table incorporates segment combinations 1, 2, 3, 4, 5, 6, 8, 9.**

Block Type	MIB	SB1	SIB1	SIB2	SIB3	SIB4	SIB5	SIB6	SIB7	SIB11	SIB12	SIB18
SIB_REP	8	16	64	64	64	64	64	64	16	64	64	64
SEG_COUNT	1	1	1	1	1	1	3	3	1	3	3	1

Frame No / SIB_POS	0	2	4	6	8	10	12	14
Block Type	MIB	SB1	SIB7/SIB6	SIB6	MIB	SIB6	SIB3	

Frame No / SIB_POS	16	18	20	22	24	26	28	30
Block Type	MIB	SB1	SIB11	SIB11	MIB	SIB11/SIB12	SIB12	SIB12

Frame No / SIB_POS	32	34	36	38	40	42	44	46
Block Type	MIB	SB1	SIB7/SIB18	SIB5	MIB	SIB5	SIB5/SIB2	

Frame No / SIB_POS	48	50	52	54	56	58	60	62
Block Type	MIB	SB1	SIB4		MIB	SIB1	SIB50	

Contents of Master Information Block PLMN type is the case of GSM-MAP

- MIB value tag	1
- Supported PLMN types	GSM-MAP
- PLMN type	
- PLMN identity	Set to the same Mobile Country Codes stored in the test USIM card (TS 34.108 clause 8.3.2.2 EF IMSI(IMSI)).
- MCC digit	Set to the same Mobile Network Codes stored in the test USIM card (TS 34.108 clause 8.3.2.2 EF IMSI(IMSI)).
- MNC digit	Not Present
- ANSI-41 Core Network information	
- References to other system information blocks and scheduling blocks	
- References to other system information blocks	
- Scheduling information	
- CHOICE Value tag	Cell Value Tag
- Cell Value tag	1
- Scheduling	
- SEG_COUNT	1
- SIB_REP	16
- SIB_POS	2
- SIB_POS offset info	Not Present – use default
- SIB type	Scheduling Block 1
- Scheduling information	
- CHOICE Value tag	PLMN Value tag
- PLMN Value tag	1
- SEG_COUNT	1
- SIB_REP	64
- SIB_POS	58
- SIB_POS offset info	Not Present – use default
- SIB type	System Information Type 1
- Scheduling information	
- CHOICE Value tag	Cell Value tag
- Cell Value tag	1
- SEG_COUNT	1
- SIB_REP	64
- SIB_POS	44
- SIB_POS offset info	Not Present – use default
- SIB type	System Information Type 2
- Scheduling information	
- CHOICE Value tag	Cell Value tag
- Cell Value tag	1
- SEG_COUNT	1
- SIB_REP	64
- SIB_POS	12
- SIB_POS offset info	Not Present – use default
- SIB type	System Information Type 3
- Scheduling information	
- CHOICE Value tag	Cell Value tag
- Cell Value tag	1
- SEG_COUNT	1
- SIB_REP	64
- SIB_POS	52
- SIB_POS offset info	Not Present – use default
- SIB type	System Information Type 4
- Scheduling information	
- CHOICE Value tag	Cell Value tag
- Cell Value tag	1
- SEG_COUNT	3
- SIB_REP	64
- SIB_POS	38
- SIB_POS offset info	
- SIB_OFF	4
- SIB_OFF	2
- SIB type	System Information Type 5

Contents of Scheduling Block 1 (FDD)

- References to other system information blocks	
- Scheduling information	
- CHOICE Value tag	Cell Value tag
- Cell Value tag	1
- SEG_COUNT	3
- SIB_REP	64
- SIB_POS	4
- SIB_POS offset info	
- SIB_OFF	2
- SIB_OFF	4
- SIB and SB type	System Information Type 6
- Scheduling information	
- CHOICE Value tag	Not Present
- SEG_COUNT	1
- SIB_REP	32
- SIB_POS	4
- SIB_POS offset info	Not Present
- SIB and SB type	System Information Type 7
- Scheduling information	
- CHOICE Value tag	Cell Value tag
- Cell Value tag	1
- SEG_COUNT	3
- SIB_REP	64
- SIB_POS	20
- SIB_POS offset info	
- SIB_OFF	2
- SIB_OFF	4
- SIB and SB type	System Information Type 11
- Scheduling information	
- CHOICE Value tag	Cell Value tag
- Cell Value tag	1
- SEG_COUNT	3
- SIB_REP	64
- SIB_POS	26
- SIB_POS offset info	
- SIB_OFF	2
- SIB_OFF	2
- SIB and SB type	System Information Type 12
- Scheduling information	
- CHOICE Value tag	Cell Value tag
- Cell Value tag	1
- SEG_COUNT	1
- SIB_REP	64
- SIB_POS	36
- SIB_POS offset info	Not Present
- SIB and SB type	System Information Type 18
- Scheduling information	
- CHOICE Value tag	Cell Value tag
- Cell Value tag	1
- SEG_COUNT	1
- SIB_REP	64
- SIB_POS	60
- SIB_POS offset info	Not Present
- SIB and SB type	System Information Type 50

Contents of System Information Block type 11 (FDD)

Same contents as that defined in Configuration 1, Section 6, 34.108 except for the following:

Information Element	Value/remark
Qqualmin	-18 (for first adjacent cell)

## Contents of System Information Block type 50

Information Element	Value/remark
Data 1	
Data 3	

## 8.1.10.1.6 Test requirement

After step b the UE shall be in Connected state U10 in Cell 1.

After step e the UE shall be in Connected state U10 in Cell 2.

## 8.1.11 Signalling Connection Release (Invalid configuration)

## 8.1.11.1 Definition

## 8.1.11.2 Conformance requirement

Upon reception of a SIGNALLING CONNECTION RELEASE message, the UE shall:

- 1> indicate the release of the signalling connection and pass the value of the IE "CN domain identity" to upper layers;
- 1> remove the signalling connection with the identity indicated by the IE "CN domain identity" from the variable ESTABLISHED\_SIGNALLING\_CONNECTIONS;
- 1> clear the entry for the SIGNALLING CONNECTION RELEASE message in the table "Accepted transactions" in the variable TRANSACTIONS;
- 1> the procedure ends.

If radio access bearers for the CN domain indicated by the IE "CN domain identity" exist in the variable ESTABLISHED\_RABS, the UE shall:

- 1> transmit an RRC STATUS message on the uplink DCCH using AM RLC;
- 1> include the IE "Identification of received message"; and
- 1> set the IE "Received message type" to SIGNALLING CONNECTION RELEASE; and
- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the SIGNALLING CONNECTION RELEASE message in the table "Accepted transactions" in the variable TRANSACTIONS and clear that entry;
- 1> include the IE "Protocol error information" with contents set to the value "Message not compatible with receiver state";
- 1> when the RRC STATUS message has been submitted to lower layers for transmission:
  - 2> continue with any ongoing processes and procedures as if the invalid SIGNALLING CONNECTION RELEASE message has not been received.

## Reference

3GPP TS 25.331 clause 8.1.13.3 and 8.1.13.5.

## 8.1.11.3 Test purpose

To confirm that the UE ignores the SIGNALLING CONNECTION RELEASE REQUEST message which request the UE to release signalling connection of domain that contains established radio access bearers.

To confirm that the UE transmit a RRC STATUS message to SS after detecting an invalid configuration in the received message.

#### 8.1.11.4 Method of test

##### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS\_DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

##### Test Procedure

SS transmit MEASUREMENT CONTROL message to UE. In this message, SS requests UE to perform traffic volume measurement. Key measurement parameters are as follows: measurement quantity = "RLC Buffer Payload", report criteria = "periodic reporting criteria", reporting interval = "6 seconds", reporting amount = 'infinity'. UE shall begin traffic volume measurements, and shall send MEASUREMENT REPORT message after completing first measurement. UE shall send second MEASUREMENT REPORT message 6 seconds after first MEASUREMENT REPORT message. Then SS transmit SIGNALLING CONNECTION RELEASE message to UE. UE shall ignore the message and send a RRC STATUS message to SS. Then the UE shall send MEASUREMENT REPORT message to SS within the next 6 seconds.

##### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	MEASUREMENT CONTROL	Periodical traffic volume measurement reporting is requested.
2		→	MEASUREMENT REPORT	
3		→	MEASUREMENT REPORT	Time difference between earlier and this MEASUREMENT REPORT message should be 6 seconds.
4		←	SIGNALLING CONNECTION RELEASE	If the initial condition of the UE is state 6-9, set the IE "CN domain identity" to "CS domain". If the initial condition of the UE is state 6-10, set the IE "CN domain identity" to "PS domain".
5		→	RRC STATUS	
6		→	MEASUREMENT REPORT	This message should be sent within 6 seconds after the previous message.

##### Specific Message Content

##### MEASUREMENT CONTROL (Step 1)

For MEASUREMENT CONTROL message in step 1, use the message sub-type as found in clause 9 of TS 34.108, with the exception of the following Information Elements:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	Acknowledged mode
- Transfer Mode	Periodic
- Periodical or event trigger	Not Present
Additional measurement list	Traffic Volume Measurement
CHOICE measurement type	DCH
- Traffic volume measurement object list	5
- Uplink transport channel type	RLC Buffer Payload
- UL Target Transport Channel ID	Not Present
- Traffic volume measurement quantity	True
- Measurement quantity	False
- Time Interval to take an average or a variance	False
- Traffic volume reporting quantity	Not Present
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	Not Present
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	6 Sec
DPCH compressed mode status	Not Present

### MEASUREMENT REPORT (Step 2, 3 and 6)

Check that the message received is the same as the message sub-type found in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	Traffic volume measured results list
- CHOICE measurement	
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

## SIGNALLING CONNECTION RELEASE (Step 4)

Information Element	Value/Remarks
Message Type RRC transaction identifier Integrity check info  - Message authentication code  - RRC Message sequence number CN domain identity	0 The presence of this IE depends on the IXIT statements in TS 34.123-2: If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted. SS calculates the value of MAC-I for this message and writes to this IE. SS provides the value of this IE, from its internal counter. If the initial condition of the UE is state 6-9, set to "CS domain". If the initial condition of the UE is state 6-10, set to "PS domain".

## RRC STATUS (Step 5)

Information Element	Value/remark
Message Type Integrity check info  - Message authentication code  - RRC Message sequence number  Identification of received message - Received message type - RRC transaction identifier Protocol error information - Protocol error cause	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent. This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS. This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value. Not Checked SIGNALLING CONNECTION RELEASE 0  Message not compatible with receiver state

## 8.1.11.5 Test requirement

After step 1 the UE shall transmit MEASUREMENT REPORT message twice at an interval of 6 seconds.

After step 4 the UE shall transmit a RRC STATUS message with protocol error cause set to "Message not compatible with receiver state".

After step 5 the UE shall transmit a MEASUREMENT REPORT within 6 seconds.

## 8.2 Radio Bearer control procedure

### 8.2.1 Radio Bearer Establishment

#### 8.2.1.1 Radio Bearer Establishment for transition from CELL\_DCH to CELL\_DCH: Success

##### 8.2.1.1.1 Definition

##### 8.2.1.1.2 Conformance requirement

If the UE receives:

- a RADIO BEARER SETUP message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If the UE was in CELL\_DCH state upon reception of the reconfiguration message and remains in CELL\_DCH state, the UE shall:

- 1> if the IE "Uplink DPCH Info" is absent, not change its current UL Physical channel configuration;
- 1> if the IE "Downlink information for each radio link" is absent, not change its current DL Physical channel configuration.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER SETUP message, the UE shall:

- 1> transmit a RADIO BEARER SETUP COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

### 8.2.1.1.3 Test purpose

To confirm that the UE establishes a new radio bearer according to a RADIO BEARER SETUP message.

### 8.2.1.1.4 Method of test

## Initial Condition

System Simulator: 1 cell

UE: CS-DCCH\_DCH (state 6-5) or PS\_DCCH\_DCH (state 6-7) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

The UE is in CELL\_DCH state, after the test operator is prompted to make an out-going call. Before step 1, only signalling radio bearers have been established. The SS transmits a RADIO BEARER SETUP message to the UE. This message requests the establishment of radio access bearer. After the UE receives this message, it configures them and establishes a radio access bearer. Finally the UE transmits a RADIO BEARER SETUP COMPLETE message using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER SETUP	
2		→	RADIO BEARER SETUP COMPLETE	
3		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

Specific Message Contents

### RADIO BEARER SETUP

The contents of RADIO BEARER SETUP message in this test case is identical to the message sub-type indicated by "Non speech from CELL\_DCH to CELL\_DCH in CS" or "Speech from CELL\_DCH to CELL\_DCH in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" in [9] TS 34.108 clause 9.

#### 8.2.1.1.5 Test requirement

After step 1 the UE shall transmit a RADIO BEARER SETUP COMPLETE message.

#### 8.2.1.2 Void

### 8.2.1.3 Radio Bearer Establishment for transition from CELL\_DCH to CELL\_DCH: Failure (Unsupported configuration)

#### 8.2.1.3.1 Definition

#### 8.2.1.3.2 Conformance requirement

If the UTRAN instructs the UE to use a configuration, which it does not support and/or if the received message causes the variable UNSUPPORTED\_CONFIGURATION to be set to TRUE, the UE shall:

- 1> transmit a failure response as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "configuration unsupported".
- 1> set the variable UNSUPPORTED\_CONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a RADIO BEARER SETUP message:
  - ...
  - 2> transmit a RADIO BEARER SETUP FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.6, 8.2.2.9.

## 8.2.1.3.3 Test purpose

To confirm that the UE keeps its configuration and transmits a RADIO BEARER SETUP FAILURE message in case of receiving a RADIO BEARER SETUP message which includes parameters of its unsupported configuration.

## 8.2.1.3.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH\_DCH (state 6-5) or PS\_DCCH\_DCH (state 6-7) as specified in clause 7.4 of TS 34.108, depending on the domain(s) supported by the UE.

## Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a RADIO BEARER SETUP message in which the frequency cannot be supported by the UE. After the UE receives this message, it transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "configuration unsupported" in IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER SETUP	Including the unsupported configuration for the UE.
2		→	RADIO BEARER SETUP FAILURE	The UE does not change the configuration.
3		→	MEASUREMENT REPORT	

## Specific Message Contents

## MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

### MEASUREMENT REPORT (Step 0b and 3)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

### RADIO BEARER SETUP (Step 1)

The contents of RADIO BEARER SETUP message in this test case is indicated as "Non-speech in CS" as found in Annex A or the RADIO BEARER SETUP message as found in clause 9 of TS 34.108 with the following exceptions:

## RADIO BEARER SETUP (FDD)

Information Element	Value/remark
Frequency info CHOICE mode - UARFCN uplink (Nu) - UARFCN downlink (Nd)	FDD 0 950

## RADIO BEARER SETUP (TDD)

Information Element	Value/remark
Frequency info CHOICE mode - UARFCN (Nt)	TDD 0

## RADIO BEARER SETUP FAILURE (Step 2)

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Message Type Failure cause	Configuration unsupported

## 8.2.1.3.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 1 the UE transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "configuration unsupported" in IE "failure cause".

After step 2, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

## 8.2.1.4 Radio Bearer Establishment for transition from CELL\_DCH to CELL\_DCH: Failure (Physical channel Failure and successful reversion to old configuration)

## 8.2.1.4.1 Definition

## 8.2.1.4.2 Conformance requirement

When a physical dedicated channel establishment is initiated by the UE, the UE shall start a timer T312 and wait for layer 1 to indicate N312 "in sync" indications. On receiving N312 "in sync" indications, the physical channel is considered established and the timer T312 is stopped and reset.

If the timer T312 expires before the physical channel is established, the UE shall consider this as a "physical channel establishment failure".

If the received message caused the UE to be in CELL\_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

- 1> revert to the configuration prior to the reception of the message (old configuration);

...

- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "physical channel failure".
- 1> set the variable ORDERED\_RECONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a RADIO BEARER SETUP message:
  - ...
  - 2> transmit a RADIO BEARER SETUP FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.7, 8.2.2.9, 8.5.4.

### 8.2.1.4.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, if the UE fails to reconfigure the radio bearer according to the RADIO BEARER SETUP message before timer T312 expires.

### 8.2.1.4.4 Method of test

## Initial Condition

System Simulator: 1 cell

UE: CS-DCCH\_DCH (state 6-5) or PS\_DCCH\_DCH (state 6-7) as specified in clause 7.4 of TS 34.108, depending on the domain(s) supported by the UE.

## Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a RADIO BEARER SETUP message to the UE and SS keep its old dedicated channel configuration. Then after T312 expiry, the UE reverts to the old configuration and transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "physical channel failure" in IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER SETUP	The SS keeps its old L1 configuration after transmitting this message.
2				The UE does not configure the new radio access bearer and reverts to the old configuration.
3		→	RADIO BEARER SETUP FAILURE	UE shall transmit this message using the old configuration.
4		→	MEASUREMENT REPORT	

Specific Message Contents

MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

MEASUREMENT REPORT (Step 0b and 4)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

#### RADIO BEARER SETUP (Step 1)

The contents of RADIO BEARER SETUP message in this test case is indicated as "Non-speech in CS" as found in annex A or the RADIO BEARER SETUP message as found in clause 9 of TS 34.108.

#### RADIO BEARER SETUP FAILURE (Step 2)

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Physical channel failure

#### 8.2.1.4.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 2 the UE shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "physical channel failure" in IE "failure cause".

After step 3, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

#### 8.2.1.5 Radio Bearer Establishment for transition from CELL\_DCH to CELL\_DCH: Failure (Physical channel Failure and cell reselection)

##### 8.2.1.5.1 Definition

##### 8.2.1.5.2 Conformance requirement

If the received message caused the UE to be in CELL\_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

- 1> revert to the configuration prior to the reception of the message (old configuration);

- 1> if the old configuration includes dedicated physical channels (CELL\_DCH state) and the UE is unable to revert to the old configuration:
  - 2> initiate a cell update procedure according to TS 25.331 subclause 8.3.1, using the cause "radio link failure";
  - 2> after the cell update procedure has completed successfully:
    - 3> proceed as below.
- ...
- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "physical channel failure".
- 1> set the variable ORDERED\_RECONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- includes "Physical channel information elements":

the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message using AM RLC.

The UE shall:

- 1> in case of reception of a RADIO BEARER SETUP message:
  - ...
  - 2> transmit a RADIO BEARER SETUP FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.7, 8.2.2.9, 8.3.1.7.

### 8.2.1.5.3 Test purpose

To confirm that UE transmits RADIO BEARER SETUP FAILURE message after it completes a cell update procedure due to a physical channel failure in the radio bearer establishment procedure.

### 8.2.1.5.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH\_DCH (state 6-5) or PS\_DCCH\_DCH (state 6-7) as specified in clause 7.4 of TS 34.108, depending on the domain(s) supported by the UE.

## Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. SS transmits a RADIO BEARER SETUP message to the UE. After transmitting the RADIO BEARER SETUP message, the SS shall not configure its dedicated physical channel in accordance with the settings in the message and release the old configuration after the RLC acknowledgement. The UE recognizes that it cannot synchronise on the new physical channel and wants to revert to the old configuration, but the UE cannot revert to the old configuration. The UE transmits a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "radio link failure". The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving a CELL UPDATE message. The UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC and subsequently transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the value of IE "failure cause" to "physical channel failure". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER SETUP	
2				The SS does not configure new radio access bearer and shall release the configuration.
3		→	CELL UPDATE	The value "radio link failure" shall be set in IE "Cell update cause".
4		←	CELL UPDATE CONFIRM	This message includes IE "Physical channel information elements".
5				The SS configures the dedicated physical channel according to the IE "Physical channel information elements" included in the CELL UPDATE CONFIRM message.
6		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
7		→	RADIO BEARER SETUP FAILURE	The IE "failure cause" shall be set to "physical channel failure"
8		→	MEASUREMENT REPORT	

## Specific Message Contents

### MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

### MEASUREMENT REPORT (Step 0b and 8)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

### RADIO BEARER SETUP (Step 1)

The contents of RADIO BEARER SETUP message in this test case is indicated as "Non-speech in CS" as found in Annex A or the RADIO BEARER SETUP message as found in clause 9 of TS 34.108.

## CELL UPDATE (Step 3)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"radio link failure"

## CELL UPDATE CONFIRM (Step 4) (FDD)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC State indicator	CELL_DCH
UplinkDPCH Info	Same as RRC CONNECTION SETUP message used to move to initial condition
Downlink information for each radio links	Same as RRC CONNECTION SETUP message used to move to initial condition

## CELL UPDATE CONFIRM (Step 4) (TDD)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_DCH
Uplink DPCH timeslots and codes	Same as RADIO BEARER SETUP message used to move to initial condition
Downlink information for each radio links	Same as RADIO BEARER SETUP message used to move to initial condition

## RADIO BEARER SETUP FAILURE (Step 7)

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Message Type	"RADIO BEARER SETUP FAILURE"
Failure cause	"physical channel failure"

## 8.2.1.5.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 2 the UE shall transmit CELL UPDATE message on the CCCH with IE "Cell update cause" set to "radio link failure".

After step 5 the UE shall transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

After step 6 the UE shall transmit RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the IE "failure cause" to "physical channel failure".

After step 7, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

## 8.2.1.6 Radio Bearer Establishment for transition from CELL\_DCH to CELL\_DCH: Failure (Incompatible simultaneous reconfiguration)

### 8.2.1.6.1 Definition

### 8.2.1.6.2 Conformance requirement

If the received message is any of the messages:

- RADIO BEARER SETUP; or

...

the UE shall:

- 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or

...

- 3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:

...

- 3> else:

- 4> reject the transaction; and

- 4> if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:

- 5> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

If the table "Rejected transactions" in the variable TRANSACTIONS is set due to the received message and the variable PROTOCOL\_ERROR\_REJECT is set to FALSE, the UE shall:

- 1> not apply the configuration contained in the received reconfiguration message;

- 1> transmit a failure response message as specified in subclause TS 25.331 8.2.2.9, setting the information elements as specified below:

- 2> include the IE "RRC transaction identifier"; and

- 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable TRANSACTIONS; and

- 2> clear that entry;

- 2> set the IE "failure cause" to "incompatible simultaneous reconfiguration".

- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a RADIO BEARER SETUP message:

...

- 2> transmit a RADIO BEARER SETUP FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.9, 8.2.2.12, clause 8.6.3.11.

## 8.2.1.6.3 Test purpose

To confirm that if the UE receives a RADIO BEARER SETUP message during a reconfiguring procedure due to a radio bearer message other than RADIO BEARER SETUP, it shall keep its configuration as if the RADIO BEARER SETUP message had not been received and complete the reconfiguration procedure according to the previously received message.

## 8.2.1.6.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS\_DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE. The SS transmits a RADIO BEARER SETUP message before the "activation time" indicated in the RADIO BEARER RECONFIGURATION message expires. When the UE receives the RADIO BEARER SETUP message, the UE shall keep its current configuration as if it had not received the RADIO BEARER SETUP message and shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the SS acknowledges the RADIO BEARER SETUP FAILURE message, the UE reconfigures the new physical channel parameters upon the specified activation time and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on DCCH using AM RLC. UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER RECONFIGURATION	Including IE "Activation Time"
2		←	RADIO BEARER SETUP	The SS send this message before the expiry of activation time specified in the message of step 1.
3		→	RADIO BEARER SETUP FAILURE	The UE does not change the configuration according to the RADIO BEARER SETUP message.
4		→	RADIO BEARER RECONFIGURATION COMPLETE	This message is on DCCH using AM RLC.
5		→	MEASUREMENT REPORT	

## Specific Message Contents

## MEASUREMENT CONTROL (Step 1a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

### MEASUREMENT REPORT (Step 1b and 13)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

### RADIO BEARER RECONFIGURATION (Step 1)

For RADIO BEARER RECONFIGURATION message in step 1, use the message sub-type indicated as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A, with the exception of the following Information Elements:

Information Element	Value/remark
Activation Time	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256
Uplink DPCH Info - Scrambling code number	1

### RADIO BEARER SETUP (Step 2)

The contents of RADIO BEARER SETUP message in this test case is indicated as "Non-speech in CS" as found in Annex A or the RADIO BEARER SETUP message as found in clause 9 of TS 34.108 with the following exceptions:

Information Element	Value/remark
Activation Time	Not Present
Uplink DPCH Info - Scrambling code number	2

### RADIO BEARER SETUP FAILURE

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Message Type	
Failure case	Incompatible simultaneous reconfiguration

#### 8.2.1.6.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 2 the UE shall keep its configuration as if the UE had not received the RADIO BEARER SETUP message and shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "Incompatible simultaneous reconfiguration".

After step 3 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

After step 4, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

#### 8.2.1.7 Radio Bearer Establishment for transition from CELL\_DCH to CELL\_DCH: Failure (Invalid message reception and Invalid configuration)

##### 8.2.1.7.1 Definition

##### 8.2.1.7.2 Conformance requirement

If the received reconfiguration message contains a protocol error causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;

- 2> set the IE "failure cause" to the cause value "protocol error";
- 2> include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL\_ERROR\_INFORMATION.

If the variable INVALID\_CONFIGURATION is set to TRUE the UE shall:

- 1> keep the configuration existing before the reception of the message;
- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
    - 3> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
    - 3> clear that entry.
  - 2> set the IE "failure cause" to "invalid configuration".
- 1> set the variable INVALID\_CONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a RADIO BEARER SETUP message:
  - ...
  - 2> transmit a RADIO BEARER SETUP FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.13, 8.2.2.11, 8.2.2.9.

### 8.2.1.7.3 Test purpose

To confirm that the UE transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC if it receives an invalid RADIO BEARER SETUP message which does not include any IEs except IE "Message Type".

To confirm that the UE transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC if it receives a RADIO BEARER SETUP message including some IEs set to give an invalid configuration.

### 8.2.1.7.4 Method of test

## Initial Condition

System Simulator: 1 cell

UE: CS-DCCH\_DCH (state 6-5) or PS-DCCH\_DCH (state 6-7) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits an invalid RADIO BEARER SETUP message to the UE which contains an unexpected critical message extension. The UE keeps the old configuration and transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "protocol error" in IE "failure cause", and is set to "Message extension not comprehended" in IE "Protocol error cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically. The UE keeps current configuration after SS transmits a RADIO BEARER SETUP message including some IEs set to give an invalid configuration. Then UE transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the value "invalid configuration" to IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER SETUP	See specific message content.
2		→	RADIO BEARER SETUP FAILURE	The UE does not change its configuration.
2a		→	MEASUREMENT REPORT	
3		←	RADIO BEARER SETUP	This message includes IE set to invalid value.
4		→	RADIO BEARER SETUP FAILURE	The UE does not change its configuration.
5		→	MEASUREMENT REPORT	

## Specific Message Contents

## MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

## MEASUREMENT REPORT (Step 0b, 2a and 5)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

## RADIO BEARER SETUP (Step 1)

Use the RADIO BEARER SETUP message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Critical extensions	'01'H

## RADIO BEARER SETUP FAILURE (Step 2)

Information Element	Value/remark
Message Type	
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	Message extension not comprehended
Other information element	Not checked

## RADIO BEARER SETUP (Step 3)

The contents of RADIO BEARER SETUP message in this test case is identical as "Non-speech in CS" as found in Annex A or the RADIO BEARER SETUP message as found in clause 9 of TS 34.108 with the following exceptions:

## RADIO BEARER SETUP (Step 3) (FDD)

Information Element	Value/remark
- Default DPCH Offset Value	512
- DPCH frame offset	1024

## RADIO BEARER SETUP (Step 3) (TDD)

Information Element	Value/remark
-PRACH TFCS	Present

## RADIO BEARER SETUP FAILURE (Step 4)

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Message Type Failure cause	Invalid configuration

## 8.2.1.7.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 1 the UE shall keep its old configuration and transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "protocol error" in IE "failure cause" and set to "Message extension not comprehended" in IE "Protocol error cause".

After step 2, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 3 the UE shall keep its old configuration and transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the value "invalid configuration" to IE "failure cause".

After step 4, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

## 8.2.1.8 Radio Bearer Establishment for transition from CELL\_DCH to CELL\_FACH: Success

## 8.2.1.8.1 Definition

## 8.2.1.8.2 Conformance requirement

If the UE receives:

- a RADIO BEARER SETUP message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_FACH state, the UE shall, after the state transition:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency.

- 1> if the IE "Frequency info" is not included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304.
- 1> if the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD), and the UE selects another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD):
  - 2> initiate a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Cell reselection";
  - 2> when the cell update procedure completed successfully:
    - 3> if the UE is in CELL\_PCH or URA\_PCH state:
      - 4> initiate a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Uplink data transmission";
      - 4> proceed as below.
- 1> start timer T305 using its initial value if timer T305 is not running and if periodical update has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity" in system information block type 1;
- 1> select PRACH according to TS 25.331 subclause 8.5.17;
- 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
- 1> use the transport format set given in system information;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> ignore that IE and stop using DRX.
- 1> if the contents of the variable C\_RNTI is empty:
  - 2> perform a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Cell reselection";
  - 2> when the cell update procedure completed successfully:
    - 3> if the UE is in CELL\_PCH or URA\_PCH state:
      - 4> initiate a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Uplink data transmission";
      - 4> proceed as below.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER SETUP message, the UE shall:

- 1> transmit a RADIO BEARER SETUP COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

## 8.2.1.8.3 Test purpose

To confirm that the UE establishes a new radio bearer according to a RADIO BEARER SETUP message.

## 8.2.1.8.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH\_DCH (state 6-7) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in CELL\_DCH state, after the test operator is asked to initiate a packet-switched data call. The SS transmits a RADIO BEARER SETUP message to the UE. After the UE receives this message, it transits from CELL\_DCH to CELL\_FACH state. Finally the UE transmits a RADIO BEARER SETUP COMPLETE message using AM RLC. Then the UE and the SS enters the communicating state. SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER SETUP	SS requests test operator to make an outgoing packet-switched data call.
2		→	RADIO BEARER SETUP COMPLETE	The UE selects PRACH and S-CCPCH indicated in SIB5 or SIB6 after entering CELL_FACH state.
3		↔	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

## Specific Message Contents

For RADIO BEARER SETUP message in step 1, use the message sub-type indicated as "Packet to CELL\_FACH from CELL\_DCH in PS" found in [9] TS 34.108 clause 9 with the following exception:

Information Element	Value/remark
New C-RNTI	0000 0000 0000 0001B

## 8.2.1.8.5 Test requirement

After step 1 the UE shall transmit a RADIO BEARER SETUP COMPLETE message.

## 8.2.1.9 Radio Bearer Establishment for transition from CELL\_DCH to CELL\_FACH: Success (Cell re-selection)

## 8.2.1.9.1 Definition

## 8.2.1.9.2 Conformance requirement

1. If after state transition the UE enters CELL\_FACH state, the UE shall, after the state transition:

.....

- if the contents of the variable C\_RNTI is empty:

- perform a cell update procedure according to clause 8.3.1 using the cause "Cell reselection";
2. If the CELL UPDATE CONFIRM message
    - does not include "RB information elements"; and
    - does not include "Transport channel information elements"; and
    - does not include "Physical channel information elements"; and
    - includes "CN information elements"; or
    - includes the IE "Ciphering mode info"; or
    - includes the IE "Integrity protection mode info"; or
    - includes the IE "New C-RNTI"; or
    - includes the IE "New U-RNTI":
- the UE shall:
- transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.
3. In case the procedure was triggered by reception of a RADIO BEARER SETUP message, the UE shall:
    - transmit a RADIO BEARER SETUP COMPLETE as response message on the uplink DCCH using AM RLC;

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.3.1.7, 8.2.2.4.

### 8.2.1.9.3 Test purpose

1. To verify that the UE when receiving a RADIO BEARER SETUP message not including a value for C-RNTI initiate a cell update procedure and indicating the cause "Cell reselection".
2. To verify that the UE when the CELL UPDATE CONFIRM message does not include "RB information elements", "Transport channel information elements" nor "Physical channel information elements" but include the IE "New C-RNTI" transmit a UTRAN MOBILITY INFORMATION CONFIRM message.
3. To confirm that the UE transmits RADIO BEARER SETUP COMPLETE message after it completes the cell update procedure.

### 8.2.1.9.4 Method of test

#### Initial Condition

System Simulator: 1 cell- Cell 1 is active.

UE: PS-DCCH\_DCH (state 6-7) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_DCH state. The SS transmits a RADIO BEARER SETUP message which includes IE "Primary CPICH info" and no dedicated physical channel information, to request the UE to transit from CELL\_DCH to CELL\_FACH. Due to absence of the C-RNTI in the RADIO BEARER SETUP message the UE shall initiate the cell update procedure even if the UE selects the same cell as indicated by the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD). The UE transmits a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection". The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmits a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC. The UE transmits a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC. SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1			Void	
2			Void	
3		←	RADIO BEARER SETUP	Assigned the transition from CELL_DCH to CELL_FACH
4		→	CELL UPDATE	The value "cell reselection" set in IE "Cell update cause".
5		←	CELL UPDATE CONFIRM	C-RNTI included
6		→	UTRAN MOBILITY INFORMATION CONFIRM	
7		→	RADIO BEARER SETUP COMPLETE	
8		←→	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

Specific Message Contents

#### RADIO BEARER SETUP (Step 3) (FDD)

The contents of RADIO BEARER SETUP message in this test case is identical as "Packet to CELL\_FACH from CELL\_DCH in PS" as found in [9] TS 34.108 clause 9.

#### RADIO BEARER SETUP (Step 3) (TDD)

The contents of RADIO BEARER SETUP message in this test case is identical as "Packet to CELL\_FACH from CELL\_DCH in PS" as found in [9] TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
Downlink information for each radio links - Primary CCPCH info -Cell parameters ID	4

#### CELL UPDATE (Step 4)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in [9] TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"cell reselection"

#### CELL UPDATE CONFIRM (Step 5)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in [9] TS 34.108 clause 9. with the following exceptions:

Information Element	Value/remark
New C-RNTI	0000 0000 0000 0001B

#### UTRAN MOBILITY INFORMATION CONFIRM (Step 6)

The contents of UTRAN MOBILITY INFORMATION CONFIRM message is identical as "UTRAN MOBILITY INFORMATION CONFIRM message" as found in [9] TS 34.108 clause 9.

## RADIO BEARER SETUP COMPLETE (Step 7)

The contents of RADIO BEARER SETUP COMPLETE message is identical as "RADIO BEARER SETUP COMPLETE message" as found in [9] TS 34.108 clause 9.

### 8.2.1.9.5 Test requirement

1. After step 3 the UE shall transmit a CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection".
2. After step 5 the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC.
3. After step 6 the UE shall transmit a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC.

### 8.2.1.10 Radio Bearer Establishment for transition from CELL\_FACH to CELL\_DCH: Success

#### 8.2.1.10.1 Definition

#### 8.2.1.10.2 Conformance requirement

If the UE receives:

- a RADIO BEARER SETUP message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_DCH state, the UE shall, after the state transition:

- 1> remove any C-RNTI from MAC;
- 1> clear the variable C\_RNTI.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER SETUP message, the UE shall:

- 1> transmit a RADIO BEARER SETUP COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

## 8.2.1.10.3 Test purpose

To confirm that the UE establishes a new radio bearer according to a RADIO BEARER SETUP message.

## 8.2.1.10.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH\_FACH (state 6-8) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in CELL\_FACH state, after SS prompts the test operator to initiate a packet-switched data call. The SS transmits a RADIO BEARER SETUP message to the UE. After the UE receives this message, it configures them and establishes the required radio bearers. Finally the UE transmits a RADIO BEARER SETUP COMPLETE message using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER SETUP	
2		→	RADIO BEARER SETUP COMPLETE	
3		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

## RADIO BEARER SETUP

The contents of RADIO BEARER SETUP message in this test case is identical the message sub-type indicated by "Packet to CELL\_DCH from CELL\_FACH in PS" in [9] TS 34.108 clause 9.

## 8.2.1.10.5 Test requirement

After step 1 the UE shall transmit a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC.

## 8.2.1.11 Radio Bearer Establishment for transition from CELL\_FACH to CELL\_DCH: Failure (Unsupported configuration)

## 8.2.1.11.1 Definition

## 8.2.1.11.2 Conformance requirement

If the UTRAN instructs the UE to use a configuration, which it does not support and/or if the received message causes the variable UNSUPPORTED\_CONFIGURATION to be set to TRUE, the UE shall:

- 1> transmit a failure response as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and

- 2> clear that entry;
- 2> set the IE "failure cause" to "configuration unsupported".
- 1> set the variable UNSUPPORTED\_CONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a RADIO BEARER SETUP message:
  - ...
  - 2> transmit a RADIO BEARER SETUP FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.6, 8.2.2.9.

### 8.2.1.11.3 Test purpose

To confirm that the UE keeps its configuration and transmits a RADIO BEARER SETUP FAILURE message in case of it receiving a RADIO BEARER SETUP message, which includes parameters of an unsupported configuration.

### 8.2.1.11.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH\_FACH (state 6-8) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in CELL\_FACH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a RADIO BEARER SETUP message with a stated frequency that cannot be supported by the UE. After the UE receives this message, it shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC setting value "configuration unsupported" in IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER SETUP	This message includes an unsupported configuration for the UE.
2		→	RADIO BEARER SETUP FAILURE	The UE shall transmit this message using RLC-AM mode and do not change the current configuration.
3		→	MEASUREMENT REPORT	

## Specific Message Contents

## MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	Acknowledged mode RLC
- Measurement Report Transfer Mode	Periodical Reporting
- Periodical Reporting / Event Trigger Reporting Mode	
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	RACHorCPCH
- UL Target Transport Channel ID	Not Present
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

## MEASUREMENT REPORT (Step 0b and 3)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

## RADIO BEARER SETUP (Step 1)

The contents of RADIO BEARER SETUP message in this test case is indicated as "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions:

## RADIO BEARER SETUP (FDD)

Information Element	Value/remark
Frequency info	
- UARFCN uplink (Nu)	0
- UARFCN downlink (Nd)	950

## RADIO BEARER SETUP (TDD)

Information Element	Value/remark
Frequency info	
- CHOICE mode	TDD
- UARFCN (Nt)	0

## RADIO BEARER SETUP FAILURE (Step 2)

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Message Type	
Failure cause	Configuration unsupported

## 8.2.1.11.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 1 the UE shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "configuration unsupported" in IE "failure cause".

After step 2, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

## 8.2.1.12 Radio Bearer Establishment for transition from CELL\_FACH to CELL\_DCH: Failure (Physical channel Failure and successful reversion to old configuration)

## 8.2.1.12.1 Definition

## 8.2.1.12.2 Conformance requirement

When a physical dedicated channel establishment is initiated by the UE, the UE shall start a timer T312 and wait for layer 1 to indicate N312 "in sync" indications. On receiving N312 "in sync" indications, the physical channel is considered established and the timer T312 is stopped and reset.

If the timer T312 expires before the physical channel is established, the UE shall consider this as a "physical channel establishment failure".

If the received message caused the UE to be in CELL\_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

- 1> revert to the configuration prior to the reception of the message (old configuration);

...

- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "physical channel failure".
- 1> set the variable ORDERED\_RECONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a RADIO BEARER SETUP message:

...

- 2> transmit a RADIO BEARER SETUP FAILURE as response message on the DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.7, 8.2.2.9, 8.5.4.

#### 8.2.1.12.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a RADIO BEARER SETUP FAILURE message when the UE fails to configure the new radio bearer after it detects physical channel failure, followed by the T312 expiry.

#### 8.2.1.12.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH\_FACH (state 6-8) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a RADIO BEARER SETUP message to the UE and keeps its old physical channel configuration. After T312 expiry, the UE shall perform cell reselection procedure and detect the same serving cell only. Then the UE shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC. The content of the message shall indicate "physical channel failure" in IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER SETUP	The SS keep its old configuration.
2		→	RADIO BEARER SETUP FAILURE	The UE does not configure a new radio bearer and reverts to the old configuration.
3		→	MEASUREMENT REPORT	

Specific Message Contents

MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	RACHorCPCH
- UL Target Transport Channel ID	Not Present
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

MEASUREMENT REPORT (Step 0b and 3)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

### RADIO BEARER SETUP (Step 1)

The contents of RADIO BEARER SETUP message in this test case is identical the message sub-type indicated by "Packet to CELL\_DCH from CELL\_FACH in PS" in Annex A.

### RADIO BEARER SETUP FAILURE (Step 2)

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Message Type	
Failure cause	Physical channel failure

#### 8.2.1.12.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 1 the UE shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC which is set to "physical channel failure" in IE "failure cause".

After step 2, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

#### 8.2.1.13 Radio Bearer Establishment for transition from CELL\_FACH to CELL\_DCH: Failure (Physical channel Failure and cell reselection)

##### 8.2.1.13.1 Definition

##### 8.2.1.13.2 Conformance requirement

If the received message caused the UE to be in CELL\_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

1> revert to the configuration prior to the reception of the message (old configuration);

...

1> if the old configuration does not include dedicated physical channels (CELL\_FACH state):

2> select a suitable UTRA cell according to TS 25.304;

2> if the UE selects another cell than the cell the UE camped on upon reception of the reconfiguration message:

3> initiate a cell update procedure according to TS 25.331 subclause 8.3.1, using the cause "Cell reselection";

3> after the cell update procedure has completed successfully:

4> proceed as below.

1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and

2> clear that entry;

2> set the IE "failure cause" to "physical channel failure".

1> set the variable ORDERED\_RECONFIGURATION to FALSE;

1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- includes "CN information elements"; or
- includes the IE "Ciphering mode info"; or
- includes the IE "Integrity protection mode info"; or
- includes the IE "New C-RNTI"; or
- includes the IE "New U-RNTI":

the UE shall:

1> transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

The UE shall:

1> in case of reception of a RADIO BEARER SETUP message:

...

2> transmit a RADIO BEARER SETUP FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.7, 8.2.2.9, 8.3.1.7.

## 8.2.1.13.3 Test purpose

To confirm that the UE transmit a RADIO BEARER SETUP FAILURE message after it completes a cell update for the physical channel failure in the radio bearer establishment procedure.

## 8.2.1.13.4 Method of test

## Initial Condition

System Simulator: 2 cells - Cell 1 and 2 are active.

UE: PS-DCCCH\_FACH (state 6-8) as specified in clause 7.4 of TS 34.108 in cell 1.

## Test Procedure

**Table 8.2.1.13**

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH Ec (FDD)	dBm/3.84 MHz	-60	-75	-75	-60
P-CCPICH RSCP (TDD)	dBm	-60	-75	-75	-60

Table 8.2.1.13 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings between columns "T0" and "T1", whenever the description in multi-cell condition specifies reverse of the transmission power settings for cell 1 and cell 2.

The UE is in CELL\_FACH state in cell 1. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a RADIO BEARER SETUP message to the UE. After transmitting the RADIO BEARER SETUP message, the SS shall not configure its DL dedicated physical channel in accordance with the setting in the message and release its current configuration. At the same time, the SS configures its downlink transmission power settings according to columns "T1" in table 8.2.1.13. The UE recognize that it cannot synchronize with the SS on the new radio bearer. The UE performs cell re-selection and transmits a CELL UPDATE message on uplink CCCH with IE "Cell update cause" which is set to "cell reselection". The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving a CELL UPDATE message. The UE transmits a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC and subsequently transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the value "physical channel failure" to IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER SETUP	
2				The SS does not configure the new radio bearer in accordance with the settings in the message and applies the downlink transmission power settings, according to the values in columns "T1" of table 8.2.1.13.
3			Void	
4				The UE select the cell 2.
5		→	CELL UPDATE	The value "cell reselection" shall be set in IE "Cell update cause".
6		←	CELL UPDATE CONFIRM	This message include IE "new U-RNTI" and IE "new C-RNTI".
7		→	UTRAN MOBILITY INFORMATION CONFIRM	
8		→	RADIO BEARER SETUP FAILURE	The IE "failure cause" shall be set to "physical channel failure"
9		→	MEASUREMENT REPORT	

## Specific Message Contents

## MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	RACHorCPCH
- UL Target Transport Channel ID	Not Present
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

## MEASUREMENT REPORT (Step 0b and 9)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

#### RADIO BEARER SETUP (Step 1)

The contents of RADIO BEARER SETUP message in this test case is identical to the message sub-type "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A.

#### CELL UPDATE (Step 5)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"cell reselection"

#### CELL UPDATE CONFIRM (Step 6)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM" message as found in Annex A with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 5
New U-RNTI	
- SRNC Identity	'0000 0000 0000 0001'
- S-RNTI	Different from previous S-RNTI
New C-RNTI	Different from previous C-RNTI

#### RADIO BEARER SETUP FAILURE (Step 8)

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Message Type	"RADIO BEARER RECONFIGURATION FAILURE"
Failure cause	"physical channel failure"

## 8.2.1.13.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 4 the UE shall transmit a CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection".

After step 6 the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 7 the UE shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the IE "failure cause" to "physical channel failure".

After step 8, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

## 8.2.1.14 Radio Bearer Establishment for transition from CELL\_FACH to CELL\_DCH: Failure (Incompatible simultaneous reconfiguration)

## 8.2.1.14.1 Definition

## 8.2.1.14.2 Conformance requirement

If the received message is any of the messages:

- RADIO BEARER SETUP; or

...

the UE shall:

- 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or

...

- 3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:

...

- 3> else:

- 4> reject the transaction; and

- 4> if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:

- 5> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

...

If the table "Rejected transactions" in the variable TRANSACTIONS is set due to the received message and the variable PROTOCOL\_ERROR\_REJECT is set to FALSE, the UE shall:

- 1> not apply the configuration contained in the received reconfiguration message;

- 1> transmit a failure response message as specified in subclause TS 25.331 8.2.2.9, setting the information elements as specified below:

- 2> include the IE "RRC transaction identifier"; and

- 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "incompatible simultaneous reconfiguration".
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a RADIO BEARER SETUP message:
  - ...
  - 2> transmit a RADIO BEARER SETUP FAILURE as response message on the DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.9, 8.2.2.12, clause 8.6.3.11.

#### 8.2.1.14.3 Test purpose

To confirm that if the UE receives a RADIO BEARER SETUP message during a reconfiguring procedure due to a radio bearer message other than RADIO BEARER SETUP, it shall keep its configuration as if the RADIO BEARER SETUP message had not been received and complete the reconfiguration procedure according to the previously received message.

#### 8.2.1.14.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE. The SS transmits a RADIO BEARER SETUP message before the "activation time" indicated in the RADIO BEARER RECONFIGURATION message expires. When the UE receives the RADIO BEARER SETUP message, the UE shall keep its current configuration as if it had not received the RADIO BEARER SETUP message and shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the SS acknowledges the RADIO BEARER SETUP FAILURE message, the UE reconfigures the new physical channel parameters upon the specified activation time and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on DCCH using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RECONFIGURATION	Including IE "Activation Time "
2		←	RADIO BEARER SETUP	The SS send this message before the expiry of activation time specified in the message of step 1.
3		→	RADIO BEAER SETUP FAILURE	The UE does not change the configuration because of the RADIO BEARER SETUP message, and transmit this message on its uplink DCCH using the same RLC-AM mode radio bearer before step 1.
4		→	RADIO BEARER RECONFIGURATION COMPLETE	This message is on DCCH using AM RLC.
5		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

### Specific Message Contents

#### RADIO BEARER RECONFIGURATION (Step 1) (FDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case are identical as "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8 ]
Uplink DPCH Info - Scrambling code number	1

#### RADIO BEARER RECONFIGURATION (Step 1) (TDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case are identical as "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time - Uplink DPCH timeslots and codes - First timeslot code list	Current CFN-[current CFN mod 8 + 8 ] Assigned in step 1

#### RADIO BEARER SETUP (for Step 2) (FDD)

For this message, use the message sub-type entitled "Packet to CELL\_DCH from CELL\_FACH in PS" in the default message content. Information element(s) to be changed are listed below:

Information Element	Value/remark
Activation Time	Not present
Uplink DPCH Info - Scrambling code number	2

#### RADIO BEARER SETUP (for Step 2) (TDD)

For this message, use the message sub-type entitled "Packet to CELL\_DCH from CELL\_FACH in PS" in the default message content. Information element(s) to be changed are listed below:

Information Element	Value/remark
Activation Time	Not Present
- Uplink DPCH timeslots and codes - First timeslot code list	A different code combination to that used in step 1.

## RADIO BEARER SETUP FAILURE

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Message Type	
Failure cause	Incompatible simultaneous reconfiguration

### 8.2.1.14.5 Test requirement

After step 2 the UE shall transmit a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "Incompatible simultaneous reconfiguration".

After step 3 the UE shall configure the new configuration on the activation time and transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

### 8.2.1.15 Radio Bearer Establishment for transition from CELL\_FACH to CELL\_DCH: Failure (Invalid message reception and Invalid configuration)

#### 8.2.1.15.1 Definition

#### 8.2.1.15.2 Conformance requirement

If the received reconfiguration message contains a protocol error causing the variable `PROTOCOL_ERROR_REJECT` to be set to TRUE according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable `TRANSACTIONS`; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to the cause value "protocol error";
  - 2> include the IE "Protocol error information" with contents set to the value of the variable `PROTOCOL_ERROR_INFORMATION`.

If the variable `INVALID_CONFIGURATION` is set to TRUE the UE shall:

- 1> keep the configuration existing before the reception of the message;
- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 3> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable `TRANSACTIONS`; and

- 3> clear that entry.
- 2> set the IE "failure cause" to "invalid configuration".
- 1> set the variable INVALID\_CONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a RADIO BEARER SETUP message:
  - ...
- 2> transmit a RADIO BEARER SETUP FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.13, 8.2.2.11, 8.2.2.9.

### 8.2.1.15.3 Test purpose

To confirm that the UE transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC if it receives an invalid RADIO BEARER SETUP message which does not include any IEs except IE "Message Type".

To confirm that the UE transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC if it receives a RADIO BEARER SETUP message including some IEs set to give an invalid configuration.

### 8.2.1.15.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH\_FACH (state 6-8) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits an invalid RADIO BEARER SETUP message to the UE which contains an unexpected critical message extension. The UE keeps the old configuration and transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC. This message shall specify "protocol error" in IE "failure cause" and also set the value "Message extension not comprehended" in IE "Protocol error cause". The UE keeps current configuration after SS transmits RADIO BEARER SETUP message including some IEs set to give an invalid configuration. Then UE transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the value "invalid configuration" to IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER SETUP	See specific message content.
2		→	RADIO BEARER SETUP FAILURE	The UE does not change the configuration.
3		←	RADIO BEARER SETUP	This message includes IE set to give an invalid configuration.
4		→	RADIO BEARER SETUP FAILURE	The UE does not change the configuration.
5		→	MEASUREMENT REPORT	

Specific Message Contents

#### MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	Acknowledged mode RLC
- Measurement Report Transfer Mode	Periodical Reporting
- Periodical Reporting / Event Trigger Reporting Mode	Not Present
Additional measurement list	Traffic Volume Measurement
CHOICE measurement type	
- Traffic volume measurement object list	
- Uplink transport channel type	RACHorCPCH
- UL Target Transport Channel ID	Not Present
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

#### MEASUREMENT REPORT (Step 0b and 5)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

### RADIO BEARER SETUP (Step 1)

Use the RADIO BEARER SETUP message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Critical extensions	'01'H

### RADIO BEARER SETUP FAILURE (Step 2)

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	Message extension not comprehended

### RADIO BEARER SETUP (Step 3)

The contents of RADIO BEARER SETUP message in this test case is identical as "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions:

#### RADIO BEARER SETUP (Step 3) (FDD)

Information Element	Value/remark
- Default DPCH Offset Value	512
- DPCH frame offset	1024

#### RADIO BEARER SETUP (Step 3) (TDD)

Information Element	Value/remark
-PRACH TFCS	Present

## RADIO BEARER SETUP FAILURE (Step 4)

The contents of RADIO BEARER SETUP FAILURE message in this test case is the same as the RADIO BEARER SETUP FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Invalid configuration

### 8.2.1.15.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 1 the UE shall transmits a RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC. The message shall indicate the reason of failure as "protocol error" in IE "failure cause" and set the value "Message extension not comprehended" in IE "Protocol error cause".

After step 3 the UE shall transmit RADIO BEARER SETUP FAILURE message on the DCCH using AM RLC, setting the value of IE "failure cause" to "invalid configuration".

After step 4, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

### 8.2.1.16 Radio Bearer Establishment for transition from CELL\_FACH to CELL\_FACH: Success

#### 8.2.1.16.1 Definition

#### 8.2.1.16.2 Conformance requirement

If the UE receives:

- a RADIO BEARER SETUP message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If the UE was in CELL\_FACH state upon reception of the reconfiguration message and remains in CELL\_FACH state, the UE shall:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency;
  - 2> if the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD), and the UE selected another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD):

...

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER SETUP message, the UE shall:

- 1> transmit a RADIO BEARER SETUP COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

#### 8.2.1.16.3 Test purpose

To confirm that the UE establishes a new radio access bearer according to a RADIO BEARER SETUP message.

#### 8.2.1.16.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH\_FACH (state 6-8) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state, after the test operator is being prompted to make an outgoing packet-switched call. The SS transmits a RADIO BEARER SETUP message to the UE. After the UE receives this message, it configures them and establishes a new radio access bearer. Finally the UE transmits a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC. SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER SETUP	
2		→	RADIO BEARER SETUP COMPLETE	The UE select PRACH and S-CCPCH using SIB5 or SIB6.
3		↔	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

#### Specific Message Contents

#### RADIO BEARER SETUP

For this message, use the message sub-type entitled "Packet to CELL\_FACH from CELL\_FACH in PS" in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Downlink information per radio link list	
- Downlink information for each radio link	
- Choice mode	FDD
- Primary CPICH info	
- Primary scrambling code	Reference to the Default setting for cell 1 in TS34.108 clause 6.1 (FDD)
- PDSCH with SHO DCH info	Not Present
- PDSCH code mapping	Not Present
- Downlink DPCH info for each RL	Not present
- SCCPCH information for FACH	Not Present

#### 8.2.1.16.5 Test requirement

After step 1, the UE shall transmit a RADIO BEARER SETUP COMPLETE message.

#### 8.2.1.17 Radio Bearer Establishment for transition from CELL\_DCH to CELL\_DCH: success (Subsequently received)

##### 8.2.1.17.1 Definition

##### 8.2.1.17.2 Conformance requirement

If the IE "RRC transaction identifier" is included in a received message, the UE shall perform the actions below. The UE shall:

If the received message is any of the messages:

- RADIO BEARER SETUP; or

...

the UE shall:

- 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or
- 2> if the variable CELL\_UPDATE\_STARTED is set to TRUE; or
- 2> if the table "Accepted transactions" in the variable TRANSACTIONS contains an entry with an IE "Message Type" set to ACTIVE SET UPDATE; or
- 2> if the received message contains a protocol error according to TS 25.331 clause 9 causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE:
  - 3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:
    - 4> ignore the transaction; and
    - 4> continue with any ongoing processes and procedures as the message was not received;
    - 4> and end the procedure.
  - 3> else:

...

#### Reference

3GPP TS 25.331 clause 8.6.3.11.

## 8.2.1.17.3 Test purpose

To confirm that if the UE receives a new RADIO BEARER SETUP message before the UE completes the configuration of the radio bearer according to a previous RADIO BEARER SETUP message, it ignores the new RADIO BEARER SETUP message and configures according to the previous RADIO BEARER SETUP message received.

## 8.2.1.17.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH\_DCH (state 6-5) or PS-DCCH\_DCH (state 6-7) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

The UE is in CELL\_DCH state. SS transmits a RADIO BEARER SETUP message to the UE before the UE completes the configuration of the radio bearer according to the RADIO BEARER SETUP message prior to this new message. The UE ignores the new RADIO BEARER SETUP message and configures according to the former RADIO BEARER SETUP message. On completion of radio bearer configuration, the UE shall transmit a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER SETUP	The "Secondary scrambling code is set to "1" for FDD mode.
2		←	RADIO BEARER SETUP	SS send this message before the expiry of activation time specified in RADIO BEARER SETUP message of step 1. For TDD the IE "Secondary scrambling code" is set to "2" and for TDD mode a different code combination to that used in step 11 is used.
3		→	RADIO BEARER SETUP COMPLETE	The UE ignores the RADIO BEARER SETUP message in step 2 and completes configuration according to the RADIO BEARER SETUP message in step 1.
4		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

## RADIO BEARER SETUP (Step 1) (FDD)

For RADIO BEARER SETUP in step 1, use the message sub-type indicated as "Non speech in CS" found in Annex A or the RADIO BEARER SETUP message as found in clause 9 of TS 34.108, with the exception of the following Information Elements:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256
- Uplink DPCH Info - Secondary scrambling code	1

## RADIO BEARER SETUP (Step 1) (TDD)

For RADIO BEARER SETUP in step 1, use the message sub-type indicated as "Non speech in CS" found in Annex A or the RADIO BEARER SETUP message as found in clause 9 of TS 34.108, with the exception of the following Information Elements:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH timeslots and codes - First timeslot code list	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256  Assigned in step 1

## RADIO BEARER SETUP (Step 2) (FDD)

For RADIO BEARER SETUP in step 2, use the message sub-type indicated as "Non speech in CS" found in Annex A or the RADIO BEARER SETUP message as found in clause 9 of TS 34.108, with the exception of the following:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH Info - Secondary scrambling code	Not Present  2

## RADIO BEARER SETUP (Step 2) (TDD)

For RADIO BEARER SETUP in step 2, use the message sub-type indicated as "Non speech in CS" found in Annex A or the RADIO BEARER SETUP message as found in clause 9 of TS 34.108, with the exception of the following:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH timeslots and codes - First timeslot code list	Not Present  A different code combination to that used in step 1.

## 8.2.1.17.5 Test requirement

After step 2 the UE shall transmit a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC.

## 8.2.1.18 Radio Bearer Establishment for transition from CELL\_FACH to CELL\_DCH: Success (Subsequently received)

## 8.2.1.18.1 Definition

## 8.2.1.18.2 Conformance requirement

If the IE "RRC transaction identifier" is included in a received message, the UE shall perform the actions below. The UE shall:

If the received message is any of the messages:

- RADIO BEARER SETUP; or

...

the UE shall:

- 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or
- 2> if the variable CELL\_UPDATE\_STARTED is set to TRUE; or

- 2> if the table "Accepted transactions" in the variable TRANSACTIONS contains an entry with an IE "Message Type" set to ACTIVE SET UPDATE; or
- 2> if the received message contains a protocol error according to TS 25.331 clause 9 causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE:
  - 3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:
    - 4> ignore the transaction; and
    - 4> continue with any ongoing processes and procedures as the message was not received;
    - 4> and end the procedure.
  - 3> else:

#### Reference

3GPP TS 25.331 clause 8.6.3.11.

#### 8.2.1.18.3 Test purpose

To confirm that if the UE receives a new RADIO BEARER SETUP message before the UE completes the configuration of the radio bearer according to a previous RADIO BEARER SETUP message, it ignores the new RADIO BEARER SETUP message and configures according to the previous RADIO BEARER SETUP message received.

#### 8.2.1.18.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH\_FACH (state 6-8) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state. The SS transmits a RADIO BEARER SETUP message, requesting the UE to setup radio bearers using DPCH physical channels. SS transmits another RADIO BEARER SETUP message before the activation time specified in the first message has lapsed. The UE ignores the new RADIO BEARER SETUP message and configures the radio bearers according to the former RADIO BEARER SETUP message. On completion of radio bearer configuration, the UE shall transmit a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER SETUP	The "Secondary scrambling code is set to "1" for FDD mode.
2		←	RADIO BEARER SETUP	SS send this message before the expiry of activation time specified in RADIO BEARER SETUP message of step 1. For FDD mode the IE "Secondary scrambling code" is set to "2" and for TDD mode a different code combination to that used in step 1 is used.
3		→	RADIO BEARER SETUP COMPLETE	The UE ignores the RADIO BEARER SETUP message in step 2 and confirms configuration according to the RADIO BEARER SETUP message in step 1.
4		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

Specific Message Contents

#### RADIO BEARER SETUP (Step 1) (FDD)

For this message, use the message sub-type entitled "Packet to CELL\_DCH from CELL\_FACH in PS" in Annex A.

Information element(s) to be changed are listed below:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256
- Uplink DPCH Info - Secondary scrambling code	1

#### RADIO BEARER SETUP (Step 1) (TDD)

For RADIO BEARER SETUP in step 1, use the message sub-type indicated as "Non speech in CS" found in Annex A or the RADIO BEARER SETUP message as found in clause 9 of TS 34.108, with the exception of the following Information Elements:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256
- Uplink DPCH timeslots and codes - First timeslot code list	Assigned in step 1

#### RADIO BEARER SETUP (for Step 2) (FDD)

For this message, use the message sub-type entitled "Packet to CELL\_DCH from CELL\_FACH in PS" in Annex A.

Information element(s) to be changed are listed below:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time	Not Present
- Uplink DPCH Info - Secondary scrambling code	2

## RADIO BEARER SETUP (Step 2) (TDD)

For RADIO BEARER SETUP in step 2, use the message sub-type indicated as "Non speech in CS" found in Annex A or the RADIO BEARER SETUP message as found in clause 9 of TS 34.108, with the exception of the following:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time	Not Present
- Uplink DPCH timeslots and codes	
- First timeslot code list	A different code combination to that used in step 1.

## 8.2.1.18.5 Test requirement

After step 2 the UE shall transmit a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC specified in step 1.

After step 3 the UE shall communicate with the SS on the radio bearer specified in the RADIO BEARER SETUP message in step 1.

## 8.2.1.19 Radio Bearer Establishment from CELL\_DCH to CELL\_PCH: Success

## 8.2.1.19.1 Definition

## 8.2.1.19.2 Conformance requirement

If the UE receives:

- a RADIO BEARER SETUP message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_PCH, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency.
- 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS 25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.

...

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER SETUP message, the UE shall:

- 1> transmit a RADIO BEARER SETUP COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

#### 8.2.1.19.3 Test purpose

To conform that the UE transmits a RADIO BEARER SETUP COMPLETE message and enters CELL\_PCH state after it received a RADIO BEARER SETUP message for the transition from CELL\_DCH to CELL\_PCH from SS. SS calls for generic procedure C.4 to check that UE is in CELL\_PCH state.

#### 8.2.1.19.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH\_DCH (state 6-7) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_DCH state. The SS transmits a RADIO BEARER SETUP message. The UE transmits RADIO BEARER SETUP COMPLETE message using AM RLC and enters CELL\_PCH state. SS calls for generic procedure C.4 to check that UE is in CELL\_PCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER SETUP	
2		→	RADIO BEARER SETUP COMPLETE	
3				The UE is in CELL_PCH state.
4		↔	CALL C.4	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

#### Specific Message Contents

##### RADIO BEARER SETUP (Step 1) (FDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3
Downlink information for each radio link - Primary CPICH info - Primary scrambling code	100

### RADIO BEARER SETUP (Step 1) (TDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3
Downlink information for each radio links - Primary CCPCH info -Cell parameters ID	4

#### 8.2.1.19.5 Test requirement

After step 1, the UE shall transmit a RADIO BEARER SETUP COMPLETE message on uplink DCCH using AM RLC.

After step 2, the UE shall enter CELL\_PCH state.

#### 8.2.1.20 Radio Bearer Establishment from CELL\_DCH to URA\_PCH: Success

##### 8.2.1.20.1 Definition

##### 8.2.1.20.2 Conformance requirement

If the UE receives:

- a RADIO BEARER SETUP message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters URA\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency.
- 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS 25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:

2> set the variable INVALID\_CONFIGURATION to TRUE.

...

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER SETUP message, the UE shall:

- 1> transmit a RADIO BEARER SETUP COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

#### 8.2.1.20.3 Test purpose

To confirm that the UE transmits a RADIO BEARER SETUP COMPLETE message and enters URA\_PCH state after it received a RADIO BEARER SETUP message for the transition from CELL\_DCH to URA\_PCH from SS.

#### 8.2.1.20.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH\_DCH (state 6-7) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_DCH state. The SS transmits a RADIO BEARER SETUP message. The UE transmits a RADIO BEARER SETUP COMPLETE message using AM RLC and enters URA\_PCH state. SS calls for generic procedure C.5 to check that UE is in URA\_PCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER SETUP	
2		→	RADIO BEARER SETUP COMPLETE	
3				The UE is in URA_PCH state.
4		↔	CALL C.5	If the test result of C.5 indicates that UE is in URA_PCH state, the test passes, otherwise it fails.

#### Specific Message Contents

##### RADIO BEARER SETUP (Step 1) (FDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3
Downlink information for each radio link - Primary CPICH info - Primary scrambling code	100

### RADIO BEARER SETUP (Step 1) (TDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3
Downlink information for each radio links - Primary CCPCH info -Cell parameters ID	4

#### 8.2.1.20.5 Test requirement

After step 1, the UE shall transmit a RADIO BEARER SETUP COMPLETE message on uplink DCCH using AM RLC.

After step 2, the UE shall enter URA\_PCH state.

#### 8.2.1.21 Void

#### 8.2.1.22 Radio Bearer Establishment for transition from CELL\_DCH to CELL\_FACH (Frequency band modification): Success

##### 8.2.1.22.1 Definition

##### 8.2.1.22.2 Conformance requirement

If the UE receives:

-a RADIO BEARER SETUP message;

it shall:

1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

1> enter a state according to TS25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_FACH state, the UE shall, after the state transition:

1> if the IE "Frequency info" is included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS5.304 on that frequency.

1> if the IE "Frequency info" is not included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS5.304.

1> if the received reconfiguration message included the IE "Primary CPICH info", and the UE selects another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info" :

2> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "Cell reselection";

- 2> when the cell update procedure completed successfully:
  - 3> if the UE is in CELL\_PCH or URA\_PCH state:
    - 4> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "Uplink data transmission";
    - 4> proceed as below.
- 1> select PRACH according to TS25.331 subclause 8.5.17;
- 1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;
- 1> use the transport format set given in system information;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> ignore that IE and stop using DRX.
- 1> if the contents of the variable C\_RNTI is empty:
  - 2> perform a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Cell reselection";
  - 2> when the cell update procedure completed successfully:
    - 3> if the UE is in CELL\_PCH or URA\_PCH state:
      - 4> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "Uplink data transmission";
      - 4> proceed as below.

In case the procedure was triggered by reception of a RADIO BEARER SETUP message, the UE shall:

- 1> transmit a RADIO BEARER SETUP COMPLETE message on the uplink DCCH using AM RLC, using the new configuration after the state transition.
- 1> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

### 8.2.1.22.3 Test purpose

1. To confirm that the UE transits from CELL\_DCH to CELL\_FACH according to the RADIO BEARER SETUP message.
2. To confirm that the UE transmits RADIO BEARER SETUP COMPLETE message on the uplink DCCH using AM RLC on a common physical channel in a different frequency.

### 8.2.1.22.4 Method of test

#### Initial Condition

System Simulator: 2 cells–Cell 1 is active and cell 6 is inactive.

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

## Test Procedure

Table 8.2.1.22

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-72	Off	-55

Table 8.2.1.22 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in idle mode state of cell 1 and the SS configures its downlink transmission power setting according to columns "T0" in table 8.2.1.22. The SS modifies the contents of System formation block 11 in cell 1, so that include IE "Inter frequency measurement system information" about cell 6. The SS and UE execute procedure P5. Next The SS and the UE execute procedure P9. The SS switches its downlink transmission power settings to columns "T1" and transmits a RADIO BEARER SETUP message with no IE "Frequency info" to the UE. After the UE receives this message, it transits from CELL\_DCH in cell 1 to CELL\_FACH state in cell 6, and initiates CELL UPDATE procedure with IE "Cell update cause" set to "cell reselection". Finally the UE transmits a RADIO BEARER SETUP COMPLETE message using AM RLC in cell 6. The SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	System Information Block type 11	The UE is in idle mode and camped on cell 1. The contents of System Information Block type 11 message are different from the default settings and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.1.22.
1a	←→		SS executes procedure P5 (clause 7.4.2.2.2) specified in TS 34.108.	
1b	←→		SS executes procedure) P9 (clause 7.4.2.4.2) specified in TS 34.108.	
2				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.1.22.
3			Void	
4		←	RADIO BEARER SETUP	Not including frequency information.
5		→	CELL UPDATE	The IE "Cell update cause" is set to "cell reselection".
6		←	CELL UPDATE CONFIRM	Including the IE "New C-RNTI"
7		→	UTRAN MOBILITY INFORMATION CONFIRM	
8		→	RADIO BEARER SETUP COMPLETE	The UE sends this message on a common physical channel in cell 6.
9	←→		CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

## Specific Message Contents

## System Information Block type 11 (Step 1)

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	0dB
- UARFCN uplink(Nu)	Not present
- UARFCN downlink(Nd)	FALSE
- Cell info	FDD
- Cell individual offset	Set to same code as used for cell 6
- Reference time difference to cell	
- Read SFN indicator	Not present
- CHOICE mode	FDD
- Primary CPICH info	Not present
- Primary scrambling code	
- Primary CPICH Tx power	0dB
- Cell Selection and Re-selection Info	Not present
- Qoffset1s,n	Reference to table 6.1.1
- Qoffset2s,n	Not present
- Maximum allowed UL TX power	Not present
- HCS neighbouring cell information	FDD
- CHOICE mode	Reference to table 6.1.1
- Qqualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

## RADIO BEARER SETUP (Step 4)

Use the message sub-type indicated as "Packet to CELL\_FACH from CELL\_DCH in PS" found in [9] TS 34.108 clause 9 with the following exception:

Information Element	Value/remark
Frequency info	Not Present
Downlink information for each radio link	Not Present

## CELL UPDATE (Step 5)

The contents of CELL UPDATE message are identical as "Contents of CELL UPDATE message" as found in [9] TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"cell reselection"

## CELL UPDATE CONFIRM (Step 6)

The contents of CELL UPDATE CONFIRM message are identical as "CELL UPDATE CONFIRM message" as found in [9] TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
New C-RNTI	0000 0000 0000 0001B

## UTRAN MOBILITY UPDATE CONFIRM (Step 7)

The contents of UTRAN MOBILITY UPDATE CONFIRM message are identical as "UTRAN MOBILITY UPDATE CONFIRM message" as found in [9] TS 34.108 clause 9.

### 8.2.1.22.5 Test requirement

After step 4 the UE shall transmit a CELL UPDATE message on the CCCH in cell 6.

After step 6 the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC in cell 6.

After step 7 the UE shall transmit a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC in cell 6.

After step 8 the UE shall be in CELL\_FACH state of cell 6.

## 8.2.1.23 Radio Bearer Establishment for transition from CELL\_FACH to CELL\_DCH (Frequency band modification): Success

### 8.2.1.23.1 Definition

### 8.2.1.23.2 Conformance requirement

If the UE receives:

- a RADIO BEARER SETUP message;

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS25.214;
- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_DCH state, the UE shall, after the state transition:

- 1> remove any C-RNTI from MAC;
- 1> clear the C\_RNTI.

In case the procedure was triggered by reception of a RADIO BEARER SETUP message, the UE shall:

- 1> transmit a RADIO BEARER SETUP COMPLETE message on the uplink DCCH using AM RLC, using the new configuration after the state transition.
- 1> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

### 8.2.1.23.3 Test purpose

1. To confirm that the UE transits from CELL\_FACH to CELL\_DCH according to the RADIO BEARER SETUP message.
2. To confirm that the UE transmits RADIO BEARER SETUP COMPLETE message on the uplink DCCH using AM RLC on a dedicated physical channel in a different frequency.

## 8.2.1.23.4 Method of test

## Initial Condition

System Simulator: 2 cells–Cell 1 is active and cell 6 is inactive.

UE: CS-DCCH\_FACH (state 6-6) or PS\_DCCH\_FACH (state 6-8) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

Table 8.2.1.23

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-55	Off	-55

Table 8.2.1.23 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in CELL\_FACH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.1.23. The SS switches its downlink transmission power settings to columns "T1" and transmits a RADIO BEARER SETUP message including new frequency information to the UE. After the UE receives this message, it configures them and establishes the required radio access bearers and moves into cell 6. Finally the UE transmits a RADIO BEARER SETUP COMPLETE message using AM RLC. The SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The initial state of UE is in CELL_FACH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.1.23.
2				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.1.23.
3		←	RADIO BEARER SETUP	Including new frequency information.
4		→	RADIO BEARER SETUP COMPLETE	The UE sends this message in cell 6.
5		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

## RADIO BEARER SETUP (Step 3)

The contents of RADIO BEARER SETUP message in this test case is identical the message sub-type indicated by "Packet to CELL\_DCH from CELL\_FACH in PS" or "Non speech from CELL\_FACH to CELL\_DCH in CS" or "Speech from CELL\_FACH to CELL\_DCH in CS" in [9] TS 34.108 clause 9, with the following exception:

Information Element	Value/remark
Frequency info - UARFCN uplink(Nu) - UARFCN downlink(Nd) Downlink information for each radio links - Primary CPICH info - Primary Scrambling Code	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6  350

#### 8.2.1.23.5 Test requirement

After step 3 the UE shall transmit a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC in cell 6.

After step 4 the UE shall be in CELL\_DCH state of cell 6.

#### 8.2.1.24 Radio Bearer Establishment for transition from CELL\_DCH to CELL\_DCH (Frequency band modification): Success

##### 8.2.1.24.1 Definition

##### 8.2.1.24.2 Conformance requirement

If the UE receives:

-a RADIO BEARER SETUP message;

it shall:

1> perform the physical layer synchronisation procedure as specified in TS25.214;

1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

1> enter a state according to TS25.331 subclause 8.6.3.3.

If the UE was in CELL\_DCH state upon reception of the reconfiguration message and remains in CELL\_DCH state, the UE shall:

1> if the IE "Uplink DPCH Info" is absent, not change its current UL Physical channel configuration;

1> if the IE "Downlink information for each radio link" is absent, not change its current DL Physical channel configuration.

In case the procedure was triggered by reception of a RADIO BEARER SETUP message, the UE shall:

1> transmit a RADIO BEARER SETUP COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

##### 8.2.1.24.3 Test purpose

1. To confirm that the UE transits from CELL\_DCH to CELL\_DCH according to the RADIO BEARER SETUP message.
2. To confirm that the UE transmits the RADIO BEARER SETUP COMPLETE message on the uplink DCCH using AM RLC on a dedicated physical channel in a different frequency.

## 8.2.1.24.4 Method of test

## Initial Condition

System Simulator: 2 cells–Cell 1 is active and cell 6 is inactive.

CS-DCCH\_DCH (state 6-5) or PS\_DCCH\_DCH (state 6-7) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

Table 8.2.1.24

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/ 3.84 MHz	-55	-72	Off	-55

Table 8.2.1.24 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in CELL\_DCH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.1.24. The SS switches its downlink transmission power settings to columns "T1" and transmits a RADIO BEARER SETUP message including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code which is assigned to P-CPICH of cell 6. The UE selects cell 6 and establish a radio access bearer after receiving this message, and then remains CELL\_DCH state. The UE transmits a RADIO BEARER SETUP COMPLETE message using AM RLC after completes configuration according to receiving RADIO BEARER SETUP message. Upon completion of the procedure, the SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in CELL_DCH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.1.24.
2				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.1.24.
3		←	RADIO BEARER SETUP	Including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6
4				The UE select cell 6 and establish a radio access bearer.
5		→	RADIO BEARER SETUP COMPLETE	The UE sends this message on a dedicated physical channel in cell 6.
6		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

## RADIO BEARER SETUP (Step 3)

The contents of RADIO BEARER SETUP message in this test case is identical the message sub-type indicated by "Packet to CELL\_DCH from CELL\_DCH in PS" or "Speech in CS" in TS34.108 clause 9 Default Message Contents, or identical the message sub-type indicated by "Non speech in CS" in [9] TS 34.108 clause 9, with the following exception:

Information Element	Value/remark
Frequency info - UARFCN uplink(Nu) - UARFCN downlink(Nd)	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
Downlink information for each radio links - Primary CPICH info - Primary Scrambling Code	Set to same code as used for cell 6

## 8.2.1.24.5 Test requirement

After step 4 the UE shall transmit a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC in cell 6.

After step 5 the UE shall be in CELL\_DCH state of cell 6.

## 8.2.1.25 Radio Bearer Establishment for transition from CELL\_FACH to CELL\_FACH (Frequency band modification): Success

## 8.2.1.25.1 Definition

## 8.2.1.25.2 Conformance requirement

If the UE receives:

-a RADIO BEARER SETUP message;

it shall:

1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

1> enter a state according to TS25.331 subclause 8.6.3.3.

If the UE was in CELL\_FACH state upon reception of the reconfiguration message and remains in CELL\_FACH state, the UE shall:

1> if the IE "Frequency info" is included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304 on that frequency;

2> if the received reconfiguration message included the IE "Primary CPICH info", and the UE selected another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info":

3> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "cell reselection";

3> when the cell update procedure completed successfully:

4> proceed as below.

In case the procedure was triggered by reception of a RADIO BEARER SETUP message, the UE shall:

1> transmit a RADIO BEARER SETUP COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

## 8.2.1.25.3 Test purpose

1. To confirm that the UE transits from CELL\_FACH to CELL\_FACH according to the RADIO BEARER SETUP message.
2. To confirm that the UE transmits RADIO BEARER SETUP COMPLETE message on the uplink DCCH using AM RLC on a common physical channel in a different frequency.

## 8.2.1.25.4 Method of test

## Initial Condition

System Simulator: 2 cells – Cell 1 is active and cell 6 is inactive.

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS".

## Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

## System Information Block type 11

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	Same downlink UARFCN as used for cell 6
- UARFCN uplink(Nu)	
- UARFCN downlink(Nd)	0dB
- Cell info	
- Cell individual offset	Not present
- Reference time difference to cell	
- Read SFN indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH info	Set to same code as used for cell 6
- Primary scrambling code	
- Primary CPICH Tx power	Not present
- Cell Selection and Re-selection Info	0dB
- Qoffset1 <sub>s,n</sub>	
- Qoffset2 <sub>s,n</sub>	Not present
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	Not present
- CHOICE mode	FDD
- Qqualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

## Test Procedure

Table 8.2.1.25

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-72	Off	-55

Table 8.2.1.25 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in CELL\_FACH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.1.25. SS asks operator to make an outgoing call. The SS and UE execute procedure P6. Next The SS and the UE execute procedure P10. The SS switches its downlink transmission power settings to columns "T1" and transmits a RADIO BEARER SETUP message including IE "Frequency info" set to frequency information of cell 6 and no IE "Primary CPICH info". The UE selects cell 6 and initiates CELL UPDATE procedure with IE "Cell update cause" set to "cell reselection". The UE remains CELL\_FACH state. The UE transmits a RADIO BEARER SETUP COMPLETE message using AM RLC after completes configuration according to receiving RADIO BEARER SETUP message. Upon completion of the procedure, the SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.1.25. SS requests operator to make an outgoing call.
2	←→		SS executes procedure P6 (clause 7.4.2.2.2) specified in TS 34.108.	
3	←→		SS executes procedure P10 (clause 7.4.2.4.2) specified in TS 34.108.	
4				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.1.25.
5		←	RADIO BEARER SETUP	Including IE "Frequency info" set to frequency information of cell 6 and no IE "Primary CPICH info"
6		→	CELL UPDATE	The IE "Cell update cause" is set to "cell reselection".
7		←	CELL UPDATE CONFIRM	Including the IE "New C-RNTI"
8		→	UTRAN MOBILITY INFORMATION CONFIRM	
9		→	RADIO BEARER SETUP COMPLETE	The UE sends this message on a common physical channel in cell 6.
10	←→		CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

#### Specific Message Contents

##### RADIO BEARER SETUP (Step 5)

The contents of RADIO BEARER SETUP message in this test case are identical the message sub-type indicated by "Packet to CELL\_FACH from CELL\_FACH in PS" in [9] TS 34.108 clause 9, with the following exception:

Information Element	Value/remark
Frequency info	Not present
Downlink information for each radio links	Not present

### CELL UPDATE (Step 6)

The contents of CELL UPDATE message are identical as "Contents of CELL UPDATE message" as found in [9] TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"cell reselection"

### CELL UPDATE CONFIRM (Step 7)

The contents of CELL UPDATE CONFIRM message are identical as "CELL UPDATE CONFIRM message" as found in [9] TS 34.108 clause 9. with the following exceptions:

Information Element	Value/remark
New C-RNTI	0000 0000 0000 0001B

### UTRAN MOBILITY UPDATE CONFIRM (Step 8)

The contents of UTRAN MOBILITY UPDATE CONFIRM message are identical as "UTRAN MOBILITY UPDATE CONFIRM message" as found in [9] TS 34.108 clause 9.

#### 8.2.1.25.5 Test requirement

After step 5 the UE shall transmit a CELL UPDATE message on the CCCH in cell 6.

After step 7 the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC in cell 6.

After step 8 the UE shall transmit a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC in cell 6.

After step 9 the UE shall be in CELL\_FACH state in cell 6.

## 8.2.2 Radio Bearer Reconfiguration

### 8.2.2.1 Radio Bearer Reconfiguration from CELL\_DCH to CELL\_DCH: Success

#### 8.2.2.1.1 Definition

#### 8.2.2.1.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

1> enter a state according to TS 25.331 subclause 8.6.3.3.

If the UE was in CELL\_DCH state upon reception of the reconfiguration message and remains in CELL\_DCH state, the UE shall:

- 1> if the IE "Uplink DPCH Info" is absent, not change its current UL Physical channel configuration;
- 1> if the IE "Downlink information for each radio link" is absent, not change its current DL Physical channel configuration.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message, the UE shall:

- 1> transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

### 8.2.2.1.3 Test purpose

To confirm that the UE reconfigures the radio bearers according to a RADIO BEARER RECONFIGURATION message, which indicates a change of UL scrambling code, change of U-RNTI and RLC parameters.

### 8.2.2.1.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

The UE is in CELL\_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE, which commands a change of UL scrambling code, change of U-RNTI and RLC parameters to be performed. The UE reconfigures the new parameter and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC. The SS verifies that the UE starts to transmit periodic RLC STATUS PDUs.

The SS transmits a new RADIO BEARER RECONFIGURATION message to the UE, which commands the UE to reconfigure RLC parameters. The UE reconfigures the new parameters and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC. The SS verifies that the UE does not transmit any periodic RLC STATUS PDUs. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1			Void	
2			Void	
3		←	RADIO BEARER RECONFIGURATION	UL scrambling code is modified. U-RNTI and RLC configuration is modified.
4		→	RADIO BEARER RECONFIGURATION COMPLETE	
5		SS		The SS verifies that periodic RLC STATUS PDUs are received from the UE on AM RLC radio bearers each 400 ms during at least 5 seconds.
6		←	RADIO BEARER RECONFIGURATION	RLC configuration is modified.
7			RADIO BEARER RECONFIGURATION COMPLETE	
8		SS		The SS verifies that no periodic RLC STATUS PDUs are received from the UE on AM RLC radio bearers during at least 5 seconds.
9		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

Specific Message Contents

#### RADIO BEARER RECONFIGURATION (FDD) (Step 3)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical to the message sub-type titled as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A, with the following exceptions:

Information Element		Value/remark
New U-RNTI - SRNC identity - S-RNTI		0000 0000 0010B 0000 0000 0000 0000 0010B
RB information to reconfigure list - RB information to reconfigure - RB identity - PDCP info - PDCP SN info - RLC info - CHOICE Uplink RLC mode - Transmission RLC discard - SDU discard mode - MAX_DAT - Transmission window size - Timer_RST - Max_RST - Polling info - Timer_poll_prohibit - Timer_poll - Poll_PDU - Poll_SDU - Last transmission PDU poll - Last retransmission PDU poll - Poll_Window - Timer_poll_periodic - CHOICE Downlink RLC mode - In-sequence delivery - Receiving window size - Downlink RLC status info - Timer_status_prohibit - Timer_EPC - Missing PDU indicator - Timer_STATUS_periodic - RB mapping info - RB stop/continue - RB information to reconfigure - RB identity - PDCP info - PDCP SN info - RLC info - CHOICE Uplink RLC mode - Transmission RLC discard - SDU discard mode - MAX_DAT - Transmission window size - Timer_RST - Max_RST - Polling info - Timer_poll_prohibit - Timer_poll - Poll_PDU - Poll_SDU - Last transmission PDU poll - Last retransmission PDU poll - Poll_Window - Timer_poll_periodic - CHOICE Downlink RLC mode - In-sequence delivery - Receiving window size - Downlink RLC status info - Timer_status_prohibit - Timer_EPC - Missing PDU indicator - Timer_STATUS_periodic - RB mapping info - RB stop/continue - RB information to reconfigure		(AM DCCH for RRC) 2 Not Present Not Present AM RLC No discard 15 128 400 4 150 150 Not present 1 TRUE TRUE 99 Not Present AM RLC TRUE 128 200 Not present TRUE 400 Not Present Not Present (AM DCCH for NAS_DT High priority) 3 Not Present Not Present AM RLC No discard 15 128 400 4 150 150 Not present 1 TRUE TRUE 99 Not Present AM RLC TRUE 128 200 Not present TRUE 400 Not Present Not Present (AM DCCH for NAS_DT Low priority)

<ul style="list-style-type: none"> <li>- RB identity</li> <li>- PDCP info</li> <li>- PDCP SN info</li> <li>- RLC info             <ul style="list-style-type: none"> <li>- CHOICE Uplink RLC mode                 <ul style="list-style-type: none"> <li>- Transmission RLC discard                     <ul style="list-style-type: none"> <li>- SDU discard mode</li> <li>- MAX_DAT</li> </ul> </li> <li>- Transmission window size</li> </ul> </li> <li>- Timer_RST</li> <li>- Max_RST</li> <li>- Polling info                 <ul style="list-style-type: none"> <li>- Timer_poll_prohibit</li> <li>- Timer_poll</li> <li>- Poll_PDU</li> <li>- Poll_SDU</li> <li>- Last transmission PDU poll</li> <li>- Last retransmission PDU poll</li> <li>- Poll_Window</li> <li>- Timer_poll_periodic</li> </ul> </li> <li>- CHOICE Downlink RLC mode                 <ul style="list-style-type: none"> <li>- In-sequence delivery</li> <li>- Receiving window size</li> <li>- Downlink RLC status info                     <ul style="list-style-type: none"> <li>- Timer_status_prohibit</li> <li>- Timer_EPC</li> <li>- Missing PDU indicator</li> <li>- Timer_STATUS_periodic</li> </ul> </li> </ul> </li> </ul> </li> <li>- RB mapping info</li> <li>- RB stop/continue</li> <li>- RB information to reconfigure</li> <li>- RB identity</li> <li>- PDCP info</li> <li>- PDCP SN info</li> <li>- RLC info             <ul style="list-style-type: none"> <li>- CHOICE Uplink RLC mode                 <ul style="list-style-type: none"> <li>- Transmission RLC discard                     <ul style="list-style-type: none"> <li>- SDU discard mode</li> <li>- MAX_DAT</li> </ul> </li> <li>- Transmission window size</li> </ul> </li> <li>- Timer_RST</li> <li>- Max_RST</li> <li>- Polling info                 <ul style="list-style-type: none"> <li>- Timer_poll_prohibit</li> <li>- Timer_poll</li> <li>- Poll_PDU</li> <li>- Poll_SDU</li> <li>- Last transmission PDU poll</li> <li>- Last retransmission PDU poll</li> <li>- Poll_Window</li> <li>- Timer_poll_periodic</li> </ul> </li> <li>- CHOICE Downlink RLC mode                 <ul style="list-style-type: none"> <li>- In-sequence delivery</li> <li>- Receiving window size</li> <li>- Downlink RLC status info                     <ul style="list-style-type: none"> <li>- Timer_status_prohibit</li> <li>- Timer_EPC</li> <li>- Missing PDU indicator</li> <li>- Timer_STATUS_periodic</li> </ul> </li> </ul> </li> </ul> </li> <li>- RB mapping info</li> <li>- RB stop/continue</li> </ul>	<p>A3</p>	<p>4</p> <p>Not Present</p> <p>Not Present</p> <p>AM RLC</p> <p>No discard</p> <p>15</p> <p>128</p> <p>400</p> <p>4</p> <p>150</p> <p>150</p> <p>Not present</p> <p>1</p> <p>TRUE</p> <p>TRUE</p> <p>99</p> <p>Not Present</p> <p>AM RLC</p> <p>TRUE</p> <p>128</p> <p>200</p> <p>Not Present</p> <p>TRUE</p> <p>400</p> <p>Not Present</p> <p>Not Present</p> <p>(AM DTCH)</p> <p>20</p> <p>Not Present</p> <p>Not Present</p> <p>AM RLC</p> <p>No discard</p> <p>15</p> <p>128</p> <p>400</p> <p>4</p> <p>150</p> <p>150</p> <p>Not Present</p> <p>1</p> <p>TRUE</p> <p>TRUE</p> <p>99</p> <p>Not Present</p> <p>AM RLC</p> <p>TRUE</p> <p>128</p> <p>200</p> <p>Not Present</p> <p>TRUE</p> <p>400</p> <p>Not Present</p> <p>Not Present</p>
<p>UL Transport channel information for all transport channels</p>		<p>Not Present</p>
<p>Added or Reconfigured UL TrCH information</p>		<p>Not Present</p>
<p>CHOICE mode</p>		<p>Not Present</p>
<p>DL Transport channel information common for all transport channel</p>		<p>Not Present</p>
<p>Deleted DL TrCH information</p>		<p>Not Present</p>

Added or Reconfigured DL TrCH information		Not Present
Frequency info		Not Present
Maximum allowed UL TX power		Not Present
CHOICE channel requirement - Scrambling code number		Uplink DPCH info 1
CHOICE Mode - Downlink PDSCH information		FDD Not Present
Downlink information common for all radio links Downlink information per radio link list -Downlink information for each radio link - Primary CPICH info - Primary scrambling code		Not present    Set to same code as used for cell 1

Condition	Explanation
A1	This IE need for "Non speech in CS"
A2	This IE need for "Speech in CS"
A3	This IE need for "Packet to CELL_DCH from CELL_DCH in PS"

### RADIO BEARER RECONFIGURATION (TDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical to the message sub-type titled "Packet to CELL\_DCH from CELL\_DCH in PS" in Annex A, with the following exceptions:

Information Element	Value/remark
Uplink DPCH timeslots and codes - First timeslot code list	Assigned by SS
Downlink information common for all radio links - Downlink DPCH info common for all RL - Timing Indicator	Maintain

### RADIO BEARER RECONFIGURATION (FDD) (Step 6)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical to the message sub-type titled as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A, with the following exceptions:

Information Element	Condition	Value/remark
RB information to reconfigure list		
- RB information to reconfigure		(AM DCCH for RRC)
- RB identity		2
- PDCP info		Not Present
- PDCP SN info		Not Present
- RLC info		
- CHOICE Uplink RLC mode		AM RLC
- Transmission RLC discard		
- SDU discard mode		No discard
- MAX_DAT		15
- Transmission window size		128
- Timer_RST		500
- Max_RST		4
- Polling info		
- Timer_poll_prohibit		200
- Timer_poll		200
- Poll_PDU		Not present
- Poll_SDU		1
- Last transmission PDU poll		TRUE
- Last retransmission PDU poll		TRUE
- Poll_Window		99
- Timer_poll_periodic		Not Present
- CHOICE Downlink RLC mode		AM RLC
- In-sequence delivery		TRUE
- Receiving window size		128
- Downlink RLC status info		
- Timer_status_prohibit		200
- Timer_EPC		Not present
- Missing PDU indicator		TRUE
- Timer_STATUS_periodic		Not Present
- RB mapping info		Not Present
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for NAS_DT High priority)
- RB identity		3
- PDCP info		Not Present
- PDCP SN info		Not Present
- RLC info		
- CHOICE Uplink RLC mode		AM RLC
- Transmission RLC discard		
- SDU discard mode		No discard
- MAX_DAT		15
- Transmission window size		128
- Timer_RST		500
- Max_RST		4
- Polling info		
- Timer_poll_prohibit		200
- Timer_poll		200
- Poll_PDU		Not present
- Poll_SDU		1
- Last transmission PDU poll		TRUE
- Last retransmission PDU poll		TRUE
- Poll_Window		99
- Timer_poll_periodic		Not Present
- CHOICE Downlink RLC mode		AM RLC
- In-sequence delivery		TRUE
- Receiving window size		128
- Downlink RLC status info		
- Timer_status_prohibit		200
- Timer_EPC		Not present
- Missing PDU indicator		TRUE
- Timer_STATUS_periodic		Not Present
- RB mapping info		Not Present
- RB stop/continue		Not Present
- RB information to reconfigure		(AM DCCH for NAS_DT Low priority)
- RB identity		4
- PDCP info		Not Present
- PDCP SN info		Not Present

Information Element	Condition	Value/remark
<ul style="list-style-type: none"> <li>- RLC info</li> <li>- CHOICE Uplink RLC mode <ul style="list-style-type: none"> <li>- Transmission RLC discard</li> <li>- SDU discard mode</li> <li>- MAX_DAT</li> </ul> </li> <li>- Transmission window size</li> <li>- Timer_RST</li> <li>- Max_RST</li> <li>- Polling info <ul style="list-style-type: none"> <li>- Timer_poll_prohibit</li> <li>- Timer_poll</li> <li>- Poll_PDU</li> <li>- Poll_SDU</li> <li>- Last transmission PDU poll</li> <li>- Last retransmission PDU poll</li> <li>- Poll_Window</li> <li>- Timer_poll_periodic</li> </ul> </li> <li>- CHOICE Downlink RLC mode <ul style="list-style-type: none"> <li>- In-sequence delivery</li> <li>- Receiving window size</li> <li>- Downlink RLC status info <ul style="list-style-type: none"> <li>- Timer_status_prohibit</li> <li>- Timer_EPC</li> <li>- Missing PDU indicator</li> <li>- Timer_STATUS_periodic</li> </ul> </li> </ul> </li> <li>- RB mapping info</li> <li>- RB stop/continue</li> <li>- RB information to reconfigure</li> <li>- RB identity</li> <li>- PDCP info</li> <li>- PDCP SN info</li> <li>- RLC info <ul style="list-style-type: none"> <li>- CHOICE Uplink RLC mode <ul style="list-style-type: none"> <li>- Transmission RLC discard</li> <li>- SDU discard mode</li> <li>- MAX_DAT</li> </ul> </li> <li>- Transmission window size</li> <li>- Timer_RST</li> <li>- Max_RST</li> <li>- Polling info <ul style="list-style-type: none"> <li>- Timer_poll_prohibit</li> <li>- Timer_poll</li> <li>- Poll_PDU</li> <li>- Poll_SDU</li> <li>- Last transmission PDU poll</li> <li>- Last retransmission PDU poll</li> <li>- Poll_Window</li> <li>- Timer_poll_periodic</li> </ul> </li> <li>- CHOICE Downlink RLC mode <ul style="list-style-type: none"> <li>- In-sequence delivery</li> <li>- Receiving window size</li> <li>- Downlink RLC status info <ul style="list-style-type: none"> <li>- Timer_status_prohibit</li> <li>- Timer_EPC</li> <li>- Missing PDU indicator</li> <li>- Timer_STATUS_periodic</li> </ul> </li> </ul> </li> <li>- RB mapping info</li> <li>- RB stop/continue</li> </ul> </li> </ul>	A3	<ul style="list-style-type: none"> <li>AM RLC</li> <li>No discard</li> <li>15</li> <li>128</li> <li>500</li> <li>4</li> <li>200</li> <li>200</li> <li>Not present</li> <li>1</li> <li>TRUE</li> <li>TRUE</li> <li>99</li> <li>Not Present</li> <li>AM RLC</li> <li>TRUE</li> <li>128</li> <li>200</li> <li>Not Present</li> <li>TRUE</li> <li>Not Present</li> <li>Not Present</li> <li>Not Present</li> <li>(AM DTCH)</li> <li>20</li> <li>Not Present</li> <li>Not Present</li> <li>AM RLC</li> <li>No discard</li> <li>15</li> <li>128</li> <li>500</li> <li>4</li> <li>200</li> <li>200</li> <li>Not Present</li> <li>1</li> <li>TRUE</li> <li>TRUE</li> <li>99</li> <li>Not Present</li> <li>AM RLC</li> <li>TRUE</li> <li>128</li> <li>200</li> <li>Not Present</li> <li>TRUE</li> <li>Not Present</li> <li>Not Present</li> <li>Not Present</li> </ul>
UL Transport channel information for all transport channels		Not Present
Added or Reconfigured UL TrCH information		Not Present
CHOICE mode		Not Present
DL Transport channel information common for all transport channel		Not Present
Deleted DL TrCH information		Not Present
Added or Reconfigured DL TrCH information		Not Present
Frequency info		Not Present

Information Element	Condition	Value/remark
Maximum allowed UL TX power		Not Present
CHOICE channel requirement		Not Present
CHOICE Mode - Downlink PDSCH information		FDD Not Present
Downlink information common for all radio links Downlink information per radio link list - Downlink information for each radio link - Primary CPICH info - Primary scrambling code		Not Present    Set to same code as used for cell 1

Condition	Explanation
A1	This IE need for "Non speech in CS"
A2	This IE need for "Speech in CS"
A3	This IE need for "Packet to CELL_DCH from CELL_DCH in PS"

#### 8.2.2.1.5 Test requirement

After step 3 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the new DPCH after the specified activation time has expired.

After step 4, the UE shall start transmitting periodical RLC STATUS PDUs.

After step 6, the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message.

After step 7, the UE shall stop transmitting periodical RLC STATUS PDUs.

### 8.2.2.2 Radio Bearer Reconfiguration from CELL\_DCH to CELL\_DCH: Failure (Unsupported configuration)

#### 8.2.2.2.1 Definition

#### 8.2.2.2.2 Conformance requirement

If the UTRAN instructs the UE to use a configuration, which it does not support and/or if the received message causes the variable UNSUPPORTED\_CONFIGURATION to be set to TRUE, the UE shall:

- 1> transmit a failure response as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "configuration unsupported".
- 1> set the variable UNSUPPORTED\_CONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a RADIO BEARER RECONFIGURATION message:

...

2> transmit a RADIO BEARER RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.6, 8.2.2.9.

#### 8.2.2.2.3 Test purpose

To confirm that the UE transmits a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC if the received RADIO BEARER RECONFIGURATION message includes unsupported configuration parameters.

#### 8.2.2.2.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE, which includes unsupported configuration parameters for the UE. The UE shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC which is set to "configuration unsupported" in IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER RECONFIGURATION	Including unsupported configuration by the UE
2		→	RADIO BEARER RECONFIGURATION FAILURE	The UE does not change the radio bearer.
3		→	MEASUREMENT REPORT	

#### Specific Message Contents

##### MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

### MEASUREMENT REPORT (Step 0b and 3)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

### RADIO BEARER RECONFIGURATION (FDD) (Step 1)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info	
- UARFCN uplink (Nu)	0
- UARFCN downlink (Nd)	950

### RADIO BEARER RECONFIGURATION (TDD) (Step 1)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info	
- UARFCN (Nt)	0

### RADIO BEARER RECONFIGURATION FAILURE (Step 2)

The contents of RADIO BEARER RECONFIGURATION FAILURE message in this test case is the same as the RADIO BEARER RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Configuration unsupported

#### 8.2.2.2.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 1 the UE shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC with the value "configuration unsupported" set in IE "failure cause".

After step 2, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

#### 8.2.2.3 Radio Bearer Reconfiguration from CELL\_DCH to CELL\_DCH: Failure (Physical channel failure and reversion to old configuration)

##### 8.2.2.3.1 Definition

##### 8.2.2.3.2 Conformance requirement

When a physical dedicated channel establishment is initiated by the UE, the UE shall start a timer T312 and wait for layer 1 to indicate N312 "in sync" indications. On receiving N312 "in sync" indications, the physical channel is considered established and the timer T312 is stopped and reset.

If the timer T312 expires before the physical channel is established, the UE shall consider this as a "physical channel establishment failure".

If the received message caused the UE to be in CELL\_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

1> revert to the configuration prior to the reception of the message (old configuration);

...

1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

- 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 2> clear that entry;
- 2> set the IE "failure cause" to "physical channel failure".
- 1> set the variable ORDERED\_RECONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a RADIO BEARER RECONFIGURATION message:
  - ...
  - 2> transmit a RADIO BEARER RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.7, 8.2.2.9, 8.5.4.

#### 8.2.2.3.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, if the UE fails to reconfigure the radio bearer expires according to the RADIO BEARER RECONFIGURATION message before timer T312.

#### 8.2.2.3.4 Method of test

##### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

##### Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a RADIO BEARER RECONFIGURATION message including the new radio bearer parameters to the UE but it keeps its current dedicated physical channel configuration. The UE shall revert to the old configuration. Then the UE shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting value "physical channel failure" in IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER RECONFIGURATION	
2				SS does not reconfigure L1.
3		→	RADIO BEARER RECONFIGURATION FAILURE	The UE shall detect a failure to reconfigure the new radio bearer, and send this message using the old radio bearer configuration.
4		→	MEASUREMENT REPORT	

Specific Message Contents

#### MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

#### MEASUREMENT REPORT (Step 0b and 4)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

#### RADIO BEARER RECONFIGURATION (Step 1)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical to the message sub-type titled as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A.

#### RADIO BEARER RECONFIGURATION FAILURE (Step 2)

The contents of RADIO BEARER RECONFIGURATION FAILURE message in this test case is the same as the RADIO BEARER RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Physical channel failure

#### 8.2.2.3.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 2 the UE shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC setting value "physical channel failure" in IE "failure cause".

After step 3, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

#### 8.2.2.4 Radio Bearer Reconfiguration from CELL\_DCH to CELL\_DCH: Failure (Physical channel failure and cell reselection)

##### 8.2.2.4.1 Definition

##### 8.2.2.4.2 Conformance requirement

If the received message caused the UE to be in CELL\_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

- 1> revert to the configuration prior to the reception of the message (old configuration);
- 1> if the old configuration includes dedicated physical channels (CELL\_DCH state) and the UE is unable to revert to the old configuration:
  - 2> initiate a cell update procedure according to TS 25.331 subclause 8.3.1, using the cause "radio link failure";
  - 2> after the cell update procedure has completed successfully:
    - 3> proceed as below.
- ...
- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "physical channel failure".
- 1> set the variable ORDERED\_RECONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- includes "Physical channel information elements":

the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message using AM RLC.

The UE shall:

- 1> in case of reception of a RADIO BEARER RECONFIGURATION message:
  - ...
  - 2> transmit a RADIO BEARER RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.7, 8.2.2.9, 8.3.1.7.

### 8.2.2.4.3 Test purpose

To confirm that the UE transmits a RADIO BEARER SETUP FAILURE message after it completes a cell update procedure when the UE cannot reconfigure the new radio bearer and a subsequent failure to revert to the old configuration.

## 8.2.2.4.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a RADIO BEARER RECONFIGURATION message, which includes the new radio bearer parameters, to the UE. After the reception of the acknowledgement for the RADIO BEARER RECONFIGURATION message in SS, the SS shall not reconfigure dedicated physical channel in accordance with the settings in the message and release the previous configuration. The UE discovers that it cannot reconfigure the new radio bearer and wants to revert to the old configuration, but the UE cannot revert to the old configuration. The UE transmits a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "radio link failure". The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving a CELL UPDATE message. The UE transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC and subsequently transmits a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value "physical channel failure" to IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER RECONFIGURATION	
2				The SS does not reconfigure the dedicated physical channel in accordance with the RADIO BEARER RECONFIGURATION message and shall release the old configuration.
3		→	CELL UPDATE	The value "radio link failure" shall be set in IE "Cell update cause".
4				The SS configures the dedicated physical channel according to the IE "Physical channel information elements" included in the CELL UPDATE CONFIRM message.
5		←	CELL UPDATE CONFIRM	This message include IE "Physical channel information elements".
6		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
7		→	RADIO BEARER RECONFIGURATION FAILURE	The IE "failure cause" shall be set to "physical channel failure"
8		→	MEASUREMENT REPORT	

## Specific Message Contents

## MEASUREMENT CONTROL (Step 1a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

### MEASUREMENT REPORT (Step 1b and 13)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

### RADIO BEARER RECONFIGURATION message (Step 1)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical to the message sub-type titled as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as as found in Annex A.

## CELL UPDATE (Step 3)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"radio link failure"

## CELL UPDATE CONFIRM (Step 5) (FDD)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC State indicator	CELL_DCH
UplinkDPCH Info	Same as RADIO BEARER SETUP message used to move to initial condition
Downlink information for each radio links	Same as RADIO BEARER SETUP message used to move to initial condition

## CELL UPDATE CONFIRM (Step 5) (TDD)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_DCH
Uplink DPCH timeslots and codes	Same as RADIO BEARER SETUP message used to move to initial condition
Downlink information for each radio links	Same as RADIO BEARER SETUP message used to move to initial condition

## RADIO BEARER RECONFIGURATION FAILURE (Step 7)

The contents of RADIO BEARER RECONFIGURATION FAILURE message in this test case is the same as the RADIO BEARER RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	"physical channel failure"

## 8.2.2.4.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 2 the UE shall transmit a CELL UPDATE message on the CCCH with IE "Cell update cause" set to "radio link failure".

After step 5 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE on the uplink DCCH using AM RLC.

After step 6 the UE shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the IE "failure cause" to "physical channel failure".

After step 7, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

## 8.2.2.5 Radio Bearer Reconfiguration from CELL\_DCH to CELL\_DCH: Failure (Incompatible simultaneous reconfiguration)

### 8.2.2.5.1 Definition

### 8.2.2.5.2 Conformance requirement

If the received message is any of the messages:

- RADIO BEARER RECONFIGURATION; or

...

the UE shall:

- 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or

...

- 3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:

...

- 3> else:

- 4> reject the transaction; and

- 4> if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:

- 5> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

...

If the table "Rejected transactions" in the variable TRANSACTIONS is set due to the received message and the variable PROTOCOL\_ERROR\_REJECT is set to FALSE, the UE shall:

- 1> not apply the configuration contained in the received reconfiguration message;

- 1> transmit a failure response message as specified in subclause TS 25.331 8.2.2.9, setting the information elements as specified below:

- 2> include the IE "RRC transaction identifier"; and

- 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable TRANSACTIONS; and

- 2> clear that entry;

- 2> set the IE "failure cause" to "incompatible simultaneous reconfiguration".

- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a RADIO BEARER RECONFIGURATION message:

...

- 2> transmit a RADIO BEARER RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clauses 8.2.2.9, 8.2.2.12, 8.6.3.11.

#### 8.2.2.5.3 Test purpose

To confirm that if the UE receives a RADIO BEARER RECONFIGURATION message during a reconfiguring procedure due to a radio bearer message other than RADIO BEARER RECONFIGURATION, it shall keep its configuration as if the RADIO BEARER RECONFIGURATION message had not been received and complete the reconfiguration procedure according to the previously received message.

#### 8.2.2.5.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH\_DCH (state 6-5) or PS\_DCCH\_DCH (state 6-7) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a RADIO BEARER SETUP message to the UE. The SS transmits a RADIO BEARER RECONFIGURATION message before the "activation time" indicated in the RADIO BEARER SETUP message expires. When the UE receives the RADIO BEARER RECONFIGURATION message, the UE shall keep its current configuration as if it had not received the RADIO BEARER RECONFIGURATION message and shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the SS acknowledges the RADIO BEARER RECONFIGURATION FAILURE message, the UE reconfigures the new physical channel parameters upon the specified activation time and transmits a RADIO BEARER SETUP COMPLETE message on DCCH using AM RLC. UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER SETUP	
2		←	RADIO BEARER RECONFIGURATION	Sent before the "activation time" in step 1 has elapsed
3		→	RADIO BEARER RECONFIGURATION FAILURE	The UE does not change its configuration according to the RADIO BEARER RECONFIGURATION message in step 2.
4		→	RADIO BEARER SETUP COMPLETE	This message is on DCCH using AM RLC.
5		→	MEASUREMENT REPORT	

## Specific Message Contents

## MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	Acknowledged mode RLC
- Measurement Report Transfer Mode	Periodical Reporting
- Periodical Reporting / Event Trigger Reporting Mode	
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

## MEASUREMENT REPORT (Step 0b and 5)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

## RADIO BEARER SETUP (Step 1) (FDD)

For RADIO BEARER SETUP message in step 1, use the message sub-type indicated as "Non speech in CS" as found in Annex A or the RADIO BEARER SETUP message as found in clause 9 of TS 34.108, with following exceptions:

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8 ]
Uplink DPCH Info - Scrambling code number	1

## RADIO BEARER SETUP (Step 1) (TDD)

For RADIO BEARER SETUP message in step 1, use the message sub-type indicated as "Non speech in CS" as found in Annex A or the RADIO BEARER SETUP message as found in clause 9 of TS 34.108, with following exceptions:

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8 ]
Uplink DPCH timeslots and codes - First timeslot code list	Assigned by SS

## RADIO BEARER RECONFIGURATION (Step 2)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical to those in the default contents of layer 3 messages for RRC tests with the following exceptions as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with following exceptions:

Information Element	Value/remark
Activation Time	Not Present.
Uplink DPCH Info - Scrambling code number	2

## RADIO BEARER RECONFIGURATION FAILURE

The contents of RADIO BEARER RECONFIGURATION FAILURE message in this test case is the same as the RADIO BEARER RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Incompatible simultaneous reconfiguration

## 8.2.2.5.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 2, the UE shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "Incompatible simultaneous reconfiguration".

After step 3, the UE shall transmit a RADIO BEARER SETUP COMPLETE message on the DCCH using AM RLC.

After step 4, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

## 8.2.2.6 Radio Bearer Reconfiguration from CELL\_DCH to CELL\_DCH: Failure (Invalid message reception and Invalid configuration)

### 8.2.2.6.1 Definition

### 8.2.2.6.2 Conformance requirement

If the received reconfiguration message contains a protocol error causing the variable `PROTOCOL_ERROR_REJECT` to be set to `TRUE` according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable `TRANSACTIONS`; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to the cause value "protocol error";
  - 2> include the IE "Protocol error information" with contents set to the value of the variable `PROTOCOL_ERROR_INFORMATION`.

If the variable `INVALID_CONFIGURATION` is set to `TRUE` the UE shall:

- 1> keep the configuration existing before the reception of the message;
- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
    - 3> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable `TRANSACTIONS`; and
    - 3> clear that entry.
  - 2> set the IE "failure cause" to "invalid configuration".
- 1> set the variable `INVALID_CONFIGURATION` to `FALSE`;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a `RADIO BEARER RECONFIGURATION` message:
  - ...
  - 2> transmit a `RADIO BEARER RECONFIGURATION FAILURE` as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.13, 8.2.2.11, 8.2.2.9.

### 8.2.2.6.3 Test purpose

To confirm that the UE transmits a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, if it receives an invalid RADIO BEARER RECONFIGURATION message which does not include any IEs except IE "Message Type".

To confirm that the UE transmits a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC if it receives a RADIO BEARER RECONFIGURATION message including some IEs set to give an invalid configuration.

### 8.2.2.6.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits an invalid RADIO BEARER RECONFIGURATION message to the UE which contains an unexpected critical message extension. The UE keeps the old configuration and transmits a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC which is set to "protocol error" in IE "failure cause" and is set to "Message extension not comprehended" in IE "Protocol error cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically. The UE keeps current configuration after SS transmits a RADIO BEARER RECONFIGURATION message including some IEs set to give an invalid configuration. Then UE transmits a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value "invalid configuration" to IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER RECONFIGURATION	See specific message content.
2		→	RADIO BEARER RECONFIGURATION FAILURE	The UE does not change the configuration.
2a		→	MEASUREMENT REPORT	
3		←	RADIO BEARER RECONFIGURATION	This message includes IE set to give an invalid configuration.
4		→	RADIO BEARER RECONFIGURATION FAILURE	The UE does not change the configuration.
5		→	MEASUREMENT REPORT	

#### Specific Message Contents

##### MEASUREMENT CONTROL (Step 1a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	Acknowledged mode RLC
- Measurement Report Transfer Mode	Periodical Reporting
- Periodical Reporting / Event Trigger Reporting Mode	
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

### MEASUREMENT REPORT (Step 0b, 2a and 5)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

### RADIO BEARER RECONFIGURATION (Step 1)

Use the RADIO BEARER RECONFIGURATION message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Critical extensions	'01'H

## RADIO BEARER RECONFIGURATION FAILURE (Step 2)

The contents of RADIO BEARER RECONFIGURATION FAILURE message in this test case is the same as the RADIO BEARER RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	Message extension not comprehended

## RADIO BEARER RECONFIGURATION (Step 3) (FDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" found in Annex A with following exceptions:

Information Element	Value/remark
- Default DPCH Offset Value	512
- DPCH frame offset	1024

## RADIO BEARER RECONFIGURATION (Step 3) (TDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" found in Annex A with following exceptions:

Information Element	Value/remark
-PRACH TFCS	Present

## RADIO BEARER RECONFIGURATION FAILURE (Step 5)

The contents of RADIO BEARER RECONFIGURATION FAILURE message in this test case is the same as the RADIO BEARER RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Invalid configuration

## 8.2.2.6.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 1 the UE shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC stating the reason "protocol error" in IE "failure cause". The message shall contain the value "Message extension not comprehended" in IE "Protocol error cause".

After step 2, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 3 the UE shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value "invalid configuration" to IE "failure cause".

After step 4, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

## 8.2.2.7 Radio Bearer Reconfiguration from CELL\_DCH to CELL\_DCH: Success (Continue and stop)

### 8.2.2.7.1 Definition

### 8.2.2.7.2 Conformance requirement

If the IE "RB information to reconfigure" is included, the UE shall apply the following actions on the radio bearer identified with the value of the IE "RB identity". The UE shall:

...

- if the IE "RB stop/continue" is included; and
  - if the "RB identity" has a value greater than 2; and
    - if the value of the IE "RB stop/continue" is "stop":
      - configure the RLC entity for the radio bearer to stop;
      - set the IE "RB started" in the variable ESTABLISHED\_RABS to "stopped" for that radio bearer;
    - if the value of the IE "RB stop/continue" is "continue":
      - configure the RLC entity for the radio bearer to continue;
      - set the IE "RB started" in the variable ESTABLISHED\_RABS to "started" for that radio bearer;

### Reference

3GPP TS 25.331 clause 8.2.2, 8.6.4.5.

### 8.2.2.7.3 Test purpose

To confirm that the UE reconfigures new radio bearer and stop the transmission and reception of the RLC entity belonging to the RB identity specified in the RADIO BEARER RECONFIGURATION message.

To confirm that the UE reconfigures new radio bearer and restart the transmission and reception of the RLC entity belonging to the RB identity specified in the RADIO BEARER RECONFIGURATION message.

### 8.2.2.7.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

The UE is in CELL\_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message including IE "RB stop/continue" set to "continue" for radio bearer with RB identity '3'. The UE reconfigures new radio bearer and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC. Then, the SS transmits an IDENTITY REQUEST message using AM RLC, the UE responds a IDENTITY RESPONSE message. The SS transmits a RADIO BEARER RECONFIGURATION message including IE "RB stop/continue" set to "stop" for radio bearer with RB identity "3". The UE reconfigures new radio bearer and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC. Then, the SS transmits an IDENTITY REQUEST message using AM RLC, the UE does not acknowledge this message and also does not respond with a IDENTITY RESPONSE message. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RECONFIGURATION	This message include IE "RB stop/continue" set to "continue".
2		→	RADIO BEARER RECONFIGURATION COMPLETE	
3		←	IDENTITY REQUEST	
3a		→	IDENTITY RESPONSE	
4		←	RADIO BEARER RECONFIGURATION	This message include IE "RB stop/continue" set to "stop".
5		→	RADIO BEARER RECONFIGURATION COMPLETE	
6		←	IDENTITY REQUEST	
7		→		The SS shall not receive any data from the UE.
8		←→	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

Specific Message Contents

#### RADIO BEARER RECONFIGURATION (Step 1)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
RB information to reconfigure list RB information to reconfigure -RB identity -RB stop/continue	3 "continue"
UL Transport channel information for all transport channels	Not Present
Added or Reconfigured UL TrCH information	Not Present
CHOICE mode	Not Present
DL Transport channel information common for all transport channel	Not Present
Deleted DL TrCH information	Not Present
Added or Reconfigured DL TrCH information	Not Present
Frequency info	Not Present
CHOICE channel requirement	Not Present
CHOICE Mode - Downlink PDSCH information	FDD Not Present
Downlink information common for all radio links	Not Present
Downlink information per radio link list -Downlink information for each radio link - Primary CPICH info - Primary scrambling code	Set to same code as used for cell 1

#### RADIO BEARER RECONFIGURATION (Step 4)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
RB information to reconfigure list RB information to reconfigure -RB identity -RB stop/continue	3 "stop"

#### 8.2.2.7.5 Test requirement

After step 3 the UE shall respond with a IDENTITY RESPONSE message.

After step 6 the UE shall not respond with a IDENTITY RESPONSE message on the stopped RB.

### 8.2.2.8 Radio Bearer Reconfiguration from CELL\_DCH to CELL\_FACH: Success

#### 8.2.2.8.1 Definition

#### 8.2.2.8.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_FACH state, the UE shall, after the state transition:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency.
- 1> select PRACH according to TS 25.331 subclause 8.5.17;
- 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
- 1> use the transport format set given in system information;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> ignore that IE and stop using DRX.
- 1> if the contents of the variable C\_RNTI is empty:
  - 2> perform a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Cell reselection";

...

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message, the UE shall:

- 1> transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

#### 8.2.2.8.3 Test purpose

To confirm that the UE establishes the reconfigured radio bearer(s) using common physical channel, after UE receives a RADIO BEARER RECONFIGURATION message.

#### 8.2.2.8.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message, which invoke a transition from CELL\_DCH to CELL\_FACH. The UE reconfigures the radio bearers and transmits a RADIO BEARER RECONFIGURATION COMPLETE message using AM RLC. SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RECONFIGURATION	
2		→	RADIO BEARER RECONFIGURATION COMPLETE	The UE selects PRACH and S-CCPCH indicated in SIB5 and SIB6 after entering CELL FACH state.
3		↔	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

#### Specific Message Contents

#### RADIO BEARER RECONFIGURATION (Step 1)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A with the following exception:

Information Element	Value/remark
New C-RNTI	0000 0000 0000 0001B
RB information to reconfigure list	
- RB information to reconfigure	(AM DCCH for RRC)
- RB identity	2
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT High priority)
- RB identity	3
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present

- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT Low priority)
- RB identity	4
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DTCH)
- RB identity	20
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not Present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
Frequency info	Not Present

Maximum allowed UL TX power	Not Present
Downlink information per radio link list - Downlink information for each radio link - Primary CPICH info - Primary scrambling code	Set to same code as used for cell 1

#### 8.2.2.8.5 Test requirement

After step 1 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message.

### 8.2.2.9 Radio Bearer Reconfiguration from CELL\_DCH to CELL\_FACH: Success (Cell re-selection)

#### 8.2.2.9.1 Definition

#### 8.2.2.9.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.
- 1> enter a state according to subclause 8.6.3.3.

If after state transition the UE enters CELL\_FACH state, the UE shall, after the state transition:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to [4] on that frequency.
- 1> if the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD), and the UE selects another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD):
  - 2> initiate a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Cell reselection";
  - 2> when the cell update procedure completed successfully:
    - 1> select PRACH according to subclause 8.5.17;
    - 1> select Secondary CCPCH according to subclause 8.5.19;
    - 1> use the transport format set given in system information;
    - 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
      - 2> ignore that IE and stop using DRX.

The UE shall transmit a response message as specified in subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

...

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- includes "CN information elements"; or
- includes the IE "Ciphering mode info"; or
- includes the IE "Integrity protection mode info"; or
- includes the IE "New C-RNTI"; or
- includes the IE "New U-RNTI":

the UE shall:

- 1> transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

...

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message, the UE shall:

- 1> transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.3.1.7, 8.2.2.4.

### 8.2.2.9.3 Test purpose

To confirm that the UE transmits RADIO BEARER RECONFIGURATION COMPLETE message after it completes a cell update procedure.

### 8.2.2.9.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in CELL\_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message, which includes IE "Primary CPICH info" and no dedicated physical channel information to transit from CELL\_DCH to CELL\_FACH. As the UE selects another cell than the specified cell, the UE shall initiate the cell update procedure. The UE transmits a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection". The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving a CELL UPDATE message. The UE transmits a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC. SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1			Void	
2			Void	
3		←	RADIO BEARER RECONFIGURATION	Assign a transition from CELL_DCH to CELL_FACH.
4		→	CELL UPDATE	The value "cell reselection" shall be set in IE "Cell update cause".
5		←	CELL UPDATE CONFIRM	See message content.
6		→	UTRAN MOBILITY INFORMATION CONFIRM	
7		→	RADIO BEARER RECONFIGURATION COMPLETE	
8		↔	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

Specific Message Contents

#### RADIO BEARER RECONFIGURATION (Step 3) (FDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL\_FACH from CELL\_DCH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
New C-RNTI	0000 0000 0000 0001B
RB information to reconfigure list	
- RB information to reconfigure	(AM DCCH for RRC)
- RB identity	2
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT High priority)
- RB identity	3
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT Low priority)
- RB identity	4
- PDCP info	Not Present

- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DTCH)
- RB identity	20
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not Present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
Frequency info	Not Present
Maximum allowed UL TX power	Not Present
Downlink information per radio link list	
- Downlink information for each radio links	
- Primary CPICH info	
- Primary scrambling code	Set to same code as used for cell 1

## RADIO BEARER RECONFIGURATION (Step 3) (TDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL\_FACH from CELL\_DCH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Downlink information for each radio links - Primary CCPCH info - Cell parameters ID	4

## CELL UPDATE (Step 4)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"Cell reselection"

## CELL UPDATE CONFIRM (Step 5)

Use the same message type found in clause Annex A, with the following exceptions.

Information Element	Value/Remarks
New C-RNTI	'1010 1010 1010 1010'

## UTRAN MOBILITY INFORMATION CONFIRM (Step 6)

Only the message type is checked.

## 8.2.2.9.5 Test requirement

After step 3, the UE shall transmit CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection".

After step 5, the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message and then followed by RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

## 8.2.2.10 Radio Bearer Reconfiguration: from CELL\_FACH to CELL\_DCH: Success

## 8.2.2.10.1 Definition

## 8.2.2.10.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and

1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message, the UE shall:

1> transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

#### 8.2.2.10.3 Test purpose

To confirm that the UE reconfigures the radio bearers according to a RADIO BEARER RECONFIGURATION message.

#### 8.2.2.10.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE. The UE reconfigures the radio bearers and transmits a RADIO BEARER RECONFIGURATION COMPLETE message using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RECONFIGURATION	This message includes IE "Uplink DPCH Info"
2				Reconfiguration of radio bearer
3		→	RADIO BEARER RECONFIGURATION COMPLETE	
4		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

#### Specific Message Contents

##### RADIO BEARER RECONFIGURATION (Step 1)

Use the same message sub-type titled "Packet to CELL\_DCH from CELL\_FACH in PS" in Annex A, with the following exceptions:

Information Element	Value/remark
RB information to reconfigure list	
- RB information to reconfigure	(AM DCCH for RRC)
- RB identity	2
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	400
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	150
- Timer_poll	150
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT High priority)
- RB identity	3
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	400
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	150
- Timer_poll	150
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present

- RB information to reconfigure	(AM DCCH for NAS_DT Low priority)
- RB identity	4
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	400
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	150
- Timer_poll	150
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DTCH)
- RB identity	20
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	400
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	150
- Timer_poll	150
- Poll_PDU	Not Present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
UL Transport channel information for all transport channels	Not Present
Added or Reconfigured UL TrCH information	Not Present

DL Transport channel information common for all transport channels	Not Present
Added or Reconfigured DL TrCH information	Not Present

#### 8.2.2.10.5 Test requirement

After step 2 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

#### 8.2.2.11 Radio Bearer Reconfiguration from CELL\_FACH to CELL\_DCH: Failure (Unsupported configuration)

FFS

#### 8.2.2.12 Radio Bearer Reconfiguration from CELL\_FACH to CELL\_DCH: Failure (Physical channel failure and successful reversion to old configuration)

##### 8.2.2.12.1 Definition

##### 8.2.2.12.2 Conformance requirement

When a physical dedicated channel establishment is initiated by the UE, the UE shall start a timer T312 and wait for layer 1 to indicate N312 "in sync" indications. On receiving N312 "in sync" indications, the physical channel is considered established and the timer T312 is stopped and reset.

If the timer T312 expires before the physical channel is established, the UE shall consider this as a "physical channel establishment failure".

If the received message caused the UE to be in CELL\_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

1> revert to the configuration prior to the reception of the message (old configuration);

...

1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and

2> clear that entry;

2> set the IE "failure cause" to "physical channel failure".

1> set the variable ORDERED\_RECONFIGURATION to FALSE;

1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

1> in case of reception of a RADIO BEARER RECONFIGURATION message:

...

2> transmit a RADIO BEARER RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.7, 8.2.2.9, 8.5.4.

## 8.2.2.12.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC if the UE fails to reconfigure the new radio bearer before timer T312 expires according to a RADIO BEARER RECONFIGURATION message.

## 8.2.2.12.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in CELL\_FACH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a RADIO BEARER RECONFIGURATION message, which includes the new radio bearer parameters, to the UE and keep its current physical channel configuration. Therefore, the UE cannot reconfigure the radio bearers and shall attempt cell reselection procedure after T312 expires. Then the UE shall detect the same serving cell only and transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, with the value "physical channel failure" in IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER RECONFIGURATION	
2		→	RADIO BEARER RECONFIGURATION FAILURE	The SS does not reconfigures L1 and the UE fails to reconfigure its radio bearers.
3		→	MEASUREMENT REPORT	

## Specific Message Contents

## MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	RACHorCPCH
- UL Target Transport Channel ID	Not Present
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

### MEASUREMENT REPORT (Step 0b and 3)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

### RADIO BEARER RECONFIGURATION (Step 1)

Use the same message sub-type titled "Packet to CELL\_DCH from CELL\_FACH in PS" in Annex A.

### RADIO BEARER RECONFIGURATION FAILURE (Step 2)

The contents of RADIO BEARER RECONFIGURATION FAILURE message in this test case is the same as the RADIO BEARER RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Physical channel failure

#### 8.2.2.12.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 1 the UE shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting "physical channel failure" in IE "failure cause".

After step 2, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

### 8.2.2.13 Radio Bearer Reconfiguration from CELL\_FACH to CELL\_DCH: Failure (Physical channel failure and cell re-selection)

#### 8.2.2.13.1 Definition

#### 8.2.2.13.2 Conformance requirement

When a physical dedicated channel establishment is initiated by the UE, the UE shall start a timer T312 and wait for layer 1 to indicate N312 "in sync" indications. On receiving N312 "in sync" indications, the physical channel is considered established and the timer T312 is stopped and reset.

If the timer T312 expires before the physical channel is established, the UE shall consider this as a "physical channel establishment failure".

If the received message caused the UE to be in CELL\_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

1> revert to the configuration prior to the reception of the message (old configuration);

...

1> if the old configuration does not include dedicated physical channels (CELL\_FACH state):

2> select a suitable UTRA cell according to TS 25.304;

2> if the UE selects another cell than the cell the UE camped on upon reception of the reconfiguration message:

3> initiate a cell update procedure according to TS 25.331 subclause 8.3.1, using the cause "Cell reselection";

3> after the cell update procedure has completed successfully:

4> proceed as below.

1> transmit a failure response message as specified in TS 25.304 subclause 8.2.2.9, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and

2> clear that entry;

2> set the IE "failure cause" to "physical channel failure".

1> set the variable ORDERED\_RECONFIGURATION to FALSE;

1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- includes "CN information elements"; or
- includes the IE "Ciphering mode info"; or
- includes the IE "Integrity protection mode info"; or
- includes the IE "New C-RNTI"; or
- includes the IE "New U-RNTI":

the UE shall:

- 1> transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

The UE shall:

- 1> in case of reception of a RADIO BEARER RECONFIGURATION message:

...

- 2> transmit a RADIO BEARER RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.7, 8.2.2.9, 8.3.1.7, 8.5.4.

### 8.2.2.13.3 Test purpose

To confirm that the UE transmits a RADIO BEARER RECONFIGURATION FAILURE message after it completes a cell update procedure due to a physical channel failure in the radio bearer reconfiguration procedure.

### 8.2.2.13.4 Method of test

#### Initial Condition

System Simulator: 2 cells - Cell 1 and 2 are active.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108 in cell 1.

## Test Procedure

Table 8.2.2.13

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH Ec	dBm /3.84 MHz	-60	-75	-75	-60
P-CCPCH RSCP (TDD)	dBm	-60	-75	switched off	-60

Table 8.2.2.13 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings between columns "T0" and "T1", whenever the description in multi-cell condition specifies a reverse in the transmission power settings for cell 1 and cell 2.

The UE is in CELL\_FACH state in cell 1. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a RADIO BEARER RECONFIGURATION message, which includes the new radio bearer parameters, to the UE but SS does not reconfigure dedicated physical channel in accordance with the settings in the message. At the same time, the SS configures its downlink transmission power settings according to columns "T1" in table 8.2.2.13. The UE recognize that it cannot synchronize with the SS on the new radio bearers. The UE performs cell reselection and transmits a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection". The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving a CELL UPDATE message. UE reply with UTRAN MOBILITY INFORMATION CONFIRM message. The UE transmits a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value "physical channel failure" to IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER RECONFIGURATION	
2				The SS does not reconfigure the dedicated physical channel in accordance with the RADIO BEARER RECONFIGURATION message and applies the downlink transmission power settings, according to the values in columns "T1" of table 8.2.2.13.
3			Void	
4			Void	
5		→	CELL UPDATE	The value "cell reselection" shall be set in IE "Cell update cause".
6		←	CELL UPDATE CONFIRM	See message content.
7		→	UTRAN MOBILITY INFORMATION CONFIRM	
8		→	RADIO BEARER RECONFIGURATION FAILURE	The IE "failure cause" shall be set to "physical channel failure"
9		→	MEASUREMENT REPORT	

## Specific Message Contents

## MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	Acknowledged mode RLC
- Measurement Report Transfer Mode	Periodical Reporting
- Periodical Reporting / Event Trigger Reporting Mode	
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	RACHorCPCH
- UL Target Transport Channel ID	Not Present
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

## MEASUREMENT REPORT (Step 0b and 9)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

## RADIO BEARER RECONFIGURATION (Step 1)

Use the same message sub-type titled "Packet to CELL\_DCH from CELL\_FACH in PS" in Annex A.

## CELL UPDATE (Step 5)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A with the following exceptions:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	Assigned previously in cell 1 Assigned previously in cell 1 "cell reselection"

## CELL UPDATE CONFIRM (Step 6)

Use the same message type found in clause Annex A, with the following exceptions.

Information Element	Value/Remarks
New C-RNTI	'1010 1010 1010 1010'

## UTRAN MOBILITY INFORMATION CONFIRM (Step 7)

Only the message type is checked.

## RADIO BEARER RECONFIGURATION FAILURE (Step 8)

The contents of RADIO BEARER RECONFIGURATION FAILURE message in this test case is the same as the RADIO BEARER RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	"physical channel failure"

## 8.2.2.13.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 4 the UE shall transmit a CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection".

After step 6, the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC.

After step 7 the UE shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the IE "failure cause" to "physical channel failure".

After step 8, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

## 8.2.2.14 Radio Bearer Reconfigure from CELL\_FACH to CELL\_DCH: Failure (Incompatible simultaneous reconfiguration)

## 8.2.2.14.1 Definition

## 8.2.2.14.2 Conformance requirement

If the received message is any of the messages:

- RADIO BEARER RECONFIGURATION; or

...

the UE shall:

- 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or

...

- 3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:

...

- 3> else:

- 4> reject the transaction; and

- 4> if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:

- 5> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

...

If the table "Rejected transactions" in the variable TRANSACTIONS is set due to the received message and the variable PROTOCOL\_ERROR\_REJECT is set to FALSE, the UE shall:

- 1> not apply the configuration contained in the received reconfiguration message;

- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:

- 2> include the IE "RRC transaction identifier"; and

- 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable TRANSACTIONS; and

- 2> clear that entry;

- 2> set the IE "failure cause" to "incompatible simultaneous reconfiguration".

- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a RADIO BEARER RECONFIGURATION message:

...

- 2> transmit a RADIO BEARER RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.9, 8.2.2.12, 8.6.3.11.

## 8.2.2.14.3 Test purpose

To confirm that if the UE receives a RADIO BEARER RECONFIGURATION message during a reconfiguring procedure due to a radio bearer message other than RADIO BEARER RECONFIGURATION, it shall keep its configuration as if the RADIO BEARER RECONFIGURATION message had not been received and complete the reconfiguration procedure according to the previously received message.

## 8.2.2.14.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in CELL\_DCH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE. The SS transmits a RADIO BEARER RECONFIGURATION message before the "activation time" indicated in the PHYSICAL CHANNEL RECONFIGURATION message expires. When the UE receives the RADIO BEARER RECONFIGURATION message, the UE shall keep the configuration as if it had not received the RADIO BEARER RECONFIGURATION message and shall transmit a RADIO RECONFIGURATION SETUP FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the SS acknowledges the RADIO BEARER RECONFIGURATION FAILURE message, the UE reconfigures the new physical channel parameters and transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on DCCH using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PHYSICAL CHANNEL RECONFIGURATION	
2		←	RADIO BEARER RECONFIGURATION	Sent before the elapse of the "Activation Time" indicated in the previous message.
3		→	RADIO BEARER RECONFIGURATION FAILURE	The UE does not change its configuration according to the RADIO BEARER RECONFIGURATION message.
4		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	This message is on DCCH using AM RLC
5		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

## PHYSICAL CHANNEL RECONFIGURATION (Step 1) (FDD)

For PHYSICAL CHANNEL RECONFIGURATION in step 1, use the message sub-type indicated as "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions.

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8 ]
Uplink DPCH Info - Scrambling code number	1

## PHYSICAL CHANNEL RECONFIGURATION (Step 1) (TDD)

For PHYSICAL CHANNEL RECONFIGURATION in step 1, use the message sub-type indicated as "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions.

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8 ]
Uplink DPCH timeslots and codes - First timeslot code list	Assigned by SS

## RADIO BEARER RECONFIGURATION (Step 2) (FDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time	Not Present
Uplink DPCH Info - Scrambling code number	2

## RADIO BEARER RECONFIGURATION (Step 2) (TDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time	
Uplink DPCH timeslots and codes - First timeslot code list	A different code combination to that used in step 1.

## RADIO BEARER RECONFIGURATION FAILURE

The contents of RADIO BEARER RECONFIGURATION FAILURE message in this test case is the same as the RADIO BEARER RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Incompatible simultaneous reconfiguration

## 8.2.2.14.5 Test requirement

After step 2 the UE shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "Incompatible simultaneous reconfiguration".

After step 3 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

## 8.2.2.15 Radio Bearer Reconfiguration from CELL\_FACH to CELL\_DCH: Failure (Invalid message reception and Invalid configuration)

## 8.2.2.15.1 Definition

## 8.2.2.15.2 Conformance requirement

If the received reconfiguration message contains a protocol error causing the variable `PROTOCOL_ERROR_REJECT` to be set to TRUE according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to the cause value "protocol error";
  - 2> include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL\_ERROR\_INFORMATION.

If the variable INVALID\_CONFIGURATION is set to TRUE the UE shall:

- 1> keep the configuration existing before the reception of the message;
- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
    - 3> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
    - 3> clear that entry.
  - 2> set the IE "failure cause" to "invalid configuration".
- 1> set the variable INVALID\_CONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a RADIO BEARER RECONFIGURATION message:
  - ...
  - 2> transmit a RADIO BEARER RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.13, 8.2.2.11, 8.2.2.9.

### 8.2.2.15.3 Test purpose

To confirm that the UE transmits a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC if it receives an invalid RADIO BEARER RECONFIGURATION message which does not include any IEs except IE "Message Type".

To confirm that the UE transmits a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC if it receives a RADIO BEARER RECONFIGURATION message including some IEs set to give an invalid configuration.

## 8.2.2.15.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in CELL\_FACH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits an invalid RADIO BEARER RECONFIGURATION message to the UE which contains an unexpected critical message extension. The UE shall keep the old configuration and transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC indicating "protocol error" in IE "failure cause" and also set "Message extension not comprehended" in IE "Protocol error cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically. The UE keeps current configuration when SS transmits RADIO BEARER RECONFIGURATION message including some IEs set to give an invalid configuration. The UE transmits a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value "invalid configuration" to IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER RECONFIGURATION	See specific message content.
2		→	RADIO BEARER RECONFIGURATION FAILURE	The UE does not change the configuration.
2a		→	MEASUREMENT REPORT	
3		←	RADIO BEARER RECONFIGURATION	This message includes IE set to invalid value
4		→	RADIO BEARER RECONFIGURATION FAILURE	The UE does not change the configuration
5		→	MEASUREMENT REPORT	

## Specific Message Contents

## MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	Acknowledged mode RLC
- Measurement Report Transfer Mode	Periodical Reporting
- Periodical Reporting / Event Trigger Reporting Mode	
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	RACHorCPCH
- UL Target Transport Channel ID	Not Present
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

### MEASUREMENT REPORT (Step 0b, 2a and 5)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

### RADIO BEARER RECONFIGURATION (Step 1)

Use the RADIO BEARER RECONFIGURATION message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Critical extensions	'01'H

## RADIO BEARER RECONFIGURATION FAILURE (Step 2)

The contents of RADIO BEARER RECONFIGURATION FAILURE message in this test case is the same as the RADIO BEARER RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	Message extension not comprehended

## RADIO BEARER RECONFIGURATION (Step 3) (FDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
- Default DPCH Offset Value	512
- DPCH frame offset	1024

## RADIO BEARER RECONFIGURATION (Step 3) (TDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" found in Annex A with following exceptions:

Information Element	Value/remark
-PRACH TFCS	Present

## RADIO BEARER RECONFIGURATION FAILURE (Step 4)

The contents of RADIO BEARER RECONFIGURATION FAILURE message in this test case is the same as the RADIO BEARER RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Invalid configuration

## 8.2.2.15.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 1 the UE shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, which includes the cause "protocol error" in IE "failure cause" and "Message extension not comprehended" in IE "Protocol error cause".

After step 2, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 3 the UE shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value "invalid configuration" to IE "failure cause".

After step 4, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

### 8.2.2.16 Void

### 8.2.2.17 Radio Bearer Reconfiguration from CELL\_FACH to CELL\_FACH: Success

#### 8.2.2.17.1 Definition

#### 8.2.2.17.2 Conformance requirement

If the UE was in CELL\_FACH state upon reception of the reconfiguration message and remains in CELL\_FACH state, the UE shall:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency;
  - 2> if the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD), and the UE selected another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD):

...

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message, the UE shall:

- 1> transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

#### 8.2.2.17.3 Test purpose

To confirm that the UE establishes radio bearers according to a RADIO BEARER RECONFIGURATION message.

#### 8.2.2.17.4 Method of test

##### Initial Condition

System Simulator: 1 cells – Cell 1 and 2 are active.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108 in cell 1.

##### Test Procedure

The UE is in CELL\_FACH state in cell 1. The SS transmits a RADIO BEARER RECONFIGURATION message, to the UE. The UE configures the common physical channel and transmits a RADIO BEARER RECONFIGURATION COMPLETE message using AM RLC. SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RECONFIGURATION	
2			Void	
3		→	RADIO BEARER RECONFIGURATION COMPLETE	
4		↔	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1) (FDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in Annex A with the following exceptions.

Information Element	Value/remark
RB information to reconfigure list	
- RB information to reconfigure	(AM DCCH for RRC)
- RB identity	2
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT High priority)
- RB identity	3
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present

- RB information to reconfigure	(AM DCCH for NAS_DT Low priority)
- RB identity	4
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DTCH)
- RB identity	20
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not Present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
Frequency info	Not Present
Maximum allowed UL TX power	Not Present

Downlink information per radio link list - Downlink information for each radio links - Primary CPICH info - Primary scrambling code	Set to same code as used for cell 1
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### RADIO BEARER RECONFIGURATION (Step 1) (TDD)

The contents of RADIO BEARER SETUP message in this test case is identical as "Packet to CELL\_FACH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Downlink information for each radio links - Primary CCPCH info -Cell parameters ID	4

#### 8.2.2.17.5 Test requirement

After step 2 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message using AM RLC.

### 8.2.2.18 Radio Bearer Reconfiguration from CELL\_FACH to CELL\_FACH: Success (Cell re-selection)

#### 8.2.2.18.1 Definition

#### 8.2.2.18.2 Conformance requirement

If the UE was in CELL\_FACH state upon reception of the reconfiguration message and remains in CELL\_FACH state, the UE shall:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency;
  - 2> if the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD), and the UE selected another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD):
    - 3> initiate a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "cell reselection";
    - 3> when the cell update procedure completed successfully:
      - 4> proceed as below.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- includes "CN information elements"; or

- includes the IE "Ciphering mode info"; or
- includes the IE "Integrity protection mode info"; or
- includes the IE "New C-RNTI"; or
- includes the IE "New U-RNTI":

the UE shall:

- 1> transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message, the UE shall:

- 1> transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4, 8.3.1.7.

### 8.2.2.18.3 Test purpose

To confirm that the UE transmits RADIO BEARER RECONFIGURATION COMPLETE message in cell 2 after it completes a cell update procedure instigated by a RADIO BEARER RECONFIGURATION message.

### 8.2.2.18.4 Method of test

Initial Condition

System Simulator: 2 cells - Cell 1 and 2 are active.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

Test Procedure

**Table 8.2.2.18**

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH Ec (FDD)	dBm/3.84 MHz	-60	-75	-75	-60
P-CCPCH (TDD)	dBm	-60	-75	-75	-60

Table 8.2.2.18 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings between columns "T0" and "T1", whenever the description in multi-cell condition specifies a reverse in the transmission power settings for cell 1 and cell 2.

The UE is in CELL\_FACH state in cell 1. On transmitting a RADIO BEARER RECONFIGURATION message to the UE, the SS configures its downlink transmission power settings according to columns "T1" in table 8.2.2.18. The UE transmits a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection". The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. UE transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC. The UE transmits a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC. SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RECONFIGURATION	
2				The SS applies the downlink transmission power settings, according to the values in columns "T1" of table 8.2.1.9.
3			Void	
4		→	CELL UPDATE	The value "cell reselection" shall be set in IE "cell update cause".
5		←	CELL UPDATE CONFIRM	See message content.
6		→	UTRAN MOBILITY INFORMATION CONFIRM	
7		→	RADIO BEARER RECONFIGURATION COMPLETE	
8		↔	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

Specific Message Contents

RADIO BEARER RECONFIGURATION (Step 1) (FDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in Annex A with the following exceptions:

Information Element	Value/remark
RB information to reconfigure list	
- RB information to reconfigure	(AM DCCH for RRC)
- RB identity	2
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT High priority)
- RB identity	3
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present

- RB information to reconfigure	(AM DCCH for NAS_DT Low priority)
- RB identity	4
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DTCH)
- RB identity	20
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not Present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
Frequency info	Not Present
Maximum allowed UL TX power	Not Present

Downlink information per radio link list -Downlink information for each radio links - Primary CPICH info - Primary scrambling code	Set to same code as used for cell 1
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### RADIO BEARER RECONFIGURATION (Step 1) (TDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in Annex A with the following exceptions:

Information Element	Value/remark
Downlink information for each radio links - Primary CCPCH info - Cell parameters ID	Not present

### CELL UPDATE (Step 4)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"cell reselection"

### CELL UPDATE CONFIRM (Step 5)

Use the same message type found in clause Annex A, with the following exceptions.

Information Element	Value/Remarks
New C-RNTI	'1010 1010 1010 1010'

### UTRAN MOBILITY INFORMATION CONFIRM (Step 6)

Only the message type is checked.

#### 8.2.18.5 Test requirement

After step 2 the UE shall transmit a CELL UPDATE message on the CCCH with IE "cell update cause" set to "cell reselection".

After step 5 UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC.

After step 6 UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

#### 8.2.2.19 Radio Bearer Reconfiguration from CELL\_DCH to CELL\_DCH: Success (Subsequently received)

##### 8.2.2.19.1 Definition

##### 8.2.2.19.2 Conformance requirement

If the IE "RRC transaction identifier" is included in a received message, the UE shall perform the actions below. The UE shall:

If the received message is any of the messages:

- RADIO BEARER RECONFIGURATION; or

...

the UE shall:

- 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or
- 2> if the variable CELL\_UPDATE\_STARTED is set to TRUE; or
- 2> if the table "Accepted transactions" in the variable TRANSACTIONS contains an entry with an IE "Message Type" set to ACTIVE SET UPDATE; or
- 2> if the received message contains a protocol error according to TS 25.331 clause 9 causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE:
  - 3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:
    - 4> ignore the transaction; and
    - 4> continue with any ongoing processes and procedures as the message was not received;
    - 4> and end the procedure.
  - 3> else:

...

## Reference

3GPP TS 25.331 clause 8.6.3.11.

### 8.2.2.19.3 Test purpose

To confirm that if the UE receives a new RADIO BEARER RECONFIGURATION message before the UE configures the radio bearer according to a previous RADIO BEARER RECONFIGURATION message, it ignores the new RADIO BEARER RECONFIGURATION message and configures the radio bearer according to the previous RADIO BEARER RECONFIGURATION message received.

### 8.2.2.19.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

The UE is in CELL\_DCH state. SS transmits a RADIO BEARER RECONFIGURATION message to the UE before the UE configures the radio bearer according to the RADIO BEARER RECONFIGURATION message prior to this new message. The UE ignores the new RADIO BEARER RECONFIGURATION message and configures according to the former RADIO BEARER RECONFIGURATION message. On completion of radio bearer configuration, the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RECONFIGURATION	Periodic RLC STATUS PDU transmission is activated. For TDD, the code combination is assigned by SS.
2		←	RADIO BEARER RECONFIGURATION	Sent before the "activation time" in step 1 has elapsed. Periodic RLC STATUS PDU transmission is not activated. For TDD the code combination assigned is different to that assigned in step 1.
3		→	RADIO BEARER RECONFIGURATION COMPLETE	The UE ignores the RADIO BEARER RECONFIGURATION message in step 2 and performs configuration according to the RADIO BEARER RECONFIGURATION message in step 1.
4		SS		The SS verifies that periodic RLC STATUS PDUs are received from the UE on AM RLC radio bearers during at least 5 seconds.
5		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

Specific Message Contents

#### RADIO BEARER RECONFIGURATION (Step 1) (FDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256
RB information to reconfigure list	
- RB information to reconfigure	(AM DCCH for RRC)
- RB identity	2
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	400
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	150
- Timer_poll	150
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	400
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT High priority)
- RB identity	3
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	400
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	150
- Timer_poll	150
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	400

- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT Low priority)
- RB identity	4
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	400
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	150
- Timer_poll	150
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	400
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DTCH)
- RB identity	20
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	400
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	150
- Timer_poll	150
- Poll_PDU	Not Present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	400
- RB mapping info	Not Present
- RB stop/continue	Not Present

UL Transport channel information for all transport channels	Not Present
Added or Reconfigured UL TrCH information	Not Present
CHOICE mode	Not Present
DL Transport channel information common for all transport channel	Not Present
Deleted DL TrCH information	Not Present
Added or Reconfigured DL TrCH information	Not Present
Frequency info	Not Present
Maximum allowed UL TX power	Not Present
CHOICE channel requirement	Not Present
CHOICE Mode	FDD
- Downlink PDSCH information	Not Present
Downlink information common for all radio links	Not Present

#### RADIO BEARER RECONFIGURATION (Step 1) (TDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256
- Uplink DPCH timeslots and codes	
- First timeslot code list	Assigned by SS

#### RADIO BEARER RECONFIGURATION (Step 2) (FDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time	Not Present
RB information to reconfigure list	
- RB information to reconfigure	(AM DCCH for RRC)
- RB identity	2
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	400
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	150
- Timer_poll	150
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT High priority)
- RB identity	3
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	400
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	150
- Timer_poll	150
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present

- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT Low priority)
- RB identity	4
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	400
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	150
- Timer_poll	150
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DTCH)
- RB identity	20
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	400
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	150
- Timer_poll	150
- Poll_PDU	Not Present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present

UL Transport channel information for all transport channels	Not Present
Added or Reconfigured UL TrCH information	Not Present
CHOICE mode	Not Present
DL Transport channel information common for all transport channel	Not Present
Deleted DL TrCH information	Not Present
Added or Reconfigured DL TrCH information	Not Present
Frequency info	Not Present
Maximum allowed UL TX power	Not Present
CHOICE channel requirement	Not Present
CHOICE Mode	FDD
- Downlink PDSCH information	Not Present
Downlink information common for all radio links	Not Present
Downlink information per radio link list	Not Present

### RADIO BEARER RECONFIGURATION (Step 2) (TDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL\_DCH from CELL\_DCH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time	Not Present
- Uplink DPCH timeslots and codes - First timeslot code list	A different code combination to that used in step 1.

#### 8.2.2.19.5 Test requirement

After step 2 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

#### 8.2.2.20 Radio Bearer Reconfigure from CELL\_FACH to CELL\_DCH: Success (Subsequently received)

##### 8.2.2.20.1 Definition

##### 8.2.2.20.2 Conformance requirement

If the IE "RRC transaction identifier" is included in a received message, the UE shall perform the actions below. The UE shall:

If the received message is any of the messages:

- RADIO BEARER RECONFIGURATION; or
- ...

the UE shall:

- 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or
- 2> if the variable CELL\_UPDATE\_STARTED is set to TRUE; or
- 2> if the table "Accepted transactions" in the variable TRANSACTIONS contains an entry with an IE "Message Type" set to ACTIVE SET UPDATE; or
- 2> if the received message contains a protocol error according to TS 25.331 clause 9 causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE:

3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:

4> ignore the transaction; and

4> continue with any ongoing processes and procedures as the message was not received;

4> and end the procedure.

3> else:

...

## Reference

3GPP TS 25.331 clause 8.6.3.11.

### 8.2.2.20.3 Test purpose

To confirm that if the UE receives a new RADIO BEARER RECONFIGURATION message before the UE configures the radio bearer according to a previous RADIO BEARER RECONFIGURATION message, it ignores the new RADIO BEARER RECONFIGURATION message and configures the radio bearer according to the previous RADIO BEARER RECONFIGURATION message received.

### 8.2.2.20.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state. The SS transmits a first RADIO BEARER RECONFIGURATION message to the UE. SS transmits then a second RADIO BEARER RECONFIGURATION message to the UE before the activation time of the first RADIO BEARER RECONFIGURATION message has expired. The UE ignores the new RADIO BEARER RECONFIGURATION message and configures the radio bearers according to the former RADIO BEARER RECONFIGURATION message. On completion of radio bearer configuration, the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC. SS calls for generic procedure C.3 2 to check that UE is in CELL\_DCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RECONFIGURATION	For FDD, the IE "Secondary scrambling code" is set to "1". For TDD, the code combination is assigned by SS.
1a (TDD)			A code combination is assigned for the SS.	
2		←	RADIO BEARER RECONFIGURATION	SS sends this message before the expiry of activation time specified in RADIO BEARER RECONFIGURATION message of step 1. For FDD, the IE "Secondary scrambling code" is set to "2". For TDD, the code combination assigned is different to that assigned in step 1.
3		→	RADIO BEARER RECONFIGURATION COMPLETE	The UE ignores the RADIO BEARER RECONFIGURATION message in step 2 and confirms configuration according to the RADIO BEARER RECONFIGURATION message in step 1.
4		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

## RADIO BEARER RECONFIGURATION (step 1) (FDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256
RB information to reconfigure list	
- RB information to reconfigure	(AM DCCH for RRC)
- RB identity	2
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	400
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	150
- Timer_poll	150
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT High priority)
- RB identity	3
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	400
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	150
- Timer_poll	150
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present

- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT Low priority)
- RB identity	4
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	400
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	150
- Timer_poll	150
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DTCH)
- RB identity	20
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	400
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	150
- Timer_poll	150
- Poll_PDU	Not Present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present

Downlink information per radio link list - Downlink information for each radio link - Primary CPICH info - Primary scrambling code - Downlink DPCH info for each RL - DL channelisation code - Secondary scrambling code	Set to same code as used for cell 1       1
--	--

### RADIO BEARER RECONFIGURATION (Step 1) (TDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH timeslots and codes - First timeslot code list	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256  Assigned by SS

## RADIO BEARER RECONFIGURATION (Step 2) (FDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time	Not Present
RB information to reconfigure list	
- RB information to reconfigure	(AM DCCH for RRC)
- RB identity	2
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	400
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	150
- Timer_poll	150
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT High priority)
- RB identity	3
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	400
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	150
- Timer_poll	150
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128

- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT Low priority)
- RB identity	4
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	400
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	150
- Timer_poll	150
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DTCH)
- RB identity	20
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	400
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	150
- Timer_poll	150
- Poll_PDU	Not Present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200

- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
UL Transport channel information for all transport channels	Not Present
Added or Reconfigured UL TrCH information	Not Present
CHOICE mode	Not Present
DL Transport channel information common for all transport channel	Not Present
Deleted DL TrCH information	Not Present
Added or Reconfigured DL TrCH information	Not Present
Downlink information for each radio link list - Downlink information for each radio link - Primary CPICH info - Primary scrambling code - Downlink DPCH info for each RL - DL channelisation code - Secondary scrambling code	Set to same code as used for cell 1      2

### RADIO BEARER RECONFIGURATION (Step 2) (TDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH timeslots and codes - First timeslot code list	Not Present  A different code combination to that used in step 1.

#### 8.2.2.20.5 Test requirement

After step 2 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

#### 8.2.2.21 Radio Bearer Reconfiguration from CELL\_DCH to CELL\_PCH: Success

##### 8.2.2.21.1 Definition

##### 8.2.2.21.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
    - 2> select a suitable UTRA cell according to TS 25.304 on that frequency.
  - 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
  - 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
    - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS 25.331 subclause 8.6.3.2.
  - 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
    - 2> set the variable INVALID\_CONFIGURATION to TRUE.
- ...

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message, the UE shall:

- 1> transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4

### 8.2.2.21.3 Test purpose

To confirm that the UE transmits a RADIO BEARER RECONFIGURATION COMPLETE message and enters CELL\_PCH state after it receives a RADIO BEARER RECONFIGURATION, which invoke the UE to transit from CELL\_DCH to CELL\_PCH, from SS.

### 8.2.2.21.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in CELL\_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message. The UE transmits a RADIO BEARER RECONFIGURATION COMPLETE message using AM RLC and enters CELL\_PCH state. SS calls for generic procedure C.4 to check that UE is in CELL\_PCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RECONFIGURATION	
2		→	RADIO BEARER RECONFIGURATION COMPLETE	
3				The UE is in CELL_PCH state.
4		←→	CALL C.4	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

Specific Message Contents

#### RADIO BEARER RECONFIGURATION (Step 1) (FDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3
Downlink information for each radio link - Primary CPICH info - Primary scrambling code	100

#### RADIO BEARER RECONFIGURATION (Step 1) (TDD)

The contents of RADIO BEARER SETUP message in this test case is identical as "Packet to CELL\_FACH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3
Downlink information for each radio links - Primary CCPCH info -Cell parameters ID	4

#### PAGING TYPE 1 (Step 4)

Use the same message sub-type titled "TM (Packet in PS)" in default message content of TS 34.108 with following exceptions:

Information Element	Value/remark
Paging record list Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	UTRAN identity  Previously assigned SRNC identity Previously assigned S-RNTI

#### CELL UPDATE (Step 5)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"paging response"

#### 8.2.2.21.5 Test requirement

After step 1 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on uplink DCCH using AM RLC.

### 8.2.2.22 Radio Bearer Reconfiguration from CELL\_DCH to URA\_PCH: Success

#### 8.2.2.22.1 Definition

#### 8.2.2.22.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters URA\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency.
- 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS 25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.

...

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message, the UE shall:

- 1> transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4

## 8.2.2.22.3 Test purpose

To confirm that the UE transmits a RADIO BEARER RECONFIGURATION COMPLETE and enters URA\_PCH state after it received a RADIO BEARER RECONFIGURATION message, which invoke the UE to transit from CELL\_DCH to URA\_PCH, from SS.

## 8.2.2.22.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in CELL\_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message. The UE transmits a RADIO BEARER RECONFIGURATION COMPLETE message using AM RLC and enters into URA\_PCH state. SS calls for generic procedure C.5 to check that UE is in URA\_PCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RECONFIGURATION	
2		→	RADIO BEARER RECONFIGURATION COMPLETE	
3				The UE is in URA_PCH state.
4		↔	CALL C.5	If the test result of C.5 indicates that UE is in URA_PCH state, the test passes, otherwise it fails.

## Specific Message Contents

## RADIO BEARER RECONFIGURATION (Step 1)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3
Downlink information for each radio link - Primary CPICH info - Primary scrambling code	100

## RADIO BEARER RECONFIGURATION (Step 1) (TDD)

The contents of RADIO BEARER SETUP message in this test case is identical as "Packet to CELL\_FACH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3
Downlink information for each radio links - Primary CCPCH info -Cell parameters ID	4

## PAGING TYPE 1 (Step 4)

Use the same message sub-type titled "TM (Packet in PS)" in default message content of TS 34.108 with following exceptions:

Information Element	Value/remark
Paging record list Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	UTRAN identity  Previously assigned SRNC identity Previously assigned S-RNTI

## CELL UPDATE (Step 5)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"paging response"

## 8.2.2.22.5 Test requirement

After step 1 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on uplink DCCH using AM RLC.

## 8.2.2.23 Radio Bearer Reconfiguration from CELL\_FACH to CELL\_PCH: Success

## 8.2.2.23.1 Definition

## 8.2.2.23.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency.
- 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS 25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:

2> set the variable INVALID\_CONFIGURATION to TRUE.

...

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message, the UE shall:

- 1> transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

### 8.2.2.23.3 Test purpose

To confirm that the UE transmits RADIO BEARER RECONFIGURATION COMPLETE message and enters CELL\_PCH state after it received a RADIO BEARER RECONFIGURATION message, which invoke the UE to transit from CELL\_FACH to CELL\_PCH. To check that the UE does not transmit periodical RLC status in CELL\_PCH state after it has been activated.

### 8.2.2.33.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state. The SS transmits a RADIO BEARER RECONFIGURATION message. The UE transmits a RADIO BEARER RECONFIGURATION COMPLETE message using AM RLC and enters CELL\_PCH state. SS calls for generic procedure C.4 to check that UE is in CELL\_PCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RECONFIGURATION	
2		→	RADIO BEARER RECONFIGURATION COMPLETE	
3		SS		The UE is in CELL_PCH state. The SS verifies that no periodic RLC STATUS PDUs are received from the UE on AM RLC radio bearers during at least 5 seconds.
4		↔	CALL C.4	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

Specific Message Contents

**RADIO BEARER RECONFIGURATION (Step 1) (FDD)**

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3
RB information to reconfigure list	
- RB information to reconfigure	(AM DCCH for RRC)
- RB identity	2
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	600
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT High priority)
- RB identity	3
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	600
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT Low priority)
- RB identity	4

- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	600
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DTCH)
- RB identity	20
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not Present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	600
- RB mapping info	Not Present
- RB stop/continue	Not Present
Maximum allowed UL TX power	Not Present
Downlink information per radio link list	
- Downlink information for each radio link	
- Primary CPICH info	
- Primary scrambling code	Set to same code as used for cell 1

## RADIO BEARER RECONFIGURATION (Step 1) (TDD)

The contents of RADIO BEARER SETUP message in this test case is identical as "Packet to CELL\_FACH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3
Downlink information for each radio links - Primary CCPCH info - Cell parameters ID	4

## 8.2.2.23.5 Test requirement

After step 1 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on uplink DCCH using AM RLC.

After step 2, the UE shall not transmit any periodical RLC STATUS PDUs.

## 8.2.2.24 Radio Bearer Reconfiguration from CELL\_FACH to URA\_PCH: Success

## 8.2.2.24.1 Definition

## 8.2.2.24.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters URA\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency.
- 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS 25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.

...

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and

1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message, the UE shall:

1> transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

#### 8.2.2.24.3 Test purpose

To confirm that the UE transmits a RADIO BEARER RECONFIGURATION COMPLETE message and enters URA\_PCH state after it receives a RADIO BEARER RECONFIGURATION message, which invoke the UE to transit from CELL\_FACH to URA\_PCH. To check that the UE does not transmit periodical RLC status in URA\_PCH state after it has been activated.

#### 8.2.2.24.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state. The SS transmits a RADIO BEARER RECONFIGURATION message. The UE transmits a RADIO BEARER RECONFIGURATION COMPLETE message using AM RLC and enters URA\_PCH state. SS calls for generic procedure C.5 to check that UE is in URA\_PCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RECONFIGURATION	Periodical RLC status transmission is activated.
2		→	RADIO BEARER RECONFIGURATION COMPLETE	
3				The UE is in URA_PCH state. The SS verifies that no periodic RLC STATUS PDUs are received from the UE on AM RLC radio bearers during at least 5 seconds.
4		↔	CALL C.5	If the test result of C.5 indicates that UE is in URA_PCH state, the test passes, otherwise it fails.

#### Specific Message Contents

#### RADIO BEARER RECONFIGURATION (Step 1) (FDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3
URA identity	0000 0000 0001B
RB information to reconfigure list	
- RB information to reconfigure	(AM DCCH for RRC)
- RB identity	2
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	600
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT High priority)
- RB identity	3
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	600

- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT Low priority)
- RB identity	4
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DTCH)
- RB identity	20
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	600
- Max_RST	4
- Polling info	
- Timer_poll_prohibit	250
- Timer_poll	250
- Poll_PDU	Not Present
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Window	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	200
- Timer_EPC	Not Present
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	600
- RB mapping info	Not Present
- RB stop/continue	Not Present
Maximum allowed UL TX power	Not Present

Downlink information per radio link list - Downlink information for each radio link - Primary CPICH info - Primary scrambling code	Set to same code as used for cell 1
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### RADIO BEARER RECONFIGURATION (Step 1) (TDD)

The contents of RADIO BEARER SETUP message in this test case is identical as "Packet to CELL\_FACH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3
Downlink information for each radio links - Primary CCPCH info - Cell parameters ID	4

#### 8.2.2.24.5 Test requirement

After step 1 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on uplink DCCH using AM RLC.

After step 2, the UE shall not transmit any periodical RLC STATUS PDUs.

#### 8.2.2.25 Radio Bearer Reconfiguration for transition from CELL\_FACH to CELL\_DCH including modification of previously signalled CELL\_DCH configuration

##### 8.2.2.25.1 Definition

##### 8.2.2.25.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message, the UE shall:

- 1> transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.

## 8.2.2.25.3 Test purpose

To confirm that the UE applies a previously signalled configuration for CELL\_DCH and in addition modifies the parameters for which reconfiguration is requested in the RADIO BEARER RECONFIGURATION message that is used to initiate transition from CELL\_FACH to CELL\_DCH.

## 8.2.2.25.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

- a) The UE is in CELL\_FACH state.
- b) The SS transmits a RADIO BEARER RECONFIGURATION message including dedicated physical channel information to request the UE to transit from CELL\_FACH to CELL\_DCH. Upon receiving this message, the UE establishes the radio bearer and transport channel configuration for CELL\_DCH included in a previous RADIO BEARER SETUP message and modifies the parameters for which reconfiguration was requested in the RADIO BEARER RECONFIGURATION message.
- c) The UE transmits a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC.
- d) SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RECONFIGURATION	Initiates the transition from CELL_FACH to CELL_DCH
2		→	RADIO BEARER RECONFIGURATION COMPLETE	
3		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

## RADIO BEARER RECONFIGURATION (Step 1)

The contents of RADIO BEARER RECONFIGURATION message is identical as "RADIO BEARER RECONFIGURATION message" as found in Annex A with the following exceptions:

Information Element	Value/remark
RB information to reconfigure list	
- RB information to reconfigure	(AM DCCH for RRC)
- RB identity	2
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	
- CHOICE Uplink RLC mode	AM RLC
- Transmission RLC discard	
- SDU discard mode	No discard
- MAX_DAT	15
- Transmission window size	128
- Timer_RST	300
- Max_RST	1
- Polling info	
- Timer_poll	100
- Poll_SDU	1
- Last transmission PDU poll	TRUE
- Last retransmission PDU poll	TRUE
- Poll_Windows	99
- Timer_poll_periodic	Not Present
- CHOICE Downlink RLC mode	AM RLC
- In-sequence delivery	TRUE
- Receiving window size	128
- Downlink RLC status info	
- Timer_status_prohibit	100
- Missing PDU indicator	TRUE
- Timer_STATUS_periodic	Not Present
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT High priority)
- RB identity	3
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	Same as for RB identity 2
- RB mapping info	Not Present
- RB stop/continue	Not Present
- RB information to reconfigure	(AM DCCH for NAS_DT Low priority)
- RB identity	4
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	Same as for RB identity 2
- RB mapping info	Not Present
- RB stop/continue	Not Present

## RADIO BEARER RECONFIGURATION COMPLETE (Step 2)

The contents of RADIO BEARER RECONFIGURATION COMPLETE message is identical as "RADIO BEARER RECONFIGURATION COMPLETE message" as found in Annex A.

### 8.2.2.25.5 Test requirement

After step 2 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

### 8.2.2.26 Radio Bearer Reconfiguration from CELL\_DCH to CELL\_DCH: Success (Incompatible Simultaneous Reconfiguration)

#### 8.2.2.26.1 Definition

#### 8.2.2.26.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RECONFIGURATION message; or

...

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

...

If the IE "Ciphering mode info" is present and if the IE "Reconfiguration" in the variable CIPHERING\_STATUS is set to TRUE, the UE shall:

- 1> ignore this second attempt to change the ciphering configuration; and
- 1> set the variable INCOMPATIBLE\_SECURITY\_RECONFIGURATION to TRUE.

If the IE "Ciphering mode info" is present and if the IE "Reconfiguration" in the variable CIPHERING\_STATUS is set to FALSE, the UE shall:

- 1> set the IE "Reconfiguration" in the variable CIPHERING\_STATUS to TRUE;

...

If the variable INCOMPATIBLE\_SECURITY\_RECONFIGURATION is set to TRUE due to the received reconfiguration message, the UE shall:

- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to the cause value "incompatible simultaneous reconfiguration".
- 1> set the variable INCOMPATIBLE\_SECURITY\_RECONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2.12a, clause 8.6.3.4.

### 8.2.2.26.3 Test purpose

1. To confirm that the UE ignores the subsequent security reconfiguration information which is contained in the RADIO BEARER RECONFIGURATION message.
2. To confirm that the UE reconfigures according to the SECURITY MODE COMMAND message.
3. To confirm that the UE transmits RADIO BEARER RECONFIGURATION FAILURE message on the uplink DCCH using AM RLC.
4. To confirm that the UE transmits SECURITY MODE COMPLETE message on the uplink DCCH using AM RLC.

### 8.2.2.26.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

### Test Procedure

The UE is in CELL\_DCH state. The SS transmits a SECURITY MODE COMMAND message. SS then transmits a RADIO BEARER RECONFIGURATION message. The UE ignores the RADIO BEARER RECONFIGURATION message and transmits a RADIO BEARER RECONFIGURATION FAILURE message and configures the radio bearers according to the SECURITY MODE COMMAND message. On completion of ciphering reconfiguration, the UE shall transmit a SECURITY MODE COMPLETE message on the DCCH using AM RLC.

### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	SECURITY MODE COMMAND	This message includes IE "Ciphering mode info".
2		←	RADIO BEARER RECONFIGURATION	SS send this message before the activation time in step 1 expires. This message includes IE "Ciphering mode info".
3		→	RADIO BEARER RECONFIGURATION FAILURE	The UE ignores the ciphering mode information in step 2.
4		→	SECURITY MODE COMPLETE	

### Specific Message Contents

#### SECURITY MODE COMMAND (Step 1)

If the initial state of the UE is state 6-9, use the message sub-type in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Ciphering mode info	
- Ciphering mode command	Start/restart
- Ciphering algorithm	Use one of the supported ciphering algorithms
- Ciphering activation time for DPCH	$(256+CFN-(CFN \text{ MOD } 8 + 8)) \text{ MOD } 256$
- Radio bearer downlink ciphering activation time info	
- Radio bearer activation time	
- RB identity	1
- RLC sequence number	Current RLC SN+X (Note 1)
- RB identity	2
- RLC sequence number	Current RLC SN+4
- RB identity	3
- RLC sequence number	Current RLC SN+X (Note 1)
- RB identity	4
- RLC sequence number	Current RLC SN+X (Note 1)

If the initial state of the UE is state 6-10, use the message sub-type in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Ciphering mode info	
- Ciphering mode command	Start/restart
- Ciphering algorithm	Use one of the supported ciphering algorithms
- Ciphering activation time for DPCH	$(256+CFN-(CFN \text{ MOD } 8 + 8))\text{MOD } 256$
- Radio bearer downlink ciphering activation time info	
- Radio bearer activation time	
- RB identity	1
- RLC sequence number	Current RLC SN+X (Note 1)
- RB identity	2
- RLC sequence number	Current RLC SN+4
- RB identity	3
- RLC sequence number	Current RLC SN+X (Note 1)
- RB identity	4
- RLC sequence number	Current RLC SN+X (Note 1)
- RB identity	20
- RLC sequence number	Current RLC SN+X (Note 1)

### RADIO BEARER RECONFIGURATION (for Step 2)

If the initial state of the UE is state 6-9, use the message sub-type entitled "Speech in CS" or "Non-speech in CS" in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Ciphering mode info	
- Ciphering mode command	Start/restart
- Ciphering algorithm	Use one of the supported ciphering algorithms
- Ciphering activation time for DPCH	$(256+CFN-(CFN \text{ MOD } 8 + 8))\text{MOD } 256$
- Radio bearer downlink ciphering activation time info	
- Radio bearer activation time	
- RB identity	1
- RLC sequence number	Current RLC SN+X (Note 1)
- RB identity	2
- RLC sequence number	Current RLC SN+4
- RB identity	3
- RLC sequence number	Current RLC SN+X (Note 1)
- RB identity	4
- RLC sequence number	Current RLC SN+X (Note 1)

If the initial state of the UE is state 6-10, use the message sub-type entitled "Packet to CELL\_DCH from CELL\_DCH in PS" in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Ciphering mode info	
- Ciphering mode command	Start/restart
- Ciphering algorithm	Use one of the supported ciphering algorithms
- Ciphering activation time for DPCH	$(256+CFN-(CFN \text{ MOD } 8 + 8))\text{MOD } 256$
- Radio bearer downlink ciphering activation time info	
- Radio bearer activation time	
- RB identity	1
- RLC sequence number	Current RLC SN+X (Note 1)
- RB identity	2
- RLC sequence number	Current RLC SN+4
- RB identity	3
- RLC sequence number	Current RLC SN+X (Note 1)
- RB identity	4
- RLC sequence number	Current RLC SN+X (Note 1)
- RB identity	20
- RLC sequence number	Current RLC SN+X (Note 1)

Note 1: X is set to 1.

#### RADIO BEARER RECONFIGURATION FAILURE (for Step 3) (FDD)

Check that the message received is the same as the message sub-type found in clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
Failure cause	incompatible simultaneous reconfiguration

#### 8.2.2.26.5 Test requirement

After step 2 the UE shall transmit a RADIO BEARER RECONFIGURATION FAILURE message on the DCCH using AM RLC and set the failure cause to "incompatible simultaneous reconfiguration".

After step 3 the UE shall transmit a SECURITY MODE COMPLETE message on the DCCH using AM RLC specified in step 1.

#### 8.2.2.27 Radio Bearer Reconfiguration for transition from CELL\_DCH to CELL\_DCH (Frequency band modification): Success

##### 8.2.2.27.1 Definition

##### 8.2.2.27.2 Conformance requirement

If the UE receives:

-a RADIO BEARER RECONFIGURATION message;

it shall:

1> perform the physical layer synchronisation procedure as specified in TS25.214;

1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the UE receives a RADIO BEARER RECONFIGURATION message including the IE "RB information to reconfigure" that only includes the IE "RB identity", the UE shall:

1> handle the message as if IE "RB information to reconfigure" was absent.

If the UE was in CELL\_DCH state upon reception of the reconfiguration message and remains in CELL\_DCH state, the UE shall:

- 1> if the IE "Uplink DPCH Info" is absent, not change its current UL Physical channel configuration;
- 1> if the IE "Downlink information for each radio link" is absent, not change its current DL Physical channel configuration.

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message, the UE shall:

- 1> transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

### 8.2.2.27.3 Test purpose

1. To confirm that the UE transits from CELL\_DCH to CELL\_DCH according to the RADIO BEARER RECONFIGURATION message.
2. To confirm that the UE transmits the RADIO BEARER RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC on a dedicated physical channel in a different frequency.

### 8.2.2.27.4 Method of test

#### Initial Condition

System Simulator: 2 cells–Cell 1 is active and cell 6 is inactive.

UE: CS-DCCH\_DTCH\_DCH (state 6-9) or PS\_DCCH\_DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

**Table 8.2.27**

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/ 3.84 MHz	-55	-72	Off	-55

Table 8.2.27 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in CELL\_DCH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.27. The SS switches its downlink transmission power settings to columns "T1" and transmits a RADIO BEARER RECONFIGURATION message including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code which is assigned to P-CPICH of cell 6. The UE shall select cell 6 and reconfigure its radio access bearer after receiving this message, and then remains in CELL\_DCH state. The UE transmits a RADIO BEARER RECONFIGURATION COMPLETE message using AM RLC after complete configuration according to receiving RADIO BEARER RECONFIGURATION message. Upon completion of the procedure, the SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The initial state of UE is in CELL_DCH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.2.27.
2				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.2.27.
3		←	RADIO BEARER RECONFIGURATION	Including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6
4		→	RADIO BEARER RECONFIGURATION COMPLETE	The UE sends this message on a dedicated physical channel in cell 6.
5		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

Specific Message Contents

**RADIO BEARER RECONFIGURATION (Step 3)**

The contents RADIO BEARER RECONFIGURATION message in this test case is identical the message sub-type indicated by "Packet to in PS" or "Speech in CS" or "Non speech from CELL\_DCH to CELL\_DCH in CS" in [9] TS 34.108 clause 9, with the following exception:

Information Element	Value/remark
Frequency info - UARFCN uplink(Nu) - UARFCN downlink(Nd)	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
Downlink information for each radio links - Primary CPICH info - Primary Scrambling Code	Set to same code as used for cell 6

**8.2.2.27.5 Test requirement**

After step 3 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC in cell 6.

After step 4 the UE shall be in CELL\_DCH state in cell 6.

**8.2.2.28 Radio Bearer Reconfiguration for transition from CELL\_DCH to CELL\_FACH (Transport channel type switching with frequency band modification): Success**

**8.2.2.28.1 Definition**

**8.2.2.28.2 Conformance requirement**

If the UE receives:

- a RADIO BEARER RECONFIGURATION message;

it shall:

1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the UE receives a RADIO BEARER RECONFIGURATION message including the IE "RB information to reconfigure" that only includes the IE "RB identity", the UE shall:

1> handle the message as if IE "RB information to reconfigure" was absent.

If after state transition the UE enters CELL\_FACH state, the UE shall, after the state transition:

1> if the IE "Frequency info" is included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304 on that frequency.

1> if the IE "Frequency info" is not included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304.

1> if the received reconfiguration message included the IE "Primary CPICH info", and the UE selects another cell than indicated by this IE:

2> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "Cell reselection";

1> select PRACH according to TS25.331 subclause 8.5.17;

1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;

1> use the transport format set given in system information;

1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

2> ignore that IE and stop using DRX.

1> if the contents of the variable C\_RNTI is empty:

2> perform a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Cell reselection";

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message, the UE shall:

1> transmit a RADIO BEARER RECONFIGURATION COMPLETE on the uplink DCCH using AM RLC, using the new configuration after the state transition.

1> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2.

### 8.2.2.28.3 Test purpose

1. To confirm that the UE transits from CELL\_DCH to CELL\_FACH according to the RADIO BEARER RECONFIGURATION message.
2. To confirm that the UE transmits RADIO BEARER RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC on a common physical channel in a different frequency.

8.2.2.28.4 Method of test

Initial Condition

System Simulator: 2 cells – Cell 1 in active and cell 6 is inactive.

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

System Information Block type 11

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	0dB
- UARFCN uplink(Nu)	Not present
- UARFCN downlink(Nd)	FALSE
- Cell info	FDD
- Cell individual offset	Set to same code as used for cell 6
- Reference time difference to cell	
- Read SFN indicator	Not present
- CHOICE mode	0dB
- Primary CPICH info	Not present
- Primary scrambling code	Reference to table 6.1.1
- Primary CPICH Tx power	
- Cell Selection and Re-selection Info	Not present
- Qoffset1s,n	Not present
- Qoffset2s,n	Reference to table 6.1.1
- Maximum allowed UL TX power	Not present
- HCS neighbouring cell information	FDD
- CHOICE mode	Reference to table 6.1.1
- Qqualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

Test Procedure

Table 8.2.2.28

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/ 3.84 MHz	-55	-72	Off	-55

Table 8.2.2.28 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in idle mode of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.2.28. SS requests operator to make an outgoing call. The SS and UE execute procedure P5. Next The SS and the UE execute procedure P9 and then execute procedure P13. The SS switches its downlink transmission power settings to columns "T1" and transmits a RADIO BEARER RECONFIGURATION message including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6. On receiving the RADIO BEARER RECONFIGURATION message, the UE shall select cell 6 and transmit a RADIO BEARER RECONFIGURATION COMPLETE message using AM RLC after complete configuration according to the RADIO BEARER RECONFIGURATION message. Upon completion of the procedure, the SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.2.28. SS requests operator to make an outgoing call.
2		←→	SS executes procedure P5 (clause 7.4.2.2.2) specified in TS 34.108.	
3		←→	SS executes procedure) P9 (clause 7.4.2.4.2) specified in TS 34.108.	
4		←→	SS executes procedure P13 (clause 7.4.2.6.2) specified in TS 34.108.	
5				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.2.28.
6		←	RADIO BEARER RECONFIGURATION	Including IE "Frequency info" and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6
7		→	RADIO BEARER RECONFIGURATION COMPLETE	The UE transmits this message on the common physical channel in cell 6.
8		←→	CALL C.2	f the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

#### Specific Message Contents

##### RADIO BEARER RECONFIGURATION (Step 5)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in [9] TS 34.108 clause 9[9] TS 34.108 clause 9 with the following exception:

Information Element	Value/remark
Frequency info	
- UARFCN uplink(Nu)	Same uplink UARFCN as used for cell 6
- UARFCN downlink(Nd)	Same downlink UARFCN as used for cell 6
Downlink information for each radio link	
- Primary CPICH info	
- Primary Scrambling Code	Set to same code as used for cell 6

After step 6 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

After step 7 the UE shall be in CELL\_FACH state.

## 8.2.2.29 Radio Bearer Reconfiguration for transition from CELL\_DCH to URA\_PCH (Frequency band modification): Success

### 8.2.2.29.1 Definition

### 8.2.2.29.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RECONFIGURATION message;

it shall:

- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.
- 1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message, the UE shall:

- 1> transmit a RADIO BEARER RECONFIGURATION COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

In case the UE receives a RADIO BEARER RECONFIGURATION message including the IE "RB information to reconfigure" that only includes the IE "RB identity", the UE shall:

- 1> handle the message as if IE "RB information to reconfigure" was absent.

If after state transition the UE enters URA\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304 on that frequency.
- 1> if the IE "Frequency info" is not included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304.
- 1> prohibit periodical status transmission in RLC;
- 1> remove any C-RNTI from MAC;
- 1> clear the variable C\_RNTI;
- 1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
  - 2> keep the configuration existing before the reception of the message and transmit a failure response message as specified in TS25.331 subclause 8.2.2.9
- 1> if the UE enters URA\_PCH state, and after cell selection the criteria for URA update caused by "URA reselection" according to TS25.331 subclause 8.3.1 is fulfilled:
  - 2> initiate a URA update procedure according to TS25.331 subclause 8.3.1 using the cause "URA reselection";
  - 2> when the URA update procedure is successfully completed:
    - 3> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

## 8.2.2.29.3 Test purpose

1. To confirm that the UE transmits a RADIO BEARER RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_DCH to URA\_PCH according to the RADIO BEARER RECONFIGURATION message.
3. To confirm that the UE release dedicated physical channel and selects a common physical channel in a different frequency.

## 8.2.2.29.4 Method of test

## Initial Condition

System Simulator: 2 cells – Cell 1 is active and cell 6 is inactive

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

## Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

## System Information Block type 11

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	0dB
- UARFCN uplink(Nu)	
- UARFCN downlink(Nd)	Not present
- Cell info	
- Cell individual offset	FALSE
- Reference time difference to cell	
- Read SFN indicator	FDD
- CHOICE mode	
- Primary CPICH info	Set to same code as used for cell 6
- Primary scrambling code	
- Primary CPICH Tx power	Not present
- Cell Selection and Re-selection Info	
- Qoffset1 <sub>s,n</sub>	0dB
- Qoffset2 <sub>s,n</sub>	Not present
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	Not present
- CHOICE mode	FDD
- Qqualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

## Test Procedure

Table 8.2.2.29

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-72	Off	-55

Table 8.2.2.29 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in idle mode of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.2.29. SS request operator to make an outgoing call. The SS and UE execute procedure P5. Next the SS and the UE execute procedure P9 and then execute procedure P13. The SS switches its downlink transmission power settings to columns "T1" and transmits a RADIO BEARER RECONFIGURATION message including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6. The UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message using AM RLC and enter CELL\_URA state of cell 6. Upon completion of the procedure, the SS calls for generic procedure C.5 to check that UE is in URA\_PCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.2.29. SS request operator to make an outgoing call.
2		←→	SS executes procedure P5 (clause 7.4.2.2.2) specified in TS 34.108.	
3		←→	SS executes procedure) P9 (clause 7.4.2.4.2) specified in TS 34.108.	
4		←→	SS executes procedure P13 (clause 7.4.2.6.2) specified in TS 34.108.	
5				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.2.29.
6		←	RADIO BEARER RECONFIGURATION	Including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6
7		→	RADIO BEARER RECONFIGURATION COMPLETE	UE transmit this message in cell 1 on the dedicated physical channel..
8				The SS waits for 5 s.
9		←→	CALL C.5	If the test result of C.5 indicates that UE is in URA_PCH state, the test passes, otherwise it fails.

## Specific Message Contents

## RADIO BEARER RECONFIGURATION (Step 6)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3
Frequency info	
- UARFCN uplink (Nu)	Same uplink UARFCN as used for cell 6
- UARFCN downlink (Nd)	Same downlink UARFCN as used for cell 6
Downlink information for each radio link	
- Primary CPICH info	
- Primary scrambling code	Set to same code as used for cell 6

## 8.2.6.29.5 Test requirement

After step 6 the UE shall transmits a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC in cell 1.

After step 8 the UE shall be in CELL\_PCH state in cell 6.

## 8.2.2.30 Radio Bearer Reconfiguration for transition from CELL\_DCH to CELL\_PCH (Frequency band modification): Success

## 8.2.2.30.1 Definition

## 8.2.2.30.2 Conformance requirement

If the UE receives:

-a RADIO BEARER RECONFIGURATION message;

it shall:

1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message, the UE shall:

1> transmit a RADIO BEARER RECONFIGURATION COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

In case the UE receives a RADIO BEARER RECONFIGURATION message including the IE "RB information to reconfigure" that only includes the IE "RB identity", the UE shall:

1> handle the message as if IE "RB information to reconfigure" was absent.

If after state transition the UE enters CELL\_PCH state, the UE shall, after the state transition and transmission of the response message:

1> if the IE "Frequency info" is included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304 on that frequency.

1> if the IE "Frequency info" is not included in the received reconfiguration message:

- 2> select a suitable UTRA cell according to TS25.304.
- 1> prohibit periodical status transmission in RLC;
- 1> remove any C-RNTI from MAC;
- 1> clear the variable C\_RNTI;
- 1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
  - 2> keep the configuration existing before the reception of the message and transmit a failure response message as specified in TS25.331 subclause 8.2.2.9
- 1> if the UE enters CELL\_PCH state from CELL\_DCH state, and the received reconfiguration message included the IE "Primary CPICH info, and the UE selected another cell than indicated by this IE:
  - 2> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "cell reselection";
  - 2> when the cell update procedure completed successfully:
    - 3> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

### 8.2.2.30.3 Test purpose

1. To confirm that the UE transmits a RADIO BEARER RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_DCH to CELL\_PCH according to the RADIO BEARER RECONFIGURATION message.
3. To confirm that the UE releases the dedicated physical channel and selects a common physical channel in a different frequency.

### 8.2.2.30.4 Method of test

#### Initial Condition

System Simulator: 2 cells – Cell 1 is active and cell 6 is inactive

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

#### Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

System Information Block type 11

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	Same downlink UARFCN as used for cell 6
- UARFCN uplink(Nu)	
- UARFCN downlink(Nd)	0dB
- Cell info	
- Cell individual offset	Not present
- Reference time difference to cell	
- Read SFN indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH info	Set to same code as used for cell 6
- Primary scrambling code	
- Primary CPICH Tx power	Not present
- Cell Selection and Re-selection Info	0dB
- Qoffset1 <sub>s,n</sub>	
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	Not present
- CHOICE mode	FDD
- Qualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

Test Procedure

Table 8.2.2.30

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-72	Off	-55

Table 8.2.2.30 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in idle mode of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.2.30. SS request operator to make an outgoing call. The SS and UE execute procedure P5. Next The SS and the UE execute procedure P9 and then execute procedure P13. The SS switches its downlink transmission power settings to columns "T1" and transmits a RADIO BEARER RECONFIGURATION message including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6. The UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message using AM RLC and enter CELL\_PCH state. Upon completion of the procedure, the SS calls for generic procedure C.4 to check that UE is in CELL\_PCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.2.30. SS requests operator to make an outgoing call.
2		←→	SS executes procedure P5 (clause 7.4.2.2.3) specified in TS 34.108.	
3		←→	SS executes procedure P9 (clause 7.4.2.4.3) specified in TS 34.108.	
4		←→	SS executes procedure P13 (clause 7.4.2.6.3) specified in TS 34.108.	
5				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.2.30.
6		←	RADIO BEARER RECONFIGURATION	Including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6
7		→	RADIO BEARER RECONFIGURATION COMPLETE	UE transmit this message on the dedicated physical channel in cell 1
8				The SS waits for 5 s.
9			Call C.4	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

Specific Message Contents

#### RADIO BEARER RECONFIGURATION (Step 6)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3
Frequency info	
- UARFCN uplink (Nu)	Same uplink UARFCN as used for cell 6
- UARFCN downlink (Nd)	Same downlink UARFCN as used for cell 6
Downlink information for each radio link	
- Primary CPICH info	
- Primary scrambling code	Set to same code as used for cell 6

#### 8.2.2.30.5 Test requirement

After step 6 the UE shall transmits a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC in cell 1.

After step 8 the UE shall be in CELL\_PCH state in cell 6.

### 8.2.2.31 Radio Bearer Reconfiguration for transition from CELL\_FACH to CELL\_DCH (Frequency band modification): Success

#### 8.2.2.13.1 Definition

#### 8.2.2.31.2 Conformance requirement

If the UE receives:

-a RADIO BEARER RECONFIGURATION message;

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS25.214;
- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.
- 1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the UE receives a RADIO BEARER RECONFIGURATION message including the IE "RB information to reconfigure" that only includes the IE "RB identity", the UE shall:

- 1> handle the message as if IE "RB information to reconfigure" was absent.

If after state transition the UE enters CELL\_DCH state, the UE shall, after the state transition:

- 1> remove any C-RNTI from MAC;
- 1> clear the C\_RNTI.

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message, the UE shall:

- 1> transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC, using the new configuration after the state transition.
- 1> the procedure ends.

#### Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

#### 8.2.2.31.3 Test purpose

1. To confirm that the UE transits from CELL\_FACH to CELL\_DCH according to the RADIO BEARER RECONFIGURATION message.
2. To confirm that the UE transmits RADIO BEARER RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC on a dedicated physical channel in a different frequency.

#### 8.2.2.31.4 Method of test

#### Initial Condition

System Simulator: 2 cells–Cell 1 is active and cell 6 is inactive.

UE: PS\_DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

Table 8.2.2.31

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-60	-60	Off	-60

Table 8.2.2.31 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in CELL\_FACH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.2.31. The SS switches its downlink transmission power settings to columns "T1" and transmits a RADIO BEARER RECONFIGURATION message IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6. The UE shall select cell 6 and then enter CELL\_DCH state according to receiving RADIO BEARER RECONFIGURATION message. Finally the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message using AM RLC. Upon completion of the procedure, the SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in CELL_FACH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.2.31.
2				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.2.31.
3		←	RADIO BEARER RECONFIGURATION	Including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6
4		→	RADIO BEARER RECONFIGURATION COMPLETE	The UE sends this message on a dedicated physical channel in cell 6.
5		↔	Call C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

## RADIO BEARER RECONFIGURATION (Step 3)

The contents of RADIO BEARER RECONFIGURATION message in this test case are identical the message sub-type indicated by "Packet to CELL\_DCH from CELL\_FACH in PS" in [9] TS 34.108 clause 9, with the following exception:

Information Element	Value/remark
Frequency info - UARFCN uplink(Nu) - UARFCN downlink(Nd) Downlink information for each radio links - Primary CPICH info - Primary Scrambling Code	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6  Set to same code as used for cell 6

#### 8.2.2.31.5 Test requirement

After step 3 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC in cell 6.

After step 4 the UE shall be in CELL\_DCH state in cell 6.

#### 8.2.2.32 Radio Bearer Reconfiguration for transition from CELL\_FACH to CELL\_FACH (Frequency band modification): Success

##### 8.2.2.32.1 Definition

##### 8.2.2.32.2 Conformance requirement

If the UE receives:

-a RADIO BEARER RECONFIGURATION message;

it shall:

- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.
- 1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the UE receives a RADIO BEARER RECONFIGURATION message including the IE "RB information to reconfigure" that only includes the IE "RB identity", the UE shall:

- 1> handle the message as if IE "RB information to reconfigure" was absent.

If the UE was in CELL\_FACH state upon reception of the reconfiguration message and remains in CELL\_FACH state, the UE shall:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304 on that frequency;
  - 2> if the received reconfiguration message included the IE "Primary CPICH info", and the UE selected another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info":
    - 3> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "cell reselection";
    - 3> when the cell update procedure completed successfully:
- 4> proceed as below.

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message, the UE shall:

- 1> transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

## 8.2.2.32.3 Test purpose

1. To confirm that the UE transits from CELL\_FACH to CELL\_FACH according to the RADIO BEARER RECONFIGURATION message.
2. To confirm that the UE transmits RADIO BEARER RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC on a common physical channel in a different frequency.

## 8.2.2.32.4 Method of test

## Initial Condition

System Simulator: 2 cells–Cell 1 is active and cell 6 is inactive.

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS".

## Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

## System Information Block type 11

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include any information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	Same downlink UARFCN as used for cell 6
- UARFCN uplink(Nu)	
- UARFCN downlink(Nd)	0dB
- Cell info	
- Cell individual offset	Not present
- Reference time difference to cell	
- Read SFN indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH info	Set to same code as used for cell 6
- Primary scrambling code	
- Primary CPICH Tx power	Not present
- Cell Selection and Re-selection Info	0dB
- Qoffset1 <sub>s,n</sub>	
- Qoffset2 <sub>s,n</sub>	Not present
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	Not present
- CHOICE mode	FDD
- Qqualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

## Test Procedure

Table 8.2.2.32

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/ 3.84 MHz	-55	-72	Off	-55

Table 8.2.2.32 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in CELL\_FACH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.2.32. SS requests operator to make an outgoing call. The SS and UE execute procedure P6. Next The SS and the UE execute procedure P10 and then execute procedure P14. The SS switches its downlink transmission power settings to columns "T1" and transmits a RADIO BEARER RECONFIGURATION message including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6. The UE shall select cell 6 and transmits a RADIO BEARER RECONFIGURATION COMPLETE message using AM RLC after it completes configuration according to the received RADIO BEARER RECONFIGURATION message. Upon completion of the procedure, the SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.2.32. SS requests operator to make an outgoing call.
2		↔	SS executes procedure P6 (clause 7.4.2.2.3) specified in TS 34.108.	
3		↔	SS executes procedure) P9 (clause 7.4.2.4.3) specified in TS 34.108.	
4		↔	SS executes procedure P13 (clause 7.4.2.6.3) specified in TS 34.108.	
5				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.2.32.
6		←	RADIO BEARER RECONFIGURATION	Including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6
7		→	RADIO BEARER RECONFIGURATION COMPLETE	The UE sends this message on a common physical channel in cell 6.
8		↔	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

## Specific Message Contents

## RADIO BEARER RECONFIGURATION (Step 6)

The contents of RADIO BEARER RECONFIGURATION message in this test case are identical the message sub-type indicated by "Packet to CELL\_FACH from CELL\_FACH in PS" in [9] TS 34.108 clause 9, with the following exception:

Information Element	Value/remark
Frequency info - UARFCN uplink(Nu) - UARFCN downlink(Nd)	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
Downlink information for each radio links - Primary CPICH info - Primary Scrambling Code	Set to same code as used for cell 6

## 8.2.2.32.5 Test requirement

After step 6 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC in cell 6.

After step 7 the UE shall be in CELL\_FACH state of cell 6.

## 8.2.2.33 Radio Bearer Reconfiguration for transition from CELL\_FACH to CELL\_PCH (Frequency band modification): Success

## 8.2.2.33.1 Definition

## 8.2.2.33.2 Conformance requirement

If the UE receives:

-a RADIO BEARER RECONFIGURATION message;

it shall:

1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the UE receives a RADIO BEARER RECONFIGURATION message including the IE "RB information to reconfigure" that only includes the IE "RB identity", the UE shall:

1> handle the message as if IE "RB information to reconfigure" was absent.

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message, the UE shall:

1> transmit a RADIO BEARER RECONFIGURATION COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

If after state transition the UE enters CELL\_PCH state, the UE shall, after the state transition and transmission of the response message:

1> if the IE "Frequency info" is included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304 on that frequency.

1> if the IE "Frequency info" is not included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304.

1> prohibit periodical status transmission in RLC;

- 1> remove any C-RNTI from MAC;
- 1> clear the variable C\_RNTI;
- 1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
  - 2> keep the configuration existing before the reception of the message and transmit a failure response message as specified in TS25.331 subclause 8.2.2.9
- 1> if the UE enters CELL\_PCH state from CELL\_FACH state, and the received reconfiguration message included the IE "Primary CPICH info" and the UE selected another cell than indicated by this IE:
  - 2> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "cell reselection";
  - 2> when the cell update procedure is successfully completed:
    - 3> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

### 8.2.2.33.3 Test purpose

1. To confirm that the UE transmits a RADIO BEARER RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_FACH to CELL\_PCH according to the RADIO BEARER RECONFIGURATION message.
3. To confirm that the UE selects a common physical channel in a different frequency.

### 8.2.2.33.4 Method of test

#### Initial Condition

System Simulator: 2 cells–Cell 1 in active and cell 6 is inactive

UE: Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

#### Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

System Information Block type 11

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include any information of cell 5 and cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	0dB
- UARFCN uplink(Nu)	
- UARFCN downlink(Nd)	Not present
- Cell info	
- Cell individual offset	FALSE
- Reference time difference to cell	FDD
- Read SFN indicator	Set to same code as used for cell 6
- CHOICE mode	
- Primary CPICH info	Not present
- Primary scrambling code	
- Primary CPICH Tx power	0dB
- Cell Selection and Re-selection Info	
- Qoffset1 <sub>s,n</sub>	Not present
- Qoffset2 <sub>s,n</sub>	Reference to table 6.1.1
- Maximum allowed UL TX power	Not present
- HCS neighbouring cell information	FDD
- CHOICE mode	Reference to table 6.1.1
- Qqualmin	Reference to table 6.1.1
- Qrxlevmin	2
- Inter frequency cell id	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
- Frequency info	
- UARFCN uplink(Nu)	0dB
- UARFCN downlink(Nd)	
- Cell info	Not present
- Cell individual offset	
- Reference time difference to cell	FALSE
- Read SFN indicator	FDD
- CHOICE mode	Set to same code as used for cell 6
- Primary CPICH info	
- Primary scrambling code	Not present
- Primary CPICH Tx power	
- Cell Selection and Re-selection Info	0dB
- Qoffset1 <sub>s,n</sub>	
- Qoffset2 <sub>s,n</sub>	Not present
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	Not present
- CHOICE mode	FDD
- Qqualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

Test Procedure

Table 8.2.2.33

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/ 3.84 MHz	-55	-72	Off	-55

Table 8.2.2.33 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in idle mode of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.2.33. SS requests operator to make an outgoing call. The SS and UE execute procedure P6. Next The SS and the UE execute procedure P10 and then execute procedure P14. The SS switches its downlink transmission power settings to columns "T1" and transmits a RADIO BEARER RECONFIGURATION message including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6. The UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message using AM RLC and enter CELL\_PCH state in cell 6. Upon completion of the procedure, the SS calls for generic procedure C.4 to check that UE is in CELL\_PCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.2.33. SS requests operator to make an outgoing call.
2	←→		SS executes procedure P6 (clause 7.4.2.2.3) specified in TS 34.108.	
3	←→		SS executes procedure P10 (clause 7.4.2.4.3) specified in TS 34.108.	
4	←→		SS executes procedure P14 (clause 7.4.2.6.3) specified in TS 34.108.	
5				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.2.33.
6		←	RADIO BEARER RECONFIGURATION	Including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6
7		→	RADIO BEARER RECONFIGURATION COMPLETE	UE transmit this message on the common physical channel in cell 1.
8				The SS waits for 5 s.
9	←→		CALL C.4	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

#### Specific Message Contents

##### RADIO BEARER RECONFIGURATION (Step 6)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3
Frequency info	
- UARFCN uplink(Nu)	Same uplink UARFCN as used for cell 6
- UARFCN downlink(Nd)	Same downlink UARFCN as used for cell 6
Downlink information for each radio link	
- Primary CPICH info	
- Primary scrambling code	Set to same code as used for cell 6

### 8.2.2.33.5 Test requirement

After step 6 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC in cell 1.

After step 8 the UE shall be in CELL\_PCH state in cell 6.

### 8.2.2.34 Radio Bearer Reconfiguration for transition from CELL\_FACH to URA\_PCH (Frequency band modification): Success

#### 8.2.2.34.1 Definition

#### 8.2.2.34.2 Conformance requirement

If the UE receives:

-a RADIO BEARER RECONFIGURATION message;

it shall:

1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the UE receives a RADIO BEARER RECONFIGURATION message including the IE "RB information to reconfigure" that only includes the IE "RB identity", the UE shall:

1> handle the message as if IE "RB information to reconfigure" was absent.

In case the procedure was triggered by reception of a RADIO BEARER RECONFIGURATION message, the UE shall:

1> transmit a RADIO BEARER RECONFIGURATION COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

If after state transition the UE enters URA\_PCH state, the UE shall, after the state transition and transmission of the response message:

1> if the IE "Frequency info" is included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304 on that frequency.

1> if the IE "Frequency info" is not included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304.

1> prohibit periodical status transmission in RLC;

1> remove any C-RNTI from MAC;

1> clear the variable C\_RNTI;

1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;

1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS25.331 subclause 8.6.3.2.

1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:

2> keep the configuration existing before the reception of the message and transmit a failure response message as specified in TS25.331 subclause 8.2.2.9

- 1> if the UE enters URA\_PCH state, and after cell selection the criteria for URA update caused by "URA reselection" according to subclause TS25.331 8.3.1 is fulfilled:
- 2> initiate a URA update procedure according to TS25.331 subclause 8.3.1 using the cause "URA reselection";
- 2> when the URA update procedure is successfully completed:
  - 3> the procedure ends.

#### Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

#### 8.2.2.34.3 Test purpose

1. To confirm that the UE transmits a RADIO BEARER RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_FACH to URA\_PCH according to the RADIO BEARER RECONFIGURATION message.
3. To confirm that the UE selects a common physical channel in a different frequency.

#### 8.2.2.34.4 Method of test

##### Initial Condition

System Simulator: 2 cells–Cell 1 is active and cell 6 are active

UE: Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

##### Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

System Information Block type 11 (Step 1)

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include any information of cell 5 and cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 5 Same downlink UARFCN as used for cell 5
- Inter frequency cell id	
- Frequency info	0dB
- UARFCN uplink(Nu)	
- UARFCN downlink(Nd)	Not present
- Cell info	
- Cell individual offset	FALSE
- Reference time difference to cell	FDD
- Read SFN indicator	Set to same code as used for cell 6
- CHOICE mode	
- Primary CPICH info	Not present
- Primary scrambling code	
- Primary CPICH Tx power	0dB
- Cell Selection and Re-selection Info	
- Qoffset1 <sub>s,n</sub>	Not present
- Qoffset2 <sub>s,n</sub>	Reference to table 6.1.1
- Maximum allowed UL TX power	Not present
- HCS neighbouring cell information	FDD
- CHOICE mode	Reference to table 6.1.1
- Qqualmin	Reference to table 6.1.1
- Qrxlevmin	2
- Inter frequency cell id	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
- Frequency info	
- UARFCN uplink(Nu)	0dB
- UARFCN downlink(Nd)	
- Cell info	Not present
- Cell individual offset	
- Reference time difference to cell	FALSE
- Read SFN indicator	FDD
- CHOICE mode	Set to same code as used for cell 6
- Primary CPICH info	
- Primary scrambling code	Not present
- Primary CPICH Tx power	
- Cell Selection and Re-selection Info	0dB
- Qoffset1 <sub>s,n</sub>	
- Qoffset2 <sub>s,n</sub>	Not present
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	Not present
- CHOICE mode	FDD
- Qqualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

Test Procedure

Table 8.2.2.34

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/ 3.84 MHz	-55	-72	Off	-55

Table 8.2.2.34 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in CELL\_FACH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.2.34. SS requests operator to make an outgoing call. The SS and UE execute procedure P6. Next The SS and the UE execute procedure P10 and then execute procedure P14. The SS switches its downlink transmission power settings to columns "T1" and transmits a RADIO BEARER RECONFIGURATION message including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6. The UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message using AM RLC and enter URA\_PCH state of cell 6. Upon completion of the procedure, the SS calls for generic procedure C.5 to check that UE is in URA\_PCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	System Information Block type 11	The UE is in idle mode and camped on cell 1. The contents of System Information Block type 11 message are different from the default settings and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.2.34. SS requests operator to make an outgoing call.
2	←→		SS executes procedure P6 (clause 7.4.2.2.2) specified in TS 34.108.	
3	←→		SS executes procedure P10 (clause 7.4.2.4.2) specified in TS 34.108.	
4	←→		SS executes procedure P14 (clause 7.4.2.6.2) specified in TS 34.108.	
5				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.2.34.
6		←	RADIO BEARER RECONFIGURATION	Including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6
7		→	RADIO BEARER RECONFIGURATION COMPLETE	The UE transmit this message on the common physical channel. n cell 1.
8				The SS waits for 5 s.
9	←→		CALL C.5	If the test result of C.4 indicates that UE is in URA_PCH state, the test passes, otherwise it fails

#### Specific Message Contents

##### RADIO BEARER RECONFIGURATION (Step 6)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3
Frequency info	
- UARFCN uplink (Nu)	Same uplink UARFCN as used for cell 6
- UARFCN downlink (Nd)	Same downlink UARFCN as used for cell 6
Downlink information for each radio link	
- Primary CPICH info	
- Primary scrambling code	Set to same code as used for cell 6

#### 8.2.2.34.5 Test requirement

After step 6 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC in cell 1.

After step 8 the UE shall be in CELL\_PCH state in cell 6.

## 8.2.3 Radio Bearer Release

### 8.2.3.1 Radio Bearer Release for transition from CELL\_DCH to CELL\_DCH: Success

#### 8.2.3.1.1 Definition

#### 8.2.3.1.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RELEASE message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If the UE was in CELL\_DCH state upon reception of the reconfiguration message and remains in CELL\_DCH state, the UE shall:

- 1> if the IE "Uplink DPCH Info" is absent, not change its current UL Physical channel configuration;
- 1> if the IE "Downlink information for each radio link" is absent, not change its current DL Physical channel configuration.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER RELEASE message, the UE shall:

- 1> transmit a RADIO BEARER RELEASE COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

#### 8.2.3.1.3 Test purpose

To confirm that the UE releases the existing radio bearer according to a RADIO BEARER RELEASE message.

#### 8.2.3.1.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

The UE is in CELL\_DCH state. The SS transmits a RADIO BEARER RELEASE message to the UE. The UE releases the radio access bearer and transmits a RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RELEASE	
2		→	RADIO BEARER RELEASE COMPLETE	Release the radio bearer.
3		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

#### Specific Message Contents

#### RADIO BEARER RELEASE

None.

#### 8.2.3.1.5 Test requirement

After step 2 the UE shall transmit a RADIO BEARER RELEASE COMPLETE message.

#### 8.2.3.2 Radio Bearer Release for transition from CELL\_DCH to CELL\_DCH: Failure (Unsupported configuration)

##### 8.2.3.2.1 Definition

##### 8.2.3.2.2 Conformance requirement

If the UTRAN instructs the UE to use a configuration, which it does not support and/or if the received message causes the variable UNSUPPORTED\_CONFIGURATION to be set to TRUE, the UE shall:

- 1> transmit a failure response as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:

- 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "configuration unsupported".
- 1> set the variable UNSUPPORTED\_CONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a RADIO BEARER RELEASE message:
- ...
- 2> transmit a RADIO BEARER RELEASE FAILURE as response message on the DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.6, 8.2.2.9.

#### 8.2.3.2.3 Test purpose

To confirm that the UE keeps its current configuration and transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, if the received RADIO BEARER RELEASE message indicates an unsupported configuration parameters for the UE.

#### 8.2.3.2.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a RADIO BEARER RELEASE message to the UE specifying a frequency which is not supported by the UE. The UE transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC indicating "configuration unsupported" in IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER RELEASE	Including unsupported configuration by the UE
2		→	RADIO BEARER RELEASE FAILURE	The UE does not change the radio bearer.
3		→	MEASUREMENT REPORT	

Specific Message Contents

MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

MEASUREMENT REPORT (Step 0b and 3)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

#### RADIO BEARER RELEASE (FDD) (Step 1)

The contents of RADIO BEARER RELEASE message in this test case is identical as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info	
- UARFCN uplink (Nu)	0
- UARFCN downlink (Nd)	950

#### RADIO BEARER RELEASE (TDD) (Step 1)

The contents of RADIO BEARER RELEASE message in this test case is identical as "Speech in CS" found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info	
- UARFCN (Nt)	0

#### RADIO BEARER RELEASE FAILURE (Step 2)

The contents of RADIO BEARER RELEASE FAILURE message in this test case is the same as the RADIO BEARER RELEASE FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Configuration unsupported

#### 8.2.3.2.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 1 the UE shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC with the IE "failure cause" set to "configuration unsupported".

After step 2, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

### 8.2.3.3 Radio Bearer Release for transition from CELL\_DCH to CELL\_DCH: Failure (Physical channel failure and reversion to old configuration)

#### 8.2.3.3.1 Definition

#### 8.2.3.3.2 Conformance requirement

When a physical dedicated channel establishment is initiated by the UE, the UE shall start a timer T312 and wait for layer 1 to indicate N312 "in sync" indications. On receiving N312 "in sync" indications, the physical channel is considered established and the timer T312 is stopped and reset.

If the timer T312 expires before the physical channel is established, the UE shall consider this as a "physical channel establishment failure".

If the received message caused the UE to be in CELL\_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

1> revert to the configuration prior to the reception of the message (old configuration);

...

1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and

2> clear that entry;

2> set the IE "failure cause" to "physical channel failure".

1> set the variable ORDERED\_RECONFIGURATION to FALSE;

1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

1> in case of reception of a RADIO BEARER RELEASE message:

...

2> transmit a RADIO BEARER RELEASE FAILURE as response message on the DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.7, 8.2.2.9, 8.5.4.

#### 8.2.3.3.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC if the UE fails to release the radio bearer according to a RADIO BEARER RELEASE message by timer T312 expiry.

## 8.2.3.3.4 Method of test

## Initial Condition

System Simulator: 1 cell

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a RADIO BEARER RELEASE message but it keeps its current dedicated physical channel configuration. This causes the UE to fail to release the radio bearer, and after T312 expires the UE reverts to the old configuration. The UE then transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC which specifies "physical channel failure" in IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER RELEASE	
2				The SS keeps its current dedicated physical channel configuration.
3		→	RADIO BEARER RELEASE FAILURE	After T312 expires, the UE finds that it fails to release a radio bearer and reverts to the old configuration.
4		→	MEASUREMENT REPORT	

## Specific Message Contents

## MEASUREMENT CONTROL (Step 1a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	Acknowledged mode RLC
- Measurement Report Transfer Mode	Periodical Reporting
- Periodical Reporting / Event Trigger Reporting Mode	
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

### MEASUREMENT REPORT (Step 1b and 13)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

### RADIO BEARER RELEASE (Step 1)

The contents of RADIO BEARER RELEASE message in this test case is identical as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in annex A.

### RADIO BEARER RELEASE FAILURE (Step 3)

The contents of RADIO BEARER RELEASE FAILURE message in this test case is the same as the RADIO BEARER RELEASE FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Physical channel failure

#### 8.2.3.3.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 2 the UE shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC which includes the value "physical channel failure" in IE "failure cause".

After step 3, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

### 8.2.3.4 Radio Bearer Release for transition from CELL\_DCH to CELL\_DCH: Failure (Physical channel failure and cell reselection)

#### 8.2.3.4.1 Definition

#### 8.2.3.4.2 Conformance requirement

If the received message caused the UE to be in CELL\_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

- 1> revert to the configuration prior to the reception of the message (old configuration);
- 1> if the old configuration includes dedicated physical channels (CELL\_DCH state) and the UE is unable to revert to the old configuration:
  - 2> initiate a cell update procedure according to TS 25.331 subclause 8.3.1, using the cause "radio link failure";
  - 2> after the cell update procedure has completed successfully:
    - 3> proceed as below.
    - ...
- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "physical channel failure".
- 1> set the variable ORDERED\_RECONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and

- includes "Physical channel information elements":

the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message using AM RLC.

The UE shall:

- 1> in case of reception of a RADIO BEARER RELEASE message:

...

- 2> transmit a RADIO BEARER RELEASE FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.7, 8.2.2.9, 8.3.1.7.

### 8.2.3.4.3 Test purpose

To confirm that the UE transmits a RADIO BEARER RELEASE FAILURE message after it completes a cell update procedure when the UE cannot revert to the old configuration after encountering a physical channel failure during the execution of a radio bearer release procedure.

### 8.2.3.4.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a RADIO BEARER RELEASE message to the UE but does not configure dedicated physical channel in accordance with the settings in the message and release the previous configuration. As a result, the UE recognizes that it cannot reconfigure the radio bearers and wants to revert to the old configuration, but the UE cannot revert to the old configuration. The UE transmits a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "radio link failure". The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC and subsequently transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to "physical channel failure". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER RELEASE	
2				The SS does not configure the dedicated physical channel in accordance with the RADIO BEARER RELEASE message and shall release the old configuration.
3		→	CELL UPDATE	This message includes the value "radio link failure" set in IE "Cell update cause".
4		←	CELL UPDATE CONFIRM	This message includes IE "Physical channel information elements".
5				The SS configures the dedicated physical channel according to the IE "Physical channel information elements" included in the CELL UPDATE CONFIRM message.
6		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
7		→	RADIO BEARER RELEASE FAILURE	The IE "failure cause" shall be set to "physical channel failure"
8		→	MEASUREMENT REPORT	

Specific Message Contents

MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

## MEASUREMENT REPORT (Step 0b and 8)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

## RADIO BEARER RELEASE (Step 1)

The contents of RADIO BEARER RELEASE message in this test case are identical as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A.

## CELL UPDATE (Step 3)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A with the following exceptions:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0000 0001'
Cell Update Cause	"radio link failure"

## CELL UPDATE CONFIRM (Step 4) (FDD)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex A with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 3
RRC State indicator	CELL_DCH
UplinkDPCH Info	Same as RADIO BEARER SETUP message used to move to initial condition
Downlink information for each radio links	Same as RADIO BEARER SETUP message used to move to initial condition

## CELL UPDATE CONFIRM (Step 4) (TDD)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex A with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 3
RRC State indicator	CELL_DCH
UplinkDPCH timeslots and codes	Same as RADIO BEARER SETUP message used to move to initial condition
Downlink information for each radio links	Same as RADIO BEARER SETUP message used to move to initial condition

## RADIO BEARER RELEASE FAILURE (Step 7)

The contents of RADIO BEARER RELEASE FAILURE message in this test case is the same as the RADIO BEARER RELEASE FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	"physical channel failure"

## 8.2.3.4.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 2 the UE shall transmit a CELL UPDATE message on the uplink CCCH with IE "Cell update cause" set to "radio link failure".

After step 5 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

After step 6 the UE shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting the IE "failure cause" to "physical channel failure".

After step 7, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

## 8.2.3.5 Radio Bearer Release for transition from CELL\_DCH to CELL\_DCH: Failure (Incompatible simultaneous reconfiguration)

## 8.2.3.5.1 Definition

## 8.2.3.5.2 Conformance requirement

If the received message is any of the messages:

- RADIO BEARER RELEASE; or

...

the UE shall:

- 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or

...

- 3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:

...

3> else:

4> reject the transaction; and

4> if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:

5> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

...

If the table "Rejected transactions" in the variable TRANSACTIONS is set due to the received message and the variable PROTOCOL\_ERROR\_REJECT is set to FALSE, the UE shall:

1> not apply the configuration contained in the received reconfiguration message;

1> transmit a failure response message as specified in subclause TS 25.331 8.2.2.9, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable TRANSACTIONS; and

2> clear that entry;

2> set the IE "failure cause" to "incompatible simultaneous reconfiguration".

1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

1> in case of reception of a RADIO BEARER RELEASE message:

...

2> transmit a RADIO BEARER RELEASE FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.9, 8.2.2.12, clause 8.6.3.11.

### 8.2.3.5.3 Test purpose

To confirm that if the UE receives a RADIO BEARER RELEASE message during a reconfiguring procedure due to a radio bearer message other than RADIO BEARER RELEASE, it shall keep its configuration as if the RADIO BEARER RELEASE message had not been received and complete the reconfiguration procedure according to the previously received message.

### 8.2.3.5.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

The UE is in CELL\_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE. The SS transmits a RADIO BEARER RELEASE message before the "activation time" indicated in the RADIO BEARER RECONFIGURATION message expires. When the UE receives the RADIO BEARER RELEASE message, the UE shall keep the configuration as if it had not received the RADIO BEARER RELEASE message and shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". When the activation time lapses, the UE reconfigures the new physical channel parameters and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on DCCH using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RECONFIGURATION	
2		←	RADIO BEARER RELEASE	Message sent before the "Activation time" indicated in the message of step 1 has elapsed.
3		→	RADIO BEARER RELEASE FAILURE	The UE does not change the configuration due to the reception of RADIO BEARER RELEASE message.
4		→	RADIO BEARER RECONFIGURATION COMPLETE	This message is on DCCH using AM RLC.
5		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

## RADIO BEARER RECONFIGURATION (Step 1) (FDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical to the message sub-type title as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A, with the following exceptions:

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8 ]
Uplink DPCH info - Scrambling code number	1
Downlink information common for all radio links - Downlink DPCH info common for all RL - Timing Indicator	Maintain

## RADIO BEARER RECONFIGURATION (TDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical to the message sub-type titled "Packet to CELL\_DCH from CELL\_DCH in PS" in Annex A, with the following exceptions:

Information Element	Value/remark
Uplink DPCH timeslots and codes - First timeslot code list	Assigned by SS
Downlink information common for all radio links - Downlink DPCH info common for all RL - Timing Indicator	Maintain

## RADIO BEARER RELEASE (Step 2) (FDD)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_DCH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time Info Uplink DPCH Info - Scrambling code number	Current CFN-[current CFN mod 8 + 8 ]  2

### RADIO BEARER RECONFIGURATION (Step 2) (TDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical as "Packet to CELL\_DCH from CELL\_DCH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time - Uplink DPCH timeslots and codes - First timeslot code list	Not Present  A different code combination to that used in step 1.

### RADIO BEARER RELEASE FAILURE

The contents of RADIO BEARER RELEASE FAILURE message in this test case is the same as the RADIO BEARER RELEASE FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Incompatible simultaneous reconfiguration

#### 8.2.3.5.5 Test requirement

After step 2 the UE shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "Incompatible simultaneous reconfiguration".

After step 3 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message.

#### 8.2.3.6 Radio Bearer Release for transition from CELL\_DCH to CELL\_DCH: Failure (Invalid message reception and Invalid configuration)

##### 8.2.3.6.1 Definition

##### 8.2.3.6.2 Conformance requirement

If the received reconfiguration message contains a protocol error causing the variable `PROTOCOL_ERROR_REJECT` to be set to TRUE according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable `TRANSACTIONS`; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to the cause value "protocol error";
  - 2> include the IE "Protocol error information" with contents set to the value of the variable `PROTOCOL_ERROR_INFORMATION`.

If the variable `INVALID_CONFIGURATION` is set to TRUE the UE shall:

- 1> keep the configuration existing before the reception of the message;
- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
    - 3> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
    - 3> clear that entry.
  - 2> set the IE "failure cause" to "invalid configuration".
- 1> set the variable INVALID\_CONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a RADIO BEARER RELEASE message:
  - ...
  - 2> transmit a RADIO BEARER RELEASE FAILURE as response message on the DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.13, 8.2.2.11, 8.2.2.9.

#### 8.2.3.6.3 Test purpose

To confirm that the UE transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC if it receives an invalid RADIO BEARER RELEASE message, which contains an unexpected critical message extension.

To confirm that the UE transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC if it receives a RADIO BEARER RELEASE message including some IEs set to give an invalid configuration.

#### 8.2.3.6.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits an invalid RADIO BEARER RELEASE message to the UE which does not any IEs except IE "Message Type". The UE keeps the old configuration and transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC. This message shall indicate "protocol error" in IE "failure cause" and also "Message extension not comprehended" in IE "Protocol error cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically. SS transmits a RADIO BEARER RELEASE message including some IEs set to give an invalid configuration. The UE keeps current configuration and transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to "invalid configuration". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER RELEASE	See specific message content.
2		→	RADIO BEARER RELEASE FAILURE	The UE shall not change the configuration.
2a		→	MEASUREMENT REPORT	
3		←	RADIO BEARER RELEASE	This message includes IE set to give an invalid configuration
4				The UE does not change the configuration
5		→	RADIO BEARER RELEASE FAILURE	The IE "failure cause" shall be set to "invalid configuration"
6		→	MEASUREMENT REPORT	

Specific Message Contents

MEASUREMENT CONTROL (Step 1a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

MEASUREMENT REPORT (Step 1b, 2a and 6)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

#### RADIO BEARER RELEASE (Step 1)

Use the RADIO BEARER RELEASE message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Critical extensions	'01'H

#### RADIO BEARER RELEASE FAILURE (Step 2)

The contents of RADIO BEARER RELEASE FAILURE message in this test case is the same as the RADIO BEARER RELEASE FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	Message extension not comprehended

#### RADIO BEARER RELEASE (Step 3) (FDD)

The contents of RADIO BEARER RELEASE message in this test case is identical as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
- Default DPCH Offset Value	512
- DPCH frame offset	1024

#### RADIO BEARER RELEASE (Step 3) (TDD)

Information Element	Value/remark
-PRACH TFCS	Present

## RADIO BEARER RELEASE FAILURE (Step 5)

The contents of RADIO BEARER RELEASE FAILURE message in this test case is the same as the RADIO BEARER RELEASE FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Invalid configuration

### 8.2.3.6.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 1 the UE shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, which is set to "protocol error" in IE "failure cause" and is set to "Message extension not comprehended" in IE "Protocol error cause".

After step 2, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 4 the UE shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting the value "invalid configuration" to IE "failure cause".

After step 5, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

### 8.2.3.7 Radio Bearer Release for transition from CELL\_DCH to CELL\_FACH: Success

#### 8.2.3.7.1 Definition

#### 8.2.3.7.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RELEASE message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_FACH state, the UE shall, after the state transition:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency.
- 1> if the IE "Frequency info" is not included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304.
- 1> if the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD), and the UE selects another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD):

- 2> initiate a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Cell reselection";
- 2> when the cell update procedure completed successfully:
  - 3> if the UE is in CELL\_PCH or URA\_PCH state:
    - 4> initiate a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Uplink data transmission";
    - 4> proceed as below.
- 1> select PRACH according to TS 25.331 subclause 8.5.17;
- 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
- 1> if the contents of the variable C\_RNTI is empty:
  - 2> perform a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Cell reselection";
  - 2> when the cell update procedure completed successfully:
    - 3> if the UE is in CELL\_PCH or URA\_PCH state:
      - 4> initiate a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Uplink data transmission";
      - 4> proceed as below.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER RELEASE message, the UE shall:

- 1> transmit a RADIO BEARER RELEASE COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

### 8.2.3.7.3 Test purpose

To confirm that the UE release the existing the radio bearer according to a RADIO BEARER RELEASE message.

### 8.2.3.7.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: PS-DTCH+DCCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in CELL\_DCH state. The SS transmits a RADIO BEARER RELEASE message to the UE. The UE releases the radio access bearer and transmits a RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC. SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RELEASE	SS releases the radio bearer in the fashion specified in the message and allocate common channel resources to carry the remaining radio bearers.
2				The UE selects PRACH and S-CCPCH indicated in SIB5 and SIB6 after entering CELL_FACH state. The UE shall release dedicated channels, and reconfigure the remaining radio bearers using the common channel.
3		→	RADIO BEARER RELEASE COMPLETE	
4		↔	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

Specific Message Contents

#### RADIO BEARER RELEASE (Step 1)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in [9] TS 34.108 clause 9 with the following exception:

Information Element	Value/remark
New C-RNTI	0000 0000 0000 0001B

#### 8.2.3.7.5 Test requirement

After step 2 the UE shall transmit a RADIO BEARER RELEASE COMPLETE message.

#### 8.2.3.8 Radio Bearer Release for transition from CELL\_DCH to CELL\_FACH: Success (Cell re-selection)

##### 8.2.3.8.1 Definition

##### 8.2.3.8.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RELEASE message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_FACH state, the UE shall, after the state transition:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:

- 2> select a suitable UTRA cell according to TS 25.304 on that frequency.
- 1> if the IE "Frequency info" is not included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304
- 1> if the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD), and the UE selects another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD):
  - 2> initiate a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Cell reselection";
- 1> select PRACH according to TS 25.331 subclause 8.5.17;
- 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
- 1> if the contents of the variable C\_RNTI is empty:
  - 2> perform a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Cell reselection";
  - 2> when the cell update procedure completed successfully:
    - 3> if the UE is in CELL\_PCH or URA\_PCH state:
      - 4> initiate a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Uplink data transmission";

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- includes "CN information elements"; or
- includes the IE "Ciphering mode info"; or
- includes the IE "Integrity protection mode info"; or
- includes the IE "New C-RNTI"; or
- includes the IE "New U-RNTI":

the UE shall:

- 1> transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER RELEASE message, the UE shall:

- 1> transmit a RADIO BEARER RELEASE COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4, 8.3.1.7.

## 8.2.3.8.3 Test purpose

To confirm that the UE transmits a RADIO BEARER RELEASE COMPLETE message after the UE completes a cell update procedure.

## 8.2.3.8.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in CELL\_DCH state. The SS transmits a RADIO BEARER RELEASE message to request the UE to transit from CELL\_DCH to CELL\_FACH. The UE initiates the cell update procedure because the UE cannot detect the specified cell in this message. The UE transmits a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection". The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE then transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC. The UE transmits a RADIO BEARER RELEASE COMPLETE message on the DCCH using AM RLC. SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1			Void	
2			Void	
3		←	RADIO BEARER RELEASE	Assigned the transition from CELL_DCH to CELL_FACH
4		→	CELL UPDATE	The value "cell reselection" shall be set in IE "cell update cause".
5		←	CELL UPDATE CONFIRM	See message content.
6		→	UTRAN MOBILITY INFORMATION CONFIRM	
7		→	RADIO BEARER RELEASE COMPLETE	
8		↔	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

## Specific Message Contents

## RADIO BEARER RELEASE (Step 3) (FDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in [9] TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
Downlink information for each radio links - Primary CPICH info - Primary scrambling code	150

## RADIO BEARER RELEASE (Step 3) (TDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in [9] TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
Downlink information for each radio links - Primary CCPCH info - Cell parameters ID	4

#### CELL UPDATE (Step 4)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in [9] TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"cell reselection"

#### CELL UPDATE CONFIRM (Step 5)

Use the same message type found in clause [9] TS 34.108 clause 9, with the following exceptions.

Information Element	Value/Remarks
New C-RNTI	'1010 1010 1010 1010'

#### UTRAN MOBILITY INFORMATION CONFIRM (Step 6)

Only the message type is checked.

##### 8.2.3.8.5 Test requirement

After step 3 the UE shall transmit a CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection".

After step 5 UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC.

After step 6 UE shall transmit a RADIO BEARER RELEASE COMPLETE message on the DCCH using AM RLC.

##### 8.2.3.9 Radio Bearer Release for transition from CELL\_FACH to CELL\_DCH: Success

###### 8.2.3.9.1 Definition

###### 8.2.3.9.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RELEASE message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_DCH state, the UE shall, after the state transition:

- 1> remove any C-RNTI from MAC;

1> clear the variable C\_RNTI.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER RELEASE message, the UE shall:

- 1> transmit a RADIO BEARER RELEASE COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

#### 8.2.3.9.3 Test purpose

To confirm that an UE, in state CELL\_FACH, releases the radio access bearers using common physical channel. After the release, it shall access the affected radio bearers on the DPCH.

#### 8.2.3.9.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state. The SS transmits a RADIO BEARER RELEASE message to the UE. In this message, SS commands the UE to release radio access bearers on common physical channel. At the same time, SS allocates DPCH to support the affected radio bearers. The UE shall release the indicated radio access bearers and transmit a RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RELEASE	
2				UE shall release the radio access bearers carried by common physical channel.
3		→	RADIO BEARER RELEASE COMPLETE	
4		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

#### Specific Message Contents

##### RADIO BEARER RELEASE (Step 1)

Use the same message sub-type titled "Packet to CELL\_DCH from CELL\_FACH in PS" in [9] TS 34.108 clause 9.

#### 8.2.3.9.5 Test requirement

After step 2 the UE shall transmit a RADIO BEARER RELEASE COMPLETE message using the dedicated physical channel allocated.

#### 8.2.3.10 Radio Bearer Release for transition from CELL\_FACH to CELL\_DCH: Failure (Unsupported configuration)

##### 8.2.3.10.1 Definition

##### 8.2.3.10.2 Conformance requirement

If the UTRAN instructs the UE to use a configuration, which it does not support and/or if the received message causes the variable UNSUPPORTED\_CONFIGURATION to be set to TRUE, the UE shall:

- 1> transmit a failure response as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "configuration unsupported".
- 1> set the variable UNSUPPORTED\_CONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a RADIO BEARER RELEASE message:
  - ...
  - 2> transmit a RADIO BEARER RELEASE FAILURE as response message on the DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.6, 8.2.2.9.

##### 8.2.3.10.3 Test purpose

To confirm that the UE keeps its configuration and transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC if the received RADIO BEARER RELEASE message requests for configuration unsupported by the UE.

##### 8.2.3.10.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

Test Procedure

The UE is in CELL\_FACH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a RADIO BEARER RELEASE message to the UE, referring to a frequency which cannot be supported by the UE. The UE shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC and set "configuration unsupported" in IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER RELEASE	The message contains a configuration not supported by the UE
2		→	RADIO BEARER RELEASE FAILURE	The UE shall not change the radio bearer configuration.
3		→	MEASUREMENT REPORT	

Specific Message Contents

MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	RACHorCPCH
- UL Target Transport Channel ID	Not Present
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

MEASUREMENT REPORT (Step 0b and 3)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

#### RADIO BEARER RELEASE (FDD) (Step 1)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info	
- UARFCN uplink (Nu)	0
- UARFCN downlink (Nd)	950

#### RADIO BEARER RELEASE (TDD) (Step 1)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info	
- UARFCN (Nt)	0

#### RADIO BEARER RELEASE FAILURE (Step 2)

The contents of RADIO BEARER RELEASE FAILURE message in this test case is the same as the RADIO BEARER RELEASE FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Configuration unsupported

#### 8.2.3.10.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 1 the UE shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, stating the reason "configuration unsupported" in IE "failure cause".

After step 2, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

### 8.2.3.11 Radio Bearer Release for transition from CELL\_FACH to CELL\_DCH: Failure (Physical channel failure and successful reversion to old configuration)

#### 8.2.3.11.1 Definition

#### 8.2.3.11.2 Conformance requirement

When a physical dedicated channel establishment is initiated by the UE, the UE shall start a timer T312 and wait for layer 1 to indicate N312 "in sync" indications. On receiving N312 "in sync" indications, the physical channel is considered established and the timer T312 is stopped and reset.

If the timer T312 expires before the physical channel is established, the UE shall consider this as a "physical channel establishment failure".

If the received message caused the UE to be in CELL\_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

1> revert to the configuration prior to the reception of the message (old configuration);

...

1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and

2> clear that entry;

2> set the IE "failure cause" to "physical channel failure".

1> set the variable ORDERED\_RECONFIGURATION to FALSE;

1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

1> in case of reception of a RADIO BEARER RELEASE message:

...

2> transmit a RADIO BEARER RELEASE FAILURE as response message on the DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.7, 8.2.2.9, 8.5.4.

#### 8.2.3.11.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC if the UE fails to release the radio bearers in accordance with the specified settings in RADIO BEARER RELEASE message before T312 timer expires.

## 8.2.3.11.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in CELL\_FACH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a RADIO BEARER RELEASE message and keeps its current physical channel configuration. The UE is expected to encounter a failure while releasing the radio bearer. After T312 timer expires, the UE shall revert to the old radio bearer configuration, so the UE transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC which is set to "physical channel failure" in IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER RELEASE	
2				The SS does not configure the specified L1.
3		→	RADIO BEARER RELEASE FAILURE	After T312 expiry the UE fails to release a radio bearer and reverts to the old configuration.
4		→	MEASUREMENT REPORT	

## Specific Message Contents

## MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	RACHorCPCH
- UL Target Transport Channel ID	Not Present
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

#### MEASUREMENT REPORT (Step 0b and 4)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

#### RADIO BEARER RELEASE (Step 1)

Use the message sub-type titled "Packet to CELL\_DCH from CELL\_FACH in PS" in Annex A.

#### RADIO BEARER RELEASE FAILURE (Step 2)

The contents of RADIO BEARER RELEASE FAILURE message in this test case is the same as the RADIO BEARER RELEASE FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Physical channel failure

#### 8.2.3.11.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 2 the UE shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting the value "physical channel failure" in IE "failure cause".

After step 3, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

### 8.2.3.12 Radio Bearer Release for transition from CELL\_FACH to CELL\_DCH: Failure (Physical channel failure and cell re-selection)

#### 8.2.3.12.1 Definition

#### 8.2.3.12.2 Conformance requirement

When a physical dedicated channel establishment is initiated by the UE, the UE shall start a timer T312 and wait for layer 1 to indicate N312 "in sync" indications. On receiving N312 "in sync" indications, the physical channel is considered established and the timer T312 is stopped and reset.

If the timer T312 expires before the physical channel is established, the UE shall consider this as a "physical channel establishment failure".

If the received message caused the UE to be in CELL\_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

1> revert to the configuration prior to the reception of the message (old configuration);

...

1> if the old configuration does not include dedicated physical channels (CELL\_FACH state):

2> select a suitable UTRA cell according to TS 25.304;

2> if the UE selects another cell than the cell the UE camped on upon reception of the reconfiguration message:

3> initiate a cell update procedure according to TS 25.331 subclause 8.3.1, using the cause "Cell reselection";

3> after the cell update procedure has completed successfully:

4> proceed as below.

1> transmit a failure response message as specified in TS 25.304 subclause 8.2.2.9, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and

2> clear that entry;

2> set the IE "failure cause" to "physical channel failure".

1> set the variable ORDERED\_RECONFIGURATION to FALSE;

1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- includes "CN information elements"; or
- includes the IE "Ciphering mode info"; or
- includes the IE "Integrity protection mode info"; or
- includes the IE "New C-RNTI"; or
- includes the IE "New U-RNTI":

the UE shall:

- 1> transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

The UE shall:

- 1> in case of reception of a RADIO BEARER RELEASE message:

...

- 2> transmit a RADIO BEARER RELEASE FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.7, 8.2.2.9, 8.3.1.7, 8.5.4.

### 8.2.3.12.3 Test purpose

To confirm that the UE transmits a RADIO BEARER RELEASE FAILURE message after it completes a cell update procedure following a physical channel failure during the radio bearer release procedure.

### 8.2.3.12.4 Method of test

#### Initial Condition

System Simulator: 2 cells - Cell 1 and 2 are active.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

Table 8.2.3.12

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH Ec (FDD)	dBm/3.84 MHz	-60	-75	-75	-60
P-CCPCH RSCP (TDD)	dBm	-60	-75	-75	-60

Table 8.2.3.12 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings between columns "T0" and "T1", whenever the description in multi-cell condition specifies a reverse in the transmission power settings for cell 1 and cell 2.

The UE is in CELL\_FACH state in cell 1. The SS transmits a RADIO BEARER RELEASE message to the UE, but it does not configure the specified L1 in accordance with the settings in the message. This is expected to cause the UE to experience a failure to release the radio bearer and it subsequently tries to revert to the old configuration. The SS configures its downlink transmission power settings according to columns "T1" in table 8.2.3.12. The UE shall find cell 2 and transmits CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection". The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE then transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC. The UE transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to "physical channel failure".

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RELEASE	
2				The SS does not configure the specified L1 in accordance with the settings in the message and applies the downlink transmission power settings, according to the values in columns "T1" of table 8.2.3.12.
3		←	Void	
4		→	CELL UPDATE	The UE finds a new cell 2 and enter CELL_FACH state. This message includes the value "cell reselection" set in IE "Cell update cause".
5		←	CELL UPDATE CONFIRM	See message content.
6		→	UTRAN MOBILITY INFORMATION CONFIRM	
7		→	RADIO BEARER RELEASE FAILURE	The IE "failure cause" shall be set to "physical channel failure"

## Specific Message Contents

## RADIO BEARER RELEASE (Step 1)

Use the message sub-type titled "Packet to CELL\_DCH from CELL\_FACH in PS" in Annex A.

## CELL UPDATE (Step 4)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A with the following exceptions:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	Assigned previously in cell 1 Assigned previously in cell 1 "cell reselection"

## CELL UPDATE CONFIRM (Step 5)

Use the same message type found in clause Annex A, with the following exceptions.

Information Element	Value/Remarks
New C-RNTI	'1010 1010 1010 1010'

## UTRAN MOBILITY INFORMATION CONFIRM (Step 6)

Only the message type is checked.

## RADIO BEARER RELEASE FAILURE (Step 7)

The contents of RADIO BEARER RELEASE FAILURE message in this test case is the same as the RADIO BEARER RELEASE FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	"physical channel failure"

## 8.2.3.12.5 Test requirement

After step 3 the UE shall transmit a CELL UPDATE message on the uplink CCCH with IE "Cell update cause" set to "cell reselection".

After step 5 UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC.

After step 6 the UE shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting the IE "failure cause" to "physical channel failure".

## 8.2.3.13 Radio Bearer Release for transition from CELL\_FACH to CELL\_DCH: Failure (Incompatible simultaneous reconfiguration)

## 8.2.3.13.1 Definition

## 8.2.3.13.2 Conformance requirement

If the received message is any of the messages:

- RADIO BEARER RELEASE; or

...

the UE shall:

- 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or

...

3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:

...

3> else:

4> reject the transaction; and

4> if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:

5> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

...

If the table "Rejected transactions" in the variable TRANSACTIONS is set due to the received message and the variable PROTOCOL\_ERROR\_REJECT is set to FALSE, the UE shall:

1> not apply the configuration contained in the received reconfiguration message;

1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable TRANSACTIONS; and

2> clear that entry;

2> set the IE "failure cause" to "incompatible simultaneous reconfiguration".

1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

1> in case of reception of a RADIO BEARER RELEASE message:

...

2> transmit a RADIO BEARER RELEASE FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.9, 8.2.2.12, 8.6.3.11.

### 8.2.3.13.3 Test purpose

To confirm that if the UE receives a RADIO BEARER RELEASE message during a reconfiguring procedure due to a radio bearer message other than a RADIO BEARER RELEASE message, it shall keep its configuration as if the RADIO BEARER RELEASE message had not been received and complete the reconfiguration procedure according to the previously received message.

### 8.2.3.13.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in CELL\_FACH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE. The SS transmits a RADIO BEARER RELEASE message before the "activation time" indicated in the RADIO BEARER RECONFIGURATION message expires. When the UE receives the RADIO BEARER RELEASE message, the UE shall keep the configuration as if it had not received the RADIO BEARER RELEASE message and shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the SS acknowledges the RADIO BEARER RELEASE FAILURE message, the UE reconfigures the new physical channel parameters upon the activation time and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on DCCH using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RECONFIGURATION	The UE receives any message other than RADIO BEARER RELEASE. (e.g. RADIO BEARER SETUP)
2		←	RADIO BEARER RELEASE	Sent before the expiry of IE "Activation Time" stated in message in step 1.
3		→	RADIO BEARER RELEASE FAILURE	The UE does not change the configuration due to the reception of RADIO BEARER RECONFIGURATION message.
4		→	RADIO BEARER RECONFIGURATION COMPLETE	This message is on DCCH using AM RLC.
5		←→	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

## RADIO BEARER RECONFIGURATION (Step 1) (FDD)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A. Information element(s) to be changed are listed below:

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8 ]
Uplink DPCH Info - Scrambling code number	1

## RADIO BEARER RECONFIGURATION (Step 1) (TDD)

The contents of RADIO BEARER SETUP message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A. Information element(s) to be changed are listed below:

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8 ]
- Uplink DPCH timeslots and codes - First timeslot code list	Assigned by SS

## RADIO BEARER RELEASE (Step 2) (FDD)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time Info	Not Present
Uplink DPCH Info - Scrambling code number	2

### RADIO BEARER RELEASE (Step 2) (TDD)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time Info	Current CFN-[current CFN mod 8 + 8 ]
- Uplink DPCH timeslots and codes - First timeslot code list	A different code combination to that used in step 1.

### RADIO BEARER RELEASE FAILURE

The contents of RADIO BEARER RELEASE FAILURE message in this test case is the same as the RADIO BEARER RELEASE FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Incompatible simultaneous reconfiguration

#### 8.2.3.13.5 Test requirement

After step 2 the UE shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "Incompatible simultaneous reconfiguration".

After step 3 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message using the new physical channel parameters reconfigured as a result of the RADIO BEARER RECONFIGURATION message.

#### 8.2.3.14 Radio Bearer Release for transition from CELL\_FACH to CELL\_DCH: Failure (Invalid message reception and Invalid configuration)

##### 8.2.3.14.1 Definition

##### 8.2.3.14.2 Conformance requirement

If the received reconfiguration message contains a protocol error causing the variable `PROTOCOL_ERROR_REJECT` to be set to TRUE according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable `TRANSACTIONS`; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to the cause value "protocol error";
  - 2> include the IE "Protocol error information" with contents set to the value of the variable `PROTOCOL_ERROR_INFORMATION`.

If the variable INVALID\_CONFIGURATION is set to TRUE the UE shall:

- 1> keep the configuration existing before the reception of the message;
- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
    - 3> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
    - 3> clear that entry.
  - 2> set the IE "failure cause" to "invalid configuration".
- 1> set the variable INVALID\_CONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a RADIO BEARER RELEASE message:
  - ...
  - 2> transmit a RADIO BEARER RELEASE FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.13, 8.2.2.11, 8.2.2.9.

### 8.2.3.14.3 Test purpose

To confirm that the UE transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC if it receives an invalid RADIO BEARER RELEASE message which does not include any IEs except IE "Message Type".

To confirm that the UE transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC if it receives a RADIO BEARER RELEASE message including some IEs set to give an invalid configuration.

### 8.2.3.14.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS\_DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits an invalid RADIO BEARER RELEASE message, which contains an unexpected critical message extension, to the UE. The UE keeps the old configuration and transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, which shall indicate the value "protocol error" in IE "failure cause" and also "Message extension not comprehended" in IE "Protocol error cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically. SS transmits a RADIO BEARER RELEASE message including some IEs set to give an invalid configuration. The UE keeps current configuration and transmits a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting the value "invalid configuration" to IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	RADIO BEARER RELEASE	See specific message content.
2		→	RADIO BEARER RELEASE FAILURE	The UE shall not change its current configuration.
2a		→	MEASUREMENT REPORT	
3		←	RADIO BEARER RELEASE	This message includes IE set to give an invalid configuration.
4				The UE does not change its configuration
5		→	RADIO BEARER RELEASE FAILURE	The IE "failure cause" shall be set to "invalid configuration"
6		→	MEASUREMENT REPORT	

Specific Message Contents

MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	RACHorCPCH
- UL Target Transport Channel ID	Not Present
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

MEASUREMENT REPORT (Step 0b, 2a and 6)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

#### RADIO BEARER RELEASE (Step 1)

Use the RADIO BEARER RELEASE message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Critical extensions	'01'H

#### RADIO BEARER RELEASE FAILURE (Step 2)

The contents of RADIO BEARER RELEASE FAILURE message in this test case is the same as the RADIO BEARER RELEASE FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	Message extension not comprehended

#### RADIO BEARER RELEASE (Step 3) (FDD)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
- Default DPCH Offset Value	512
- DPCH frame offset	1024

#### RADIO BEARER RELEASE (Step 3) (TDD)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
-PRACH TFCS	Present

## RADIO BEARER RELEASE FAILURE (Step 5)

The contents of RADIO BEARER RELEASE FAILURE message in this test case is the same as the RADIO BEARER RELEASE FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Invalid configuration

### 8.2.3.14.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 1 the UE shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting "protocol error" in IE "failure cause" and also indicating "Message extension not comprehended" in IE "Protocol error cause".

After step 2, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 3 the UE shall transmit a RADIO BEARER RELEASE FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to "invalid configuration".

After step 5, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

### 8.2.3.15 Radio Bearer Release for transition from CELL\_FACH to CELL\_FACH: Success

#### 8.2.3.15.1 Definition

#### 8.2.3.15.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RELEASE message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If the UE was in CELL\_FACH state upon reception of the reconfiguration message and remains in CELL\_FACH state, the UE shall:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency;

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER RELEASE message, the UE shall:

- 1> transmit a RADIO BEARER RELEASE COMPLETE as response message on the uplink DCCH using AM RLC.

If the IE "RAB information to reconfigure" is included then the UE shall:

- 1> if the entry for the radio access bearer identified by the IE "CN domain identity" together with the IE "RAB Identity" in the variable ESTABLISHED\_RABS already exists:

...

1> else:

- 2> set the variable INVALID\_CONFIGURATION to TRUE.

If the variable INVALID\_CONFIGURATION is set to TRUE the UE shall:

- 1> keep the configuration existing before the reception of the message;
- 1> transmit a failure response message, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
    - 3> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
    - 3> clear that entry.
  - 2> set the IE "failure cause" to "invalid configuration".
- 1> set the variable INVALID\_CONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The procedure ends.

...

- 1> in case of reception of a RADIO BEARER RECONFIGURATION message:
  - 2> if the radio bearer reconfiguration procedure affects several radio bearers:
    - 3> (may) include the identities of the radio bearers for which the procedure would have been successful into the RADIO BEARER RECONFIGURATION FAILURE message.
  - 2> transmit a RADIO BEARER RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4, 8.6.4.2a, 8.2.2.11, 8.2.2.9.

### 8.2.3.15.3 Test purpose

To confirm that the UE releases the existing the radio bearer(s) according to the RADIO BEARER RELEASE message.

### 8.2.3.15.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in CELL\_FACH state. The SS transmits a RADIO BEARER RELEASE message to the UE. The UE releases the radio access bearer and transmits a RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC. SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RELEASE	
2			Void	
3		→	RADIO BEARER RELEASE COMPLETE	
4		←	RADIO BEARER RECONFIGURATION	The IE "RAB information to reconfigure" is included with the same RAB identity as was released with the RADIO BEARER RELEASE message.
5		→	RADIO BEARER RECONFIGURATION FAILURE	The UE responds with failure, in case the RB is properly removed
6		↔	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

## Specific Message Contents

### RADIO BEARER RELEASE

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in [9] TS 34.108 clause 9.

### RADIO BEARER RECONFIGURATION (Step 4)

The contents of RADIO BEARER RECONFIGURATION message in this test case is specified below:

Information Element	Condition	Value/remark
Message Type RRC transaction identifier Integrity check info  - message authentication code  - RRC message sequence number  Integrity protection mode info Ciphering mode info Activation time New U-RNTI New C-RNTI		Arbitrarily selects an integer between 0 and 3 The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted. SS calculates the value of MAC-I for this message and writes to this IE. SS provides the value of this IE, from its internal counter. Not Present Not Present Now Not Present Not Present
RRC State indicator		CELL_FACH
UTRAN DRX cycle length coefficient CN information info URA identity RAB information to reconfigure list - RAB information to reconfigure - RAB identity - CN domain identity - NAS Synchronization Indicator		Not Present Not Present Not Present  (AM DTCH for PS domain) 0000 0101B PS domain Not Present
RB information to reconfigure list  - RB information to reconfigure - RB identity - PDCP info - PDCP SN info - RLC info - RB mapping info - RB stop/continue		TS25.331 specifies that "Although this IE is not always required, need is MP to align with ASN.1". (Dummy) 1 Not Present Not Present Not Present Not Present Not Present
RB information to be affected list		Not Present
UL Transport channel information for all transport channels		Not Present
Deleted TrCH information list		Not Present
Added or Reconfigured TrCH information list		Not Present
CHOICE mode		Not Present
Deleted DL TrCH information list		Not Present
Added or Reconfigured DL TrCH information list		Not Present
Frequency info		Not Present
Maximum allowed UL TX power		Not Present
CHOICE channel requirement		Not Present
CHOICE Mode - Downlink PDSCH information		FDD Not Present
Downlink information common for all radio links Downlink information per radio link list		Not Present Not Present

### RADIO BEARER RECONFIGURATION FAILURE (step 5)

The contents of RADIO BEARER RECONFIGURATION FAILURE message in this test case is the same as the RADIO BEARER RECONFIGURATION FAILURE message as found in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Failure cause	Invalid configuration

### 8.2.3.15.5 Test requirement

After step 1 the UE shall transmit a RADIO BEARER RELEASE COMPLETE message using AM RLC on the common physical channel.

After step 4, UE shall transmit a RADIO BEARER RECONFIGURATION FAILURE message to verify that the RAB is properly removed.

### 8.2.3.16 Radio Bearer Release for transition from CELL\_DCH to CELL\_DCH: Success (Subsequently received)

#### 8.2.3.16.1 Definition

#### 8.2.3.16.2 Conformance requirement

If the IE "RRC transaction identifier" is included in a received message, the UE shall perform the actions below. The UE shall:

If the received message is any of the messages:

- RADIO BEARER RELEASE; or

...

the UE shall:

- 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or
- 2> if the variable CELL\_UPDATE\_STARTED is set to TRUE; or
- 2> if the table "Accepted transactions" in the variable TRANSACTIONS contains an entry with an IE "Message Type" set to ACTIVE SET UPDATE; or
- 2> if the received message contains a protocol error according to TS 25.331 clause 9 causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE:
  - 3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:
    - 4> ignore the transaction; and
    - 4> continue with any ongoing processes and procedures as the message was not received;
    - 4> and end the procedure.
  - 3> else:

...

#### Reference

3GPP TS 25.331 clause 8.6.3.11.

#### 8.2.3.16.3 Test purpose

To confirm that if the UE receives a new RADIO BEARER RELEASE message before the UE releases the radio bearer according to a previous RADIO BEARER RELEASE message it ignore the new RADIO BEARER RELEASE message and configures according to the previous RADIO BEARER RELEASE message received.

## 8.2.3.16.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

The UE is in CELL\_DCH state. When the SS transmits a RADIO BEARER RELEASE message to the UE before the UE releases the radio access bearer, the UE ignores the second RADIO BEARER RELEASE message and releases the radio bearer according to the previous RADIO BEARER RELEASE message received. Finally, the UE shall transmit RADIO BEARER RELEASE COMPLETE message on the DCCH using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RELEASE	For FDD, the SS sets its UL scrambling code to "1".
2		←	RADIO BEARER RELEASE	Message sent before the expiry of "activation time" specified in message in step 1. For FDD, the IE "Secondary scrambling code" is set to "2". For TDD the code combination assigned is different from that assigned in stage 1.
3		→	RADIO BEARER RELEASE COMPLETE	The UE ignores the RADIO BEARER RELEASE message in step 2 and release radio bearer according to the RADIO BEARER RELEASE message in step 1.
4		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

## RADIO BEARER RELEASE (Step 1) (FDD)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A, with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256
- Uplink DPCH Info - Secondary scrambling code	1

## RADIO BEARER RELEASE (Step 1) (TDD)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A, with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256
Uplink DPCH timeslots and codes - First timeslot code list	Assigned by SS

### RADIO BEARER RELEASE (Step 2) (FDD)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A, with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH Info	Not Present
- Secondary scrambling code	2

### RADIO BEARER RELEASE (Step 2) (TDD)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A, with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH timeslots and codes - First timeslot code list	Not Present A different code combination to that used in step 1.

#### 8.2.3.16.5 Test requirement

After step 2 the UE shall transmit an RADIO BEARER RELEASE COMPLETE message on the DCCH using AM RLC.

#### 8.2.3.17 Radio Bearer Release for transition from CELL\_FACH to CELL\_DCH: Success (Subsequently received)

##### 8.2.3.17.1 Definition

##### 8.2.3.17.2 Conformance requirement

If the IE "RRC transaction identifier" is included in a received message, the UE shall perform the actions below. The UE shall:

If the received message is any of the messages:

- RADIO BEARER RELEASE; or

...

the UE shall:

- 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or
- 2> if the variable CELL\_UPDATE\_STARTED is set to TRUE; or
- 2> if the table "Accepted transactions" in the variable TRANSACTIONS contains an entry with an IE "Message Type" set to ACTIVE SET UPDATE; or

- 2> if the received message contains a protocol error according to TS 25.331 clause 9 causing the variable `PROTOCOL_ERROR_REJECT` to be set to `TRUE`:
- 3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable `TRANSACTIONS`:
- 4> ignore the transaction; and
- 4> continue with any ongoing processes and procedures as the message was not received;
- 4> and end the procedure.
- 3> else:

## Reference

3GPP TS 25.331 clause 8.6.3.11.

### 8.2.3.17.3 Test purpose

To confirm that if the UE receives a new RADIO BEARER RELEASE message before the UE releases the radio bearer according to a previous RADIO BEARER RELEASE message, it ignores the new RADIO BEARER RELEASE message and configures according to the previous RADIO BEARER RELEASE message received.

### 8.2.3.17.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in `CELL_FACH` state. When the SS transmits a RADIO BEARER RELEASE message to the UE before the UE releases the radio access bearer, the UE ignores the second RADIO BEARER RELEASE message and releases the radio bearers according to the previous RADIO BEARER RELEASE message received. Finally, the UE shall transmit a RADIO BEARER RELEASE COMPLETE message on the DCCH using AM RLC. SS calls for generic procedure C.3 2 to check that UE is in `CELL_DCH` state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RELEASE	For FDD, the SS sets its UL scrambling code to "1".
2		←	RADIO BEARER RELEASE	Sent before the expiry stated in IE "Activation Time" of RADIO BEARER RELEASE message in step 1. For TDD the IE "Secondary scrambling code" is set to "2". For TDD, the code combination assigned is different from that assigned in stage 1.
3		→	RADIO BEARER RELEASE COMPLETE	The UE ignores the RADIO BEARER RELEASE message in step 2 and release radio bearers according to the RADIO BEARER RELEASE message in step 1.
4		↔	CALL C.3	If the test result of C.3 indicates that UE is in <code>CELL_DCH</code> state, the test passes, otherwise it fails.

## Specific Message Contents

## RADIO BEARER RELEASE (Step 1) (FDD)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time Info - Uplink DPCH Info - Secondary scrambling code	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256 1

## RADIO BEARER RELEASE (Step 1) (TDD)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time Info Uplink DPCH timeslots and codes - First timeslot code list	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256 Assigned by SS

## RADIO BEARER RELEASE (Step 2) (FDD)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH Info - Secondary scrambling code	Not Present 2

## RADIO BEARER RELEASE (Step 2) (TDD)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH timeslots and codes - First timeslot code list	Not Present A different code combination to that used in step 1.

## 8.2.3.17.5 Test requirement

After step 2 the UE shall transmit an RADIO BEARER RELEASE COMPLETE message on the DCCH using AM RLC.

## 8.2.3.18 Radio Bearer Release from CELL\_DCH to CELL\_PCH: Success

## 8.2.3.18.1 Definition

## 8.2.3.18.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RELEASE message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_PCH or URA\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency.
- 1> if the IE "Frequency info" is not included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304.
- 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.

...

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER RELEASE message, the UE shall:

- 1> transmit a RADIO BEARER RELEASE COMPLETE as response message on the uplink DCCH using AM RLC.

If the new state is CELL\_PCH, the response message shall be transmitted using the old configuration before the state transition, but the new C-RNTI shall be used if the IE "New C-RNTI" was included in the received reconfiguration message, and the UE shall:

- 1> when RLC has confirmed the successful transmission of the response message:

...

- 2> enter the new state (CELL\_PCH);

...

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

### 8.2.3.18.3 Test purpose

To confirm that the UE transmits a RADIO BEARER RELEASE COMPLETE before entering CELL\_PCH state after it received a RADIO BEARER RELEASE message and released its radio access bearers.

## 8.2.3.18.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in CELL\_DCH state. The SS transmits a RADIO BEARER RELEASE message. The UE transmits a RADIO BEARER RELEASE COMPLETE message using AM RLC and enters into CELL\_PCH state. SS calls for generic procedure C.4 to check that UE is in CELL\_PCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RELEASE	
2		→	RADIO BEARER RELEASE COMPLETE	The UE sends this message before it completes state transition.
2a			Void	SS waits 5 seconds to allow the UE to read system information before the next step.
3		↔	CALL C.4	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

## Specific Message Contents

## RADIO BEARER RELEASE (Step 1) (FDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator UTRAN DRX cycle length coefficient	CELL_PCH 3
Downlink information for each radio link - Primary CPICH info - Primary scrambling code	100

## RADIO BEARER RELEASE (Step 1) (TDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator UTRAN DRX cycle length coefficient Downlink information for each radio links - Primary CCPCH info -Cell parameters ID	CELL_PCH 3 4

## 8.2.3.18.5 Test requirement

After step 1 the UE transmits a RADIO BEARER RELEASE COMPLETE message on uplink DCCH using AM RLC.

### 8.2.3.19 Radio Bearer Release from CELL\_DCH to URA\_PCH: Success

#### 8.2.3.19.1 Definition

#### 8.2.3.19.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RELEASE message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_PCH or URA\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency.
- 1> if the IE "Frequency info" is not included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304.
- 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS 25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.
- ...
- 1> if the UE enters URA\_PCH state, and after cell selection the criteria for URA update caused by "URA reselection" according to TS 25.331 subclause 8.3.1 is fulfilled:
  - 2> initiate a URA update procedure according to TS 25.331 subclause 8.3.1 using the cause "URA reselection";
  - 2> when the URA update procedure is successfully completed:
    - 3> the procedure ends.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a RADIO BEARER RELEASE message, the UE shall:

- 1> transmit a RADIO BEARER RELEASE COMPLETE as response message on the uplink DCCH using AM RLC.

If the new state is URA\_PCH, the response message shall be transmitted using the old configuration before the state transition, but the new C-RNTI shall be used if the IE "New C-RNTI" was included in the received reconfiguration message, and the UE shall:

- 1> when RLC has confirmed the successful transmission of the response message:

...

- 2> enter the new state (URA\_PCH);

...

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

### 8.2.3.19.3 Test purpose

To confirm that the UE transmits a RADIO BEARER RELEASE COMPLETE before entering URA\_PCH state after it received a RADIO BEARER RELEASE message and released its radio bearers.

### 8.2.3.19.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in CELL\_DCH state. The SS transmits a RADIO BEARER RELEASE message. The UE transmits a RADIO BEARER RELEASE COMPLETE message using AM RLC and enters into URA\_PCH state. SS calls for generic procedure C.5 to check that UE is in URA\_PCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RELEASE	
2		→	RADIO BEARER RELEASE COMPLETE	The UE sends this message before it completes state transition.
2a			Void	SS waits 5 seconds to allow the UE to read system information before the next step.
3		↔	CALL C.5	If the test result of C.5 indicates that UE is in URA_PCH state, the test passes, otherwise it fails.

## Specific Message Contents

### RADIO BEARER RELEASE (Step 1) (FDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator UTRAN DRX cycle length coefficient	URA_PCH 3
Downlink information for each radio link - Primary CPICH info - Primary scrambling code	100

## RADIO BEARER RELEASE (Step 1) (TDD)

Information Element	Value/remark
RRC State Indicator UTRAN DRX cycle length coefficient Downlink information for each radio links - Primary CCPCH info -Cell parameters ID	CELL_PCH 3 4

## 8.2.3.19.5 Test requirement

After step 1 the UE transmits a RADIO BEARER RELEASE COMPLETE message to the UE on uplink DCCH using AM RLC.

## 8.2.3.20 Radio Bearer Release for transition from CELL\_DCH to CELL\_FACH (Frequency band modification): Success

## 8.2.3.20.1 Definition

## 8.2.3.20.2 Conformance requirement

If the UE receives:

-a RADIO BEARER RELEASE message;

it shall:

1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

1> enter a state according to TS25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_FACH state, the UE shall, after the state transition:

1> if the IE "Frequency info" is included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304 on that frequency.

1> if the IE "Frequency info" is not included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS5.304.

1> if the received reconfiguration message included the IE "Primary CPICH info", and the UE selects another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info" :

2> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "Cell reselection";

2> when the cell update procedure completed successfully:

3> if the UE is in CELL\_PCH or URA\_PCH state:

4> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "Uplink data transmission";

4> proceed as below.

1> select PRACH according to TS25.331 subclause 8.5.17;

1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;

1> use the transport format set given in system information;

1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

2> ignore that IE and stop using DRX.

1> if the contents of the variable C\_RNTI is empty:

2> perform a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Cell reselection";

2> when the cell update procedure completed successfully:

3> if the UE is in CELL\_PCH or URA\_PCH state:

4> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "Uplink data transmission";

4> proceed as below.

In case the procedure was triggered by reception of a RADIO BEARER RELEASE message, the UE shall:

1> transmit a RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC, using the new configuration after the state transition.

1> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

### 8.2.3.20.3 Test purpose

1. To confirm that the UE transits from CELL\_DCH to CELL\_FACH according to the RADIO BEARER RELEASE message.
2. To confirm that the UE transmits RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC on a common physical channel in a different frequency.

### 8.2.3.20.4 Method of test

#### Initial Condition

System Simulator: 2 cells–Cell 1 is active and cell 6 is inactive.

UE: Registered idle mode on CS" (state 2) or "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

## Test Procedure

Table 8.2.3.20

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/ 3.84 MHz	-55	-72	Off	-55

Table 8.2.3.20 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in CELL\_DCH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.3.20. The SS modifies the contents of System information block 11 in cell 1, so that include IE "Inter frequency measurement system information" about cell 6. The SS and UE execute procedure P3 or P5. Next The SS and the UE execute procedure P7 or P9 and then execute procedure P11 or P13. The SS switches its downlink transmission power settings to columns "T1" transmits a RADIO BEARER RELEASE message with no IE "Frequency info" to the UE. The UE releases the radio access bearer and moves into cell 6. The UE transmits CELL UPDATE message with IE "Cell update cause" set to "cell reselection". SS then transmit CELL UPDATE CONFIRM with IE "New C\_RNTI". The UE shall respond with an UTRAN MOBILITY INFORMATION CONFIRM message, and then transmits a RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC. The SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	System Information Block type 11	The UE is in idle mode and camped on cell 1. The contents of System Information Block type 11 message are different from the default settings and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.3.20.
1a	←→		SS executes procedure P3 (clause 7.4.2.1.2) or P5 (clause 7.4.2.2.2) specified in TS 34.108.	
1b	←→		SS executes procedure P7 (clause 7.4.2.3.2) or P9 (clause 7.4.2.4.2) specified in TS 34.108.	
1c	←→		SS executes procedure P11 (clause 7.4.2.5.2) or P13 (clause 7.4.2.6.2) specified in TS 34.108.	
2				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.3.20.
3			Void	
4		←	RADIO BEARER RELEASE	Not including frequency information.
5		→	CELL UPDATE	The IE "Cell update cause" is set to "cell reselection".
6		←	CELL UPDATE CONFIRM	Including the IE "New C-RNTI"
7		→	UTRAN MOBILITY INFORMATION CONFIRM	
8		→	RADIO BEARER RELEASE COMPLETE	
9		←→	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

## Specific Message Contents

## System Information Block type 11 (Step 1)

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	0dB
- UARFCN uplink(Nu)	Not present
- UARFCN downlink(Nd)	FALSE
- Cell info	FDD
- Cell individual offset	Set to same code as used for cell 6
- Reference time difference to cell	
- Read SFN indicator	Not present
- CHOICE mode	FDD
- Primary CPICH info	Not present
- Primary scrambling code	
- Primary CPICH Tx power	0dB
- Cell Selection and Re-selection Info	Not Present
- Qoffset1s,n	Reference to table 6.1.1
- Qoffset2s,n	Not present
- Maximum allowed UL TX power	FDD
- HCS neighbouring cell information	Reference to table 6.1.1
- CHOICE mode	Reference to table 6.1.1
- Qqualmin	Not present
- Qrxlevmin	Not present
- Cell for measurement	

## RADIO BEARER RELEASE (Step 4)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" or "Non speech to CELL\_FACH from CELL\_DCH in CS" or "Speech to CELL\_FACH from CELL\_DCH in CS" in [9] TS 34.108 clause 9 with the following exception:

Information Element	Value/remark
Frequency info	Not present
Downlink information for each radio link	

## CELL UPDATE (Step 5)

The contents of CELL UPDATE message are identical as "Contents of CELL UPDATE message" as found in [9] TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"cell reselection"

## CELL UPDATE CONFIRM (Step 6)

The contents of CELL UPDATE CONFIRM message are identical as "CELL UPDATE CONFIRM message" as found in [9] TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
New C-RNTI	0000 0000 0000 0001B

## UTRAN MOBILITY UPDATE CONFIRM (Step 7)

The contents of UTRAN MOBILITY UPDATE CONFIRM message are identical as "UTRAN MOBILITY UPDATE CONFIRM message" as found in [9] TS 34.108 clause 9.

### 8.2.3.20.5 Test requirement

After step 4 the UE shall transmit a CELL UPDATE message on the CCCH in cell 6.

After step 6 the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC in cell 6.

After step 7 the UE shall transmit a RADIO BEARER RELEASE COMPLETE message on the DCCH using AM RLC in cell 6.

After step 8 the UE shall be in CELL\_FACH state of cell 6.

### 8.2.3.21 Radio Bearer Release from CELL\_DCH to CELL\_PCH (Frequency band modification): Success

#### 8.2.3.21.1 Definition

#### 8.2.3.21.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RELEASE message;

it shall:

- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.
- 1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the procedure was triggered by reception of a RADIO BEARER RELEASE message, the UE shall:

- 1> transmit a RADIO BEARER RELEASE COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

If after state transition the UE enters CELL\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304 on that frequency.
- 1> if the IE "Frequency info" is not included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304.
- 1> prohibit periodical status transmission in RLC;
- 1> remove any C-RNTI from MAC;
- 1> clear the variable C\_RNTI;
- 1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS25.331 subclause 8.6.3.2.

- 1> if the UE enters CELL\_PCH state from CELL\_DCH state, and the received reconfiguration message included the IE "Primary CPICH info, and the UE selected another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info:
- 2> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "cell reselection";
- 2> when the cell update procedure completed successfully:
  - 3> the procedure ends.

#### Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

#### 8.2.3.21.3 Test purpose

1. To confirm that the UE transmits RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_DCH to CELL\_PCH according to the RADIO BEARER RELEASE message.
3. To confirm that the UE releases the radio access bearer and selects a common physical channel in a different frequency indicated by SS.

#### 8.2.3.21.4 Method of test

##### Initial Condition

System Simulator: 2 cells–Cells 1 is active and cell 6 is inactive.

UE: "Registered idle mode on CS" (state 2) or "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

##### Test Procedure

**Table 8.2.3.21**

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-72	Off	-55

Table 8.2.3.21 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in CELL\_DCH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.3.21. The SS modifies the contents of System information block 11 in cell 1, so that include IE "Inter frequency measurement system information" about cell 6. The SS and UE execute procedure P3 or P5. Next The SS and the UE execute procedure P7 or P9 and then execute procedure P11 or P13. The SS switches its downlink transmission power settings to columns "T1" and then transmits a RADIO BEARER RELEASE message with no IE "Frequency info". The UE transmits a RADIO BEARER RELEASE COMPLETE message using AM RLC and enters CELL\_PCH state of cell 6, then the UE shall transmit CELL UPDATE procedure with IE "Cell update cause" set to "cell reselection", to complete the procedure. The SS calls for generic procedure C.4 to check that UE is in CELL\_PCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	System Information Block type 11	The UE is in idle mode and camped on cell 1. The contents of System Information Block type 11 message are different from the default settings and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.3.21.
1a		←→	SS executes procedure P3 (clause 7.4.2.1.2) or P5 (clause 7.4.2.2.2) specified in TS 34.108.	
1b		←→	SS executes procedure P7 (clause 7.4.2.3.2) or P9 (clause 7.4.2.4.2) specified in TS 34.108.	
1c		←→	SS executes procedure P11 (clause 7.4.2.5.2) or P13 (clause 7.4.2.6.2) specified in TS 34.108.	
2				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.3.21.
3		←	Void	
4		←	RADIO BEARER RELEASE	Not including new frequency information.
5		→	RADIO BEARER RELEASE COMPLETE	The UE sends this message before it completes state transition. UE sends this message in cell 1.
6		→	CELL UPDATE	The IE "Cell update cause" is set to "cell reselection".
7		←	CELL UPDATE CONFIRM	IE "RRC State Indicator" is set to "CELL_PCH".
8				The SS waits for 5 s.
9		←→	CALL C.4	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

## Specific Message Contents

## System Information Block type 11 (Step 1)

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	0dB
- UARFCN uplink(Nu)	Not present
- UARFCN downlink(Nd)	FALSE
- Cell info	FDD
- Cell individual offset	Set to same code as used for cell 6
- Reference time difference to cell	
- Read SFN indicator	Not present
- CHOICE mode	FDD
- Primary CPICH info	Not present
- Primary scrambling code	
- Primary CPICH Tx power	0dB
- Cell Selection and Re-selection Info	Not Present
- Qoffset1s,n	Reference to table 6.1.1
- Qoffset2s,n	Not present
- Maximum allowed UL TX power	FDD
- HCS neighbouring cell information	Reference to table 6.1.1
- CHOICE mode	Reference to table 6.1.1
- Qqualmin	Not present
- Qrxlevmin	
- Cell for measurement	

## RADIO BEARER RELEASE (Step 4)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" or "Non speech to CELL\_FACH from CELL\_DCH in CS" or "Speech to CELL\_FACH from CELL\_DCH in CS" in [9] TS 34.108 clause 9, with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3
Frequency info	Not Present
Downlink information for each radio link	Not Present

## CELL UPDATE (Step 6)

The contents of CELL UPDATE message are identical as "Contents of CELL UPDATE message" as found in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"cell reselection"

## CELL UPDATE CONFIRM (Step 7)

The contents of CELL UPDATE CONFIRM message are identical as "CELL UPDATE CONFIRM message" as found in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
RRC State indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3

#### 8.2.3.21.5 Test requirement

After step 4 the UE shall transmit a RADIO BEARER RELEASE COMPLETE message on uplink DCCH using AM RLC in cell 1.

After step 5 the UE shall transmit a CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection" in cell 6.

After step 8 the UE shall be in CELL\_PCH state in cell 6.

#### 8.2.3.22 Radio Bearer Release for transition from CELL\_FACH to CELL\_PCH: Success

##### 8.2.3.22.1 Definition

##### 8.2.3.22.2 Conformance requirement

If the UE receives:

-a RADIO BEARER RELEASE message;

it shall:

1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the procedure was triggered by reception of a RADIO BEARER RELEASE message, the UE shall:

1> transmit a RADIO BEARER RELEASE COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

If after state transition the UE enters CELL\_PCH state, the UE shall, after the state transition and transmission of the response message:

1> if the IE "Frequency info" is included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304 on that frequency.

1> if the IE "Frequency info" is not included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304.

1> prohibit periodical status transmission in RLC;

1> remove any C-RNTI from MAC;

1> clear the variable C\_RNTI;

1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;

1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS25.331 subclause 8.6.3.2.

1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:

- 2> keep the configuration existing before the reception of the message and transmit a failure response message as specified in TS25.331 subclause 8.2.2.9
- 1> if the UE enters CELL\_PCH state from CELL\_FACH state, and the received reconfiguration message included the IE "Primary CPICH info", and the UE selected another cell than indicated by this IE:
  - 2> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "cell reselection";
  - 2> when the cell update procedure is successfully completed:
    - 3> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.3, 8.5 and 8.6.

### 8.2.3.22.3 Test purpose

1. To confirm that the UE transmits RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_FACH to CELL\_PCH according to the RADIO BEARER RELEASE message.
3. To confirm that the UE releases the radio access bearer and selects a common physical channel.

### 8.2.2.22.4 Method of test

#### Initial Condition

System Simulator: 1 cell– Cell 1 is active.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state of cell 1. The SS transmits a RADIO BEARER RELEASE message. The UE shall release all radio access bearer and enter CELL\_PCH state after it transmits a RADIO BEARER RELEASE COMPLETE message using AM RLC. Upon completion of the procedure, the SS calls for generic procedure C.4 to check that UE is in CELL\_PCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in CELL_FACH state of cell 1.
2		←	RADIO BEARER RELEASE	
3		→	RADIO BEARER RELEASE COMPLETE	The UE transmits this message on uplink DCCH using AM RLC.
4				The SS waits for 5 s.
5		↔	CALL C.4	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

#### Specific Message Contents

##### RADIO BEARER RELEASE (Step 2)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3

#### 8.2.3.22.5 Test requirement

After step 2 the UE shall transmit a RADIO BEARER RELEASE COMPLETE message on uplink DCCH using AM RLC.

After step 4 the UE shall be in CELL\_PCH state in cell 6.

### 8.2.3.23 Radio Bearer Release for transition from CELL\_FACH to URA\_PCH: Success

#### 8.2.3.23.1 Definition

#### 8.2.3.23.2 Conformance requirement

If the UE receives:

-a RADIO BEARER RELEASE message;

it shall:

1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the procedure was triggered by reception of a RADIO BEARER RELEASE message, the UE shall:

1> transmit a RADIO BEARER RELEASE COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

If after state transition the UE enters URA\_PCH state, the UE shall, after the state transition and transmission of the response message:

1> if the IE "Frequency info" is included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304 on that frequency.

1> if the IE "Frequency info" is not included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304.

1> prohibit periodical status transmission in RLC;

1> remove any C-RNTI from MAC;

1> clear the variable C\_RNTI;

1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;

1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS5.331 subclause 8.6.3.2.

1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:

2> keep the configuration existing before the reception of the message and transmit a failure response message as specified in TS25.331 subclause 8.2.2.9

- 1> if the UE enters URA\_PCH state, and after cell selection the criteria for URA update caused by "URA reselection" according to TS5.331 subclause 8.3.1 is fulfilled:
  - 2> initiate a URA update procedure according to TS25.331 subclause 8.3.1 using the cause "URA reselection";
  - 2> when the URA update procedure is successfully completed:
- 3> the procedure ends.

#### Reference

3GPP TS 25.331 clause 8.2.2, 8.3, 8.5 and 8.6.

#### 8.2.3.23.3 Test purpose

1. To confirm that the UE transmits RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_FACH to URA\_PCH according to the RADIO BEARER RELEASE message.
3. To confirm that the UE releases the radio access bearer and selects a common physical channel.

#### 8.2.3.23.4 Method of test

##### Initial Condition

System Simulator: 1 cell– Cell 1 is active.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

##### Test Procedure

The UE is in CELL\_FACH state of cell 1. The SS transmits a RADIO BEARER RELEASE message. The UE shall release all radio access bearers and enter URA\_PCH state after it transmits a RADIO BEARER RELEASE COMPLETE message using AM RLC. Upon completion of the procedure, the SS calls for generic procedure C.4 to check that UE is in URA\_PCH state.

##### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in CELL_FACH state of cell 1.
2		←	RADIO BEARER RELEASE	
3		→	RADIO BEARER RELEASE COMPLETE	The UE transmits this message on uplink DCCH using AM RLC.
4				The SS waits for 5 s.
5		↔	CALL C.5	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

##### Specific Message Contents

##### RADIO BEARER RELEASE (Step 2)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3

#### 8.2.2.23.5 Test requirement

After step 2 the UE shall transmit a RADIO BEARER RELEASE COMPLETE message on uplink DCCH using AM RLC.

After step 4 the UE shall be in URA\_PCH state.

#### 8.2.3.24 Radio Bearer Release for transition from CELL\_DCH to CELL\_DCH (Frequency band modification): Success

##### 8.2.3.24.1 Definition

##### 8.2.3.24.2 Conformance requirement

If the UE receives:

-a RADIO BEARER RELEASE message;

1> perform the physical layer synchronisation procedure as specified in TS25.214;

1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

1> enter a state according to TS25.331 subclause 8.6.3.3.

If the UE was in CELL\_DCH state upon reception of the reconfiguration message and remains in CELL\_DCH state, the UE shall:

1> if the IE "Uplink DPCH Info" is absent, not change its current UL Physical channel configuration;

1> if the IE "Downlink information for each radio link" is absent, not change its current DL Physical channel configuration.

In case the procedure was triggered by reception of a RADIO BEARER RELEASE message, the UE shall:

1> transmit a RADIO BEARER RELEASE COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

##### 8.2.3.24.3 Test purpose

1. To confirm that the UE transits from CELL\_DCH to CELL\_DCH according to the RADIO BEARER RELEASE message.
2. To confirm that the UE transmits RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC on a dedicated physical channel in a different frequency.

##### 8.2.3.24.4 Method of test

#### Initial Condition

System Simulator: 2 cells–Cell 1 is active and cell 6 is inactive.

CS-DCCH\_DTCH\_DCH (state 6-9) or PS\_DCCH\_DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

**Table 8.2.4.24**

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/ 3.84 MHz	-55	-72	Off	-72

Table 8.2.3.24 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in CELL\_DCH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.3.24. The SS switches its downlink transmission power settings to columns "T1" and transmits a RADIO BEARER RELEASE message including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code which is assigned to P-CPICH of cell 6. The UE shall select cell 6 and release the radio access bearer after receiving this message, and then remain in CELL\_DCH state. The UE transmits a RADIO BEARER RELEASE COMPLETE message using AM RLC after it completes reconfiguration according to received RADIO BEARER RELEASE message. Upon completion of the procedure, the SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The initial state of UE is in CELL_DCH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.3.24.
2				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.3.24.
3		←	RADIO BEARER RELEASE	Including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6.
4				The UE select cell 6.
5		→	RADIO BEARER RELEASE COMPLETE	The UE sends this message on a dedicated physical channel in cell 6.
6		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

### RADIO BEARER RELEASE (Step 3)

The contents RADIO BEARER RELEASE message in this test case is identical the message sub-type indicated by "Packet to CELL\_DCH from CELL\_DCH in PS" or "Speech in CS" or "Non speech in CS" in [9] TS 34.108 clause 9, with the following exception:

Information Element	Value/remark
Frequency info - UARFCN uplink(Nu) - UARFCN downlink(Nd)	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
Downlink information for each radio links - Primary CPICH info - Primary Scrambling Code	Set to same code as used for cell 6

#### 8.2.3.24.5 Test requirement

After step 4 the UE shall transmit a RADIO BEARER RELEASE COMPLETE message on the DCCH using AM RLC in cell 6.

After step 5 the UE shall be in CELL\_DCH state in cell 6.

#### 8.2.3.25 Radio Bearer Release for transition from CELL\_DCH to URA\_PCH (Frequency band modification): Success

##### 8.2.3.25.1 Definition

##### 8.2.3.25.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RELEASE message;

it shall:

- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.
- 1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the procedure was triggered by reception of a RADIO BEARER RELEASE message, the UE shall:

- 1> transmit a RADIO BEARER RELEASE COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

If after state transition the UE enters URA\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304 on that frequency.
- 1> if the IE "Frequency info" is not included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304.
- 1> prohibit periodical status transmission in RLC;
- 1> remove any C-RNTI from MAC;
- 1> clear the variable C\_RNTI;
- 1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:

- 2> keep the configuration existing before the reception of the message and transmit a failure response message as specified in TS25.331 subclause 8.2.2.9
- 1> if the UE enters URA\_PCH state, and after cell selection the criteria for URA update caused by "URA reselection" according to TS25.331 subclause 8.3.1 is fulfilled:
  - 2> initiate a URA update procedure according to TS25.331 subclause 8.3.1 using the cause "URA reselection";
  - 2> when the URA update procedure is successfully completed:
    - 3> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

### 8.2.3.25.3 Test purpose

1. To confirm that the UE transmits a RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_DCH to URA\_PCH according to the RADIO BEARER RELEASE message.
3. To confirm that the UE releases radio access bearer, dedicated physical channel and selects a common physical channel in a different frequency.

### 8.2.3.25.4 Method of test

#### Initial Condition

System Simulator: 2 cells – Cell 1 is active and cell 6 is inactive

UE: "Registered idle mode on CS" (state 2) or "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

#### Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

System Information Block type 11

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	Same downlink UARFCN as used for cell 6
- UARFCN uplink(Nu)	
- UARFCN downlink(Nd)	0dB
- Cell info	
- Cell individual offset	Not present
- Reference time difference to cell	
- Read SFN indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH info	Set to same code as used for cell 6
- Primary scrambling code	
- Primary CPICH Tx power	Not present
- Cell Selection and Re-selection Info	0dB
- Qoffset1 <sub>s,n</sub>	
- Qoffset2 <sub>s,n</sub>	Not present
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	Not present
- CHOICE mode	FDD
- Qualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

Test Procedure

Table 8.2.3.25

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-72	Off	-55

Table 8.2.3.25 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in idle mode of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.3.25. SS requests operator to make an outgoing call. The SS and UE execute procedure P3 or P5. Next The SS and the UE execute procedure P7 or P9 and then execute procedure P11 or P13. The SS switches its downlink transmission power settings to columns "T1" and transmits a RADIO BEARER RELEASE message including no IE "Frequency info".The UE shall transmit a RADIO BEARER RELEASE COMPLETE message using AM RLC and enter URA\_PCH state of cell 6. Upon completion of the procedure, the SS calls for generic procedure C.5 to check that UE is in URA\_PCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.3.25. SS requests operator to make an outgoing call.
2			SS executes procedure P3 (clause 7.4.2.1.2) or P5 (clause 7.4.2.2.2) specified in TS 34.108.	
3			SS executes procedure P7 (clause 7.4.2.3.2) or P9 (clause 7.4.2.4.2) specified in TS 34.108.	
4			SS executes procedure P11 (clause 7.4.2.5.2) or P13 (clause 7.4.2.6.2) specified in TS 34.108.	
5				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.3.25.
6		←	RADIO BEARER RELEASE	Not including IE "Frequency info" and IE "Primary CPICH info"
7		→	RADIO BEARER RELEASE COMPLETE	UE transmit this message on the dedicated physical channel in cell 1
8				The SS waits for 5 s.
9		↔	CALL C.5	If the test result of C.5 indicates that UE is in URA_PCH state, the test passes, otherwise it fails.

Specific Message Contents

#### RADIO BEARER RELEASE (Step 6)

Use the same message sub-type titled "Speech to CELL\_FACH from CELL\_DCH in CS" or "Non speech to CELL\_FACH from CELL\_DCH in CS" or "Packet to CELL\_FACH from CELL\_DCH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3
Frequency info	Not present
Downlink information for each radio link	Not present

#### 8.2.3.25.5 Test requirement

After step 6 the UE shall transmits a RADIO BEARER RELEASE COMPLETE message on the DCCH using AM RLC in cell 1.

After step 8 the UE shall be in URA\_PCH state in cell 6.

#### 8.2.3.26 Radio Bearer Release for transition from CELL\_FACH to CELL\_PCH (Frequency band modification): Success

##### 8.2.3.26.1 Definition

### 8.2.3.26.2 Conformance requirement

If the UE receives:

-a RADIO BEARER RELEASE message;

it shall:

- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.
- 1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the procedure was triggered by reception of a RADIO BEARER RELEASE message, the UE shall:

- 1> transmit a RADIO BEARER RELEASE COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

If after state transition the UE enters CELL\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304 on that frequency.
- 1> if the IE "Frequency info" is not included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304.
- 1> prohibit periodical status transmission in RLC;
- 1> remove any C-RNTI from MAC;
- 1> clear the variable C\_RNTI;
- 1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
  - 2> keep the configuration existing before the reception of the message and transmit a failure response message as specified in TS25.331 subclause 8.2.2.9
- 1> if the UE enters CELL\_PCH state from CELL\_FACH state, and the received reconfiguration message included the IE "Primary CPICH info" , and the UE selected another cell than indicated by this IE:
  - 2> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "cell reselection";
  - 2> when the cell update procedure is successfully completed:
    - 3> the procedure ends.

### Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

### 8.2.3.26.3 Test purpose

1. To confirm that the UE transmits a RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_FACH to CELL\_PCH according to the RADIO BEARER RELEASE message.

3. To confirm that the UE releases radio access bearer and selects a common physical channel in a different frequency.

#### 8.2.3.26.4 Method of test

##### Initial Condition

System Simulator: 2 cells – Cell 1 is active and cell 6 is inactive

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

##### Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

##### System Information Block type 11

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	0dB
- UARFCN uplink(Nu)	
- UARFCN downlink(Nd)	Not present
- Cell info	
- Cell individual offset	FALSE
- Reference time difference to cell	
- Read SFN indicator	FDD
- CHOICE mode	
- Primary CPICH info	Set to same code as used for cell 6
- Primary scrambling code	
- Primary CPICH Tx power	Not present
- Cell Selection and Re-selection Info	
- Qoffset1s,n	0dB
- Qoffset2s,n	Not Present
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	Not present
- CHOICE mode	FDD
- Qqualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

## Test Procedure

Table 8.2.3.26

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-72	Off	-55

Table 8.2.3.26 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in idle mode of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.3.26. SS requests operator to make an outgoing call. The SS and UE execute procedure P6. Next The SS and the UE execute procedure P10 and then execute procedure P14. The SS switches its downlink transmission power settings to columns "T1" and. transmits a RADIO BEARER RELEASE message including no IE "Frequency info" and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 1. The UE shall transmit a RADIO BEARER RELEASE COMPLETE message using AM RLC and enter CELL\_PCH state. Upon completion of the procedure, the SS calls for generic procedure C.4 to check that UE is in CELL\_PCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.3.26. SS requests operator to make an outgoing call.
2	←→		SS executes procedure P6 (clause 7.4.2.2.2) specified in TS 34.108.	
3	←→		SS executes procedure P10 (clause 7.4.2.4.2) specified in TS 34.108.	
4	←→		SS executes procedure P14 (clause 7.4.2.6.2) specified in TS 34.108.	
5				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.3.26.
6		←	RADIO BEARER RELEASE	Including no IE "Frequency info" and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 1
7		→	RADIO BEARER RELEASE COMPLETE	UE transmit this message on the common physical channel in cell 1
8				The SS waits for 5 s.
9	←→		CALL C.4	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

## Specific Message Contents

## RADIO BEARER RELEASE (Step 6)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3
Frequency info	Not present
Downlink information for each radio link	Not present

#### 8.2.3.26.5 Test requirement

After step 6 the UE shall transmit a RADIO BEARER RELEASE COMPLETE message on the DCCH using AM RLC in cell 1.

After step 10 the UE shall be in CELL\_PCH state in cell 6.

#### 8.2.3.27 Radio Bearer Release for transition from CELL\_FACH to URA\_PCH (Frequency band modification): Success

##### 8.2.3.27.1 Definition

##### 8.2.3.27.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RELEASE message;

it shall:

- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.
- 1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the procedure was triggered by reception of a RADIO BEARER RELEASE message, the UE shall:

- 1> transmit a RADIO BEARER RELEASE COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

If after state transition the UE enters URA\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304 on that frequency.
- 1> if the IE "Frequency info" is not included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304.
- 1> prohibit periodical status transmission in RLC;
- 1> remove any C-RNTI from MAC;
- 1> clear the variable C\_RNTI;
- 1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:

- 2> keep the configuration existing before the reception of the message and transmit a failure response message as specified in TS25.331 subclause 8.2.2.9.
- 1> if the UE enters URA\_PCH state, and after cell selection the criteria for URA update caused by "URA reselection" according to TS25.331 subclause 8.3.1 is fulfilled:
  - 2> initiate a URA update procedure according to TS25.331 subclause 8.3.1 using the cause "URA reselection";
  - 2> when the URA update procedure is successfully completed:
    - 3> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

### 8.2.3.27.3 Test purpose

1. To confirm that the UE transmits a RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_FACH to URA\_PCH according to the RADIO BEARER RELEASE message.
3. To confirm that the UE releases radio access bearer and selects a common physical channel in a different frequency.

### 8.2.3.27.4 Method of test

#### Initial Condition

System Simulator: 2 cells–Cell 1 is active and cell 6 is inactive

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

#### Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

System Information Block type 11

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	Same downlink UARFCN as used for cell 6
- UARFCN uplink(Nu)	
- UARFCN downlink(Nd)	0dB
- Cell info	
- Cell individual offset	Not present
- Reference time difference to cell	
- Read SFN indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH info	Set to same code as used for cell 6
- Primary scrambling code	
- Primary CPICH Tx power	Not present
- Cell Selection and Re-selection Info	0dB
- Qoffset1 <sub>s,n</sub>	
- Qoffset2 <sub>s,n</sub>	Not present
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	Not present
- CHOICE mode	FDD
- Qualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

Test Procedure

Table 8.2.3.27

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-72	Off	-72

Table 8.2.3.27 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in idle mode of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.3.27. SS requests operator to make an outgoing call. The SS and UE execute procedure P6. Next The SS and the UE execute procedure P10 and then execute procedure P14. The SS switches its downlink transmission power settings to columns "T1" and transmits a RADIO BEARER RELEASE not including IE "Frequency info" and IE "Primary CPICH info". The UE shall transmit a RADIO BEARER RELEASE COMPLETE message using AM RLC and enter URA\_PCH state of cell 6. Upon completion of the procedure, the SS calls for generic procedure C.5 to check that UE is in URA\_PCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.3.27. SS requests operator to make an outgoing call.
2		←→	SS executes procedure P6 (clause 7.4.2.2.2) specified in TS 34.108.	
3		←→	SS executes procedure P10 (clause 7.4.2.4.2) specified in TS 34.108.	
4		←→	SS executes procedure P14 (clause 7.4.2.6.2) specified in TS 34.108.	
5				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.3.27.
6		←	RADIO BEARER RELEASE	Not including IE "Frequency info" and IE "Primary CPICH info"
7		→	RADIO BEARER RELEASE COMPLETE	UE transmit this message on the common physical channel in cell 1.
8				The SS waits for 5 s.
9		←→	CALL C.4	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

Specific Message Contents

#### RADIO BEARER RELEASE (Step 6)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3
Frequency info	
Downlink information for each radio link	Not present

#### 8.2.3.27.5 Test requirement

After step 6 the UE shall transmits a RADIO BEARER RELEASE COMPLETE message on the DCCH using AM RLC in cell 1.

After step 6 the UE shall be in URA\_PCH state in cell 6.

#### 8.2.3.28 Radio Bearer Release for transition from CELL\_FACH to CELL\_PCH (Frequency band modification): Success

##### 8.2.3.28.1 Definition

##### 8.2.3.28.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RELEASE message;

it shall:

1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

1> enter a state according to TS25.331 subclause 8.6.3.3.

If the UE was in CELL\_FACH state upon reception of the reconfiguration message and remains in CELL\_FACH state, the UE shall:

1> if the IE "Frequency info" is included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304 on that frequency;

2> if the received reconfiguration message included the IE "Primary CPICH info", and the UE selected another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info":

3> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "cell reselection";

3> when the cell update procedure completed successfully:

4> proceed as below.

In case the procedure was triggered by reception of a RADIO BEARER RELEASE message, the UE shall:

1> transmit a RADIO BEARER RELEASE COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

### 8.2.3.28.3 Test purpose

1. To confirm that the UE transits from CELL\_FACH to CELL\_FACH according to the RADIO BEARER RELEASE message.
2. To confirm that the UE transmits RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC on a common physical channel in a different frequency.

### 8.2.3.28.4 Method of test

#### Initial Condition

System Simulator: 2 cells – Cell 1 is active and cell 6 is inactive.

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS".

#### Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

System Information Block type 11

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	Same downlink UARFCN as used for cell 6
- UARFCN uplink(Nu)	
- UARFCN downlink(Nd)	0dB
- Cell info	
- Cell individual offset	Not present
- Reference time difference to cell	
- Read SFN indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH info	Set to same code as used for cell 6
- Primary scrambling code	
- Primary CPICH Tx power	Not present
- Cell Selection and Re-selection Info	0dB
- Qoffset1 <sub>s,n</sub>	
- Qoffset2 <sub>s,n</sub>	Not present
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	Not present
- CHOICE mode	FDD
- Qualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

Test Procedure

Table 8.2.3.28

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-72	Off	-55

Table 8.2.3.28 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in CELL\_FACH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.3.28. SS requests operator to make an outgoing call. The SS and UE execute procedure P6. Next The SS and the UE execute procedure P10 and then execute procedure P14. The SS switches its downlink transmission power settings to columns "T1" and transmits a RADIO BEARER RELEASE message including IE "Frequency info" set to frequency information of cell 6 and no IE "Primary CPICH info". The UE shall select cell 6 and initiates CELL UPDATE procedure with IE "Cell update cause" set to "cell reselection". The UE shall transmit a RADIO BEARER RELEASE COMPLETE message using AM RLC after it completes reconfiguration according to the received RADIO BEARER RELEASE message. Upon completion of the procedure, the SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.3.28. SS requests operator to make an outgoing call.
2	←→		SS executes procedure P6 (clause 7.4.2.2.2) specified in TS 34.108.	
3	←→		SS executes procedure P6 (clause 7.4.2.4.2) specified in TS 34.108.	
4	←→		SS executes procedure P6 (clause 7.4.2.6.2) specified in TS 34.108.	
5				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.3.28.
6	←		RADIO BEARER RELEASE	Including IE "Frequency info" set to frequency information of cell 6 and no IE "Primary CPICH info" set to Primary Scrambling Code
7	→		CELL UPDATE	The IE "Cell update cause" is set to "cell reselection".
8	←		CELL UPDATE CONFIRM	Including the IE "New C-RNTI"
9	→		UTRAN MOBILITY INFORMATION CONFIRM	
10	→		RADIO BEARER RELEASE COMPLETE	The UE sends this message on a common physical channel in cell 6.
11	←→		CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

## Specific Message Contents

## RADIO BEARER RELEASE (Step 6)

The contents of RADIO BEARER RELEASE message in this test case are identical the message sub-type indicated by "Packet to CELL\_FACH from CELL\_FACH in PS" in [9] TS 34.108 clause 9, with the following exception:

Information Element	Value/remark
Frequency info	
- UARFCN uplink(Nu)	Same uplink UARFCN as used for cell 6
- UARFCN downlink(Nd)	Same downlink UARFCN as used for cell 6
Downlink information for each radio links	Not present

## CELL UPDATE (Step 7)

The contents of CELL UPDATE message are identical as "Contents of CELL UPDATE message" as found in [9] TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"cell reselection"

## CELL UPDATE CONFIRM (Step 8)

The contents of CELL UPDATE CONFIRM message are identical as "CELL UPDATE CONFIRM message" as found in [9] TS 34.108 clause 9. with the following exceptions:

Information Element	Value/remark
New C-RNTI	0000 0000 0000 0001B

### UTRAN MOBILITY UPDATE CONFIRM (Step 9)

The contents of UTRAN MOBILITY UPDATE CONFIRM message is identical as "UTRAN MOBILITY UPDATE CONFIRM message" as found in [9] TS 34.108 clause 9.

#### 8.2.3.28.5 Test requirement

After step 6 the UE shall transmit a CELL UPDATE message on the CCCH in cell 6.

After step 8 the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC in cell 6.

After step 9 the UE shall transmit a RADIO BEARER RELEASE COMPLETE message on the DCCH using AM RLC in cell 6.

After step 10 the UE shall be in CELL\_FACH state in cell 6.

#### 8.2.3.29 Radio Bearer Release for transition from CELL\_DCH to CELL\_DCH: Associated with signalling connection release during multi call for PS and CS services

##### 8.2.3.29.1 Definition

##### 8.2.3.29.2 Conformance requirement

If the UE receives:

- a RADIO BEARER RELEASE message:

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS25.214;
- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS25.331 subclause 8.6.3.3.

If the UE was in CELL\_DCH state upon reception of the reconfiguration message and remains in CELL\_DCH state, the UE shall:

- 1> if the IE "Uplink DPCH Info" is absent, not change its current UL Physical channel configuration;
- 1> if the IE "Downlink information for each radio link" is absent, not change its current DL Physical channel configuration.

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a RADIO BEARER RELEASE COMPLETE message as response message on the uplink DCCH using AM RLC.
- 1> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.3.

## 8.2.3.29.3 Test purpose

To confirm that the UE releases the existing radio access bearer and signaling connection according to a RADIO BEARER RELEASE message.

## 8.2.3.29.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) as specified in clause 7.4 of TS 34.108

## Test Procedure

The UE is in CELL\_DCH state of cell 1. The UE initiates a session setup to establish a PS signalling connection for multi call. Then UE and SS enter to multi call state. The SS transmits a DISCONNECT message to release a CS domain signalling connection. After the CC procedure, SS transmit a RADIO BEARER RELEASE message which includes IE "Signalling Connection release indication" set to "CS domain" and new configuration for remained service to the UE. The UE shall configure the specified channel and transmit a RADIO BEARER RELEASE COMPLETE message on the uplink DCCH using AM RLC.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The initial state of UE is in CELL_DCH state of cell 1.
2		→	INITIAL DIRECT TRANSFER (SERVICE REQUEST)	GMM ( Session setup is initiated for multi call from UE side.)
3		←	DOWNLINK DIRECT TRANSFER (AUTHENTICATION AND CIPHERING REQUEST)	GMM
4		→	UPLINK DIRECT TRANSFER (AUTHENTICATION AND CIPHERING RESPONSE)	GMM
5		←	SECURITY MODE COMMAND	
6		→	SECURITY MODE COMPLETE	
7		→	UPLINK DIRECT TRANSFER (ACTIVATE PDP CONTEXT REQUEST)	SM
8		←	RADIO BEARER SETUP	
9		→	RADIO BEARER SETUP COMPLETE	
10		←	DOWNLINK DIRECT TRANSFER (ACTIVE PDP CONTEXT ACCEPT)	SM
11		←	DOWNLINK DIRECT TRANSFER (DISCONNECT)	CC
12		→	UPLINK DIRECT TRANSFER (RELEASE)	CC
13		←	DOWNLINK DIRECT TRANSFER (RELEASE COMPLETE)	CC
14		←	RADIO BEARER RELEASE	Including IE "signalling connection indication" set to "CS domain"
15		→	RADIO BEARER RELEASE COMPLETE	

## Specific Message Contents

## RADIO BEARER RELEASE (STEP 14)

The contents of RADIO BEARER RELEASE message in this test case is identical to the message sub-type titled as "Non speech in CS" or "Speech in CS" as found in Annex.A, with the following exceptions

Information Element	Value/remark
Signalling Connection release indication - CN domain identity	CS domain

## 8.2.3.29.5 Test requirement

After step 14 the UE shall transmit a RADIO BEARER RELEASE COMPLETE message.

## 8.2.4 Transport channel reconfiguration

## 8.2.4.1 Transport channel reconfiguration (Timing re-initialised hard handover with transmission rate modification) from CELL\_DCH to CELL\_DCH: Success

## 8.2.4.1.1 Definition

## 8.2.4.1.2 Conformance requirement

If the UE receives:

- a TRANSPORT CHANNEL RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If the UE was in CELL\_DCH state upon reception of the reconfiguration message and remains in CELL\_DCH state, the UE shall:

- 1> if the IE "Uplink DPCH Info" is absent, not change its current UL Physical channel configuration;
- 1> if the IE "Downlink information for each radio link" is absent, not change its current DL Physical channel configuration.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

## 8.2.4.1.3 Test purpose

To confirm that the UE reconfigures the channel configuration according to a TRANSPORT CHANNEL RECONFIGURATION message, which is used to change the TFCS and the TFS while replacing the RL(s) in the active set with a set of RL(s) disjunct with the previous active set.

## 8.2.4.1.4 Method of test

## Initial Condition

System Simulator: 2 cells - Cell 1 and cell 2 are active

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE. Either a streaming CS domain RAB (state 6-9) or an interactive/ background PS domain RAB (state 6-10) has been established. UE connected to cell 1.

## Test Procedure

The UE is in CELL\_DCH state, connected to cell 1. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE, which includes new configuration parameters. The message is used to replace the RL(s) in the active set with a set of RL(s) disjunct with the previous active set. In this case, the connection to cell 1 is discontinued while a new connection to cell 2 is established at the same time. The TRANSPORT CHANNEL RECONFIGURATION message is used to also change the TFCS and TFS e.g. because the currently used rate is not available on cell 2. The TFCS and TFS change from a value corresponding with one reference configuration in 34.108 to another such reference configuration, e.g. to change an interactive PS domain RAB from UL:64 DL:384 to UL:32 DL:64 or to change a streaming CS RAB from UL:14.4 DL:14.4 to UL:57.6 DL:57.6. The UE shall apply the new configuration and then transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1			Void	
2			Void	
3		←	TRANSPORT CHANNEL RECONFIGURATION	The TFCS and the TFS are changed while replacing the RL(s) in the active set with a set of RL(s) disjunct with the previous active set
4			Void	
5		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	
6		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

## TRANSPORT CHANNEL RECONFIGURATION (FDD)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type titled as "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A, with the following exceptions:

For condition A1 (for CS non- speech the following IEs are not present in the default message, while included below: UL Transport channel information for all transport channels, Added or Reconfigured UL TrCH information, DL Transport channel information common for all transport channel, Added or Reconfigured DL TrCH information).

Information Element	Value/remark
UL Transport channel information for all transport channels Added or Reconfigured UL TrCH information	Set to the same values as for "Packet to CELL_DCH from CELL_FACH in PS" Set to the same values as for "Packet to CELL_DCH from CELL_FACH in PS"
DL Transport channel information common for all transport channel Added or Reconfigured DL TrCH information	Set to the same values as for "Packet to CELL_DCH from CELL_FACH in PS" Set to the same values as for "Packet to CELL_DCH from CELL_FACH in PS"
Frequency info	Not Present
Maximum allowed UL TX power	Not Present
CHOICE channel requirement	Set to the same values as for "Packet to CELL_DCH from CELL_FACH in PS" unless explicitly indicated otherwise in the following
-Uplink DPCH power control info	Not present
Downlink information common for all radio links	Set to the same values as for "Packet to CELL_DCH from CELL_FACH in PS" unless explicitly indicated otherwise in the following
- Downlink DPCH info common for all RL	Initialise
- Timing indicator	Not present
- Downlink DPCH power control information	Arbitrary set to value 0..306688 by step of 512
- Default DPCH Offset Value	Set to the same values as for "Packet to CELL_DCH from CELL_FACH in PS" unless explicitly indicated otherwise in the following
Downlink information for each radio link list	Set to the same values as for "Packet to CELL_DCH from CELL_FACH in PS" unless explicitly indicated otherwise in the following
- Downlink information for each radio links	FDD
- CHOICE mode	Ref. to the Default setting in TS34.108 clause 6.1 (FDD) for cell 2: 150
- Primary CPICH info	
- Primary scrambling code	
- Downlink DPCH info for each RL	
- DPCH frame offset	Set to value : Default DPCH Offset Value mod 38400
- DL channelisation code	
- Scrambling code change	Not Present

## TRANSPORT CHANNEL RECONFIGURATION (TDD)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message in Annex A, with the following exceptions:

Information Element	Value/remark
- Uplink DPCH timeslots and codes - First timeslot code list	A different code combination to that used previously.
Downlink information common for all radio links - Downlink DPCH info common for all RL - Timing Indicator	Maintain

### 8.2.4.1.5 Test requirement

After step 3 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC on a dedicated physical channel using another radio link.

### 8.2.4.1a Transport channel reconfiguration (Transmission Rate Modification with Timing Maintained) from CELL\_DCH to CELL\_DCH of the same cell: Success

#### 8.2.4.1a.1 Definition

#### 8.2.4.1a.2 Conformance requirement

If the UE receives:

- a TRANSPORT CHANNEL RECONFIGURATIONmessage; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If the UE was in CELL\_DCH state upon reception of the reconfiguration message and remains in CELL\_DCH state, the UE shall:

- 1> if the IE "Uplink DPCH Info" is absent, not change its current UL Physical channel configuration;
- 1> if the IE "Downlink information for each radio link" is absent, not change its current DL Physical channel configuration.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

#### 8.2.4.1a.3 Test purpose

To confirm that the UE reconfigures the physical channel and transport channel configuration according to a TRANSPORT CHANNEL RECONFIGURATION message, which specifies a hard handover by changing physical channel information and either TFCS and TFS or TFCS only.

#### 8.2.4.1a.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108.

Note : Transmission rate shall be set to the maximum rate for the UE during the radio bearer establishment procedure.

### Test Procedure

The UE is in CELL\_DCH state. The radio bearer is placed into UE test loop mode 1 described in 34.109 clause 5.3 and the UL RLC\_SDU size for the loopback scheme is set to the maximum size possible when the maximum uplink TFS, as indicated in RADIO BEARER SETUP message during radio bearer establishment procedure, is used. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE to modify the transmission rate which includes a new physical channel information and the TFCS is reconfigured to restrict the use of TFCl. The UE shall reconfigure the new configuration and then transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC. UL MAC restriction is imposed on the SS so that SS can only received using the maximum TFS and minimum TFS. Both TFSs belong to the restricted TFCS(i.e. the TFCS after reconfiguration). In this procedure SS transmits a RLC\_SDU whose size is the same as the UL RLC\_SDU size for the loopback scheme . The UE shall selects the maximum uplink TFS in the restricted TFCS(i.e. the TFCS after reconfiguration) on the radio access bearer. The SS should receive the expected data as a RLC\_SDU that is sent back by UE. Next the SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE to modify the transmission rate which includes new physical channel information and new TFCS and TFS. The UE shall reconfigure the new configuration and then transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state

### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	TRANSPORT CHANNEL RECONFIGURATION	
2		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	
2a		←	DOWNLINK RLC SDU	
2b		→	UPLINK RLC SDU	
3		←	TRANSPORT CHANNEL RECONFIGURATION	
4		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	
5		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

### Specific Message Contents

#### TRANSPORT CHANNEL RECONFIGURATION (Step 1)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type titled as "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A, with the following exceptions:

Information Element	Value/remark
UL Transport channel information for all transport channels	Not Present
Added or Reconfigured UL TrCH information	Not Present
DL Transport channel information common for all transport channel	
- SCCPCH TFCS	Not Present
- CHOICE mode	FDD
- CHOICE DL parameters	Explicit
- DL DCH TFCS	
- CHOICE TFCI Signalling	Normal
- TFCI Field 1 Information	
- CHOICE TFCS representation	Complete reconfiguration
- TFCS complete reconfigure	
- CHOICE CTFC Size	Number of bits used must be enough to cover all combinations of CTFC from TS34.108 clause 6.10 Parameter Set which is used in RADIO BEARER SETUP message in initial procedure.
- CTFC information	
- CTFC	This CTFC value is set as defined value to be restricted from the TFCS defined in RADIO BEARER SETUP message and repeated for TFC numbers.
- Power offset information	Not Present
Added or Reconfigured DL TrCH information	Not Present

#### 8.2.4.1a.5 Test requirement

After step 1 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

After step 2a the UE shall transmit a RLC\_SDU that is same as the transmitted data from SS in step 2a on the radio access bearer.

After step 3 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

#### 8.2.4.2 Transport channel reconfiguration from CELL\_DCH to CELL\_DCH: Failure (Unsupported configuration)

##### 8.2.4.2.1 Definition

##### 8.2.4.2.2 Conformance requirement

If the UTRAN instructs the UE to use a configuration, which it does not support and/or if the received message causes the variable UNSUPPORTED\_CONFIGURATION to be set to TRUE, the UE shall:

- 1> transmit a failure response as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "configuration unsupported".
- 1> set the variable UNSUPPORTED\_CONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

1> in case of reception of a TRANSPORT CHANNEL RECONFIGURATION message:

...

2> transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.6, 8.2.2.9.

#### 8.2.4.2.3 Test purpose

To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC if the received TRANSPORT CHANNEL RECONFIGURATION message specifies unsupported configuration parameters.

#### 8.2.4.2.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message, which includes configuration parameters unsupported by the UE. The UE transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, reporting the event "configuration unsupported" in IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	TRANSPORT CHANNEL RECONGURATION	Including configuration unsupported by the UE
2		→	TRANSPORT CHANNEL RECONFIGURATION FAILURE	The UE shall not change the settings used by the transport channels.
3		→	MEASUREMENT REPORT	

#### Specific Message Contents

##### MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

## MEASUREMENT REPORT (Step 0b and 3)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

### TRANSPORT CHANNEL RECONFIGURATION (FDD) (Step 1)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info	
- UARFCN uplink(Nu)	0.
- UARFCN downlink (Nd)	950

### TRANSPORT CHANNEL RECONFIGURATION (TDD) (Step 1)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info	
- UARFCN (Nt)	0

### TRANSPORT CHANNEL RECONFIGURATION FAILURE (Step 2)

The contents of TRANSPORT CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the TRANSPORT CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Configuration unsupported

#### 8.2.4.2.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 1 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, indicating "configuration unsupported" in IE "failure cause".

After step 2, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

#### 8.2.4.3 Transport channel reconfiguration from CELL\_DCH to CELL\_DCH: Failure (Physical channel failure and reversion to old configuration)

##### 8.2.4.3.1 Definition

##### 8.2.4.3.2 Conformance requirement

When a physical dedicated channel establishment is initiated by the UE, the UE shall start a timer T312 and wait for layer 1 to indicate N312 "in sync" indications. On receiving N312 "in sync" indications, the physical channel is considered established and the timer T312 is stopped and reset.

If the timer T312 expires before the physical channel is established, the UE shall consider this as a "physical channel establishment failure".

If the received message caused the UE to be in CELL\_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

- 1> revert to the configuration prior to the reception of the message (old configuration);

...

- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "physical channel failure".
- 1> set the variable ORDERED\_RECONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a TRANSPORT CHANNEL RECONFIGURATION message:

...

- 2> transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.7, 8.2.2.9, 8.5.4.

### 8.2.4.3.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, if the UE fails to reconfigure the new configuration according to a TRANSPORT CHANNEL RECONFIGURATION message.

### 8.2.4.3.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE. Either a streaming CS domain RAB (state 6-9) or an interactive/ background PS domain RAB (state 6-10) has been established.

#### Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE, which includes new configuration parameters (rate change including change of spreading factor e.g. to change an interactive PS domain RAB from UL:64 DL:384 to UL:32 DL:64 or to change a streaming CS RAB from UL:14.4 DL:14.4 to UL:57.6 DL:57.6) but the SS does not configure the new physical channel specified in this message and keep its old configuration. Therefore, the UE cannot synchronise with the SS on the new physical channel and shall revert to the old configuration after T312 expires. Then the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting "physical channel failure" in IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	TRANSPORT CHANNEL RECONFIGURATION	
2				The SS does not reconfigure the new configuration.
3		→	TRANSPORT CHANNEL RECONFIGURATION FAILURE	The UE reverts to the old configuration and transmits this message.
4		→	MEASUREMENT REPORT	

Specific Message Contents

MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

MEASUREMENT REPORT (Step 0b and 4)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

#### TRANSPORT CHANNEL RECONFIGURATION (Step 1)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type titled as "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A, with the following exceptions:

Information Element	Value/remark
UL Transport channel information for all transport channels	Set to the same values as for "Packet to CELL_DCH from CELL_FACH in PS"
Added or Reconfigured UL TrCH information	Set to the same values as for "Packet to CELL_DCH from CELL_FACH in PS"
DL Transport channel information common for all transport channel	Set to the same values as for "Packet to CELL_DCH from CELL_FACH in PS"
Added or Reconfigured DL TrCH information	Set to the same values as for "Packet to CELL_DCH from CELL_FACH in PS"
Frequency info	Not Present
Maximum allowed UL TX power	Not Present
CHOICE channel requirement	Set to the same values as for "Packet to CELL_DCH from CELL_FACH in PS" unless explicitly indicated otherwise in the following
-Uplink DPCH power control info	Not present
Downlink information common for all radio links	Set to the same values as for "Packet to CELL_DCH from CELL_FACH in PS" unless explicitly indicated otherwise in the following
- Downlink DPCH info common for all RL	
- Downlink DPCH power control information	Not present
Downlink information for each radio link list	Set to the same values as for "Packet to CELL_DCH from CELL_FACH in PS" unless explicitly indicated otherwise in the following
- Downlink information for each radio links	
- CHOICE mode	FDD
- Downlink DPCH info for each RL	
- DPCH frame offset	Set to the value used when establishing this radio link
- DL channelisation code	
- Scrambling code change	Not Present

## TRANSPORT CHANNEL RECONFIGURATION FAILURE (Step 2)

The contents of TRANSPORT CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the TRANSPORT CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Physical channel failure

### 8.2.4.3.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 2 the UE shall revert to the old configuration and transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, and it shall set the value "physical channel failure" in IE "failure cause".

After step 3, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

### 8.2.4.4 Transport channel reconfiguration from CELL\_DCH to CELL\_DCH: Failure (Physical channel failure and cell reselection)

#### 8.2.4.4.1 Definition

#### 8.2.4.4.2 Conformance requirement

If the received message caused the UE to be in CELL\_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

- 1> revert to the configuration prior to the reception of the message (old configuration);
- 1> if the old configuration includes dedicated physical channels (CELL\_DCH state) and the UE is unable to revert to the old configuration:
  - 2> initiate a cell update procedure according to TS 25.331 subclause 8.3.1, using the cause "radio link failure";
  - 2> after the cell update procedure has completed successfully:
    - 3> proceed as below.
    - ...
- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "physical channel failure".
- 1> set the variable ORDERED\_RECONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and

- does not include "Transport channel information elements"; and
- includes "Physical channel information elements":

the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message using AM RLC.

The UE shall:

- 1> in case of reception of a TRANSPORT CHANNEL RECONFIGURATION message:

...

- 2> transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.7, 8.2.2.9, 8.3.1.7.

### 8.2.4.4.3 Test purpose

To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message after it completes a cell update procedure when the UE cannot synchronise with the SS on the new channel before T312 expires and fails to revert to the old configuration.

### 8.2.4.4.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

The UE is in CELL\_DCH state. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE. The message specifies a new configuration but the SS does not reconfigure the new channel specified in this message and release the old configuration. The UE cannot synchronise with SS before T312 expires and shall attempt to revert to the old configuration. The UE cannot revert to the old configuration and then transmit a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "radio link failure". The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC and subsequently transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to "physical channel failure".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	TRANSPORT CHANNEL RECONFIGURATION	
2				The SS does not reconfigure L1 in accordance with TRANSPORT CHANNEL RECONFIGURATION message and release the old configuration.
3		→	CELL UPDATE	This message includes the value "radio link failure" set in IE "Cell update cause".
4		←	CELL UPDATE CONFIRM	This message includes IE "Physical channel information elements".
5				The SS changes physical channel configuration according to the IE "Physical channel information elements" included in the CELL UPDATE CONFIRM message.
6		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
7		→	TRANSPORT CHANNEL RECONFIGURATION FAILURE	The IE "failure cause" shall be set to "physical channel failure"

Specific Message Contents

#### TRANSPORT CHANNEL RECONFIGURATION (Step 1)

Use the message sub-type titled as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A, with the following exception.

Information Element	Value/remark
Uplink DPCH info - Scrambling code number	Different value from previous value
Downlink information common for all radio links - Downlink DPCH info common for all RL - Timing Indicator	Maintain

#### CELL UPDATE (Step 3)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A with the following exceptions:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI	Check to see if set to '0000 0000 0001'
Cell Update Cause	Check to see if set to '0000 0000 0000 0000 0000 0001' "radio link failure"

#### CELL UPDATE CONFIRM (Step 4) (FDD)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC State indicator UplinkDPCH Info	CELL_DCH Same as RADIO BEARER SETUP message used to move to initial condition
Downlink information for each radio links	Same as RADIO BEARER SETUP message used to move to initial condition

#### CELL UPDATE CONFIRM (Step 4) (TDD)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC State Indicator Uplink DPCH timeslots and codes	CELL_DCH Same as RADIO BEARER SETUP message used to move to initial condition
Downlink information for each radio links	Same as RADIO BEARER SETUP message used to move to initial condition

#### TRANSPORT CHANNEL RECONGURATION FAILURE (Step 7)

The contents of TRANSPORT CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the TRANSPORT CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	"physical channel failure"

#### 8.2.4.4.5 Test requirement

After step 2 the UE shall transmit a CELL UPDATE message on the uplink CCCH with IE "Cell update cause" set to "radio link failure".

After step 5 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

After step 6 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the IE "failure cause" to "physical channel failure".

#### 8.2.4.5 Transport Channel Reconfiguration from CELL\_DCH to CELL\_DCH: Failure (Incompatible simultaneous reconfiguration)

##### 8.2.4.5.1 Definition

##### 8.2.4.5.2 Conformance requirement

If the received message is any of the messages:

- TRANSPORT CHANNEL RECONFIGURATION; or
- ...

the UE shall:

- 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or
- ...

3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:

...

3> else:

4> reject the transaction; and

4> if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:

5> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

...

If the table "Rejected transactions" in the variable TRANSACTIONS is set due to the received message and the variable PROTOCOL\_ERROR\_REJECT is set to FALSE, the UE shall:

1> not apply the configuration contained in the received reconfiguration message;

1> transmit a failure response message as specified in subclause TS 25.331 8.2.2.9, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable TRANSACTIONS; and

2> clear that entry;

2> set the IE "failure cause" to "incompatible simultaneous reconfiguration".

1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

1> in case of reception of a TRANSPORT CHANNEL RECONFIGURATION message:

...

2> transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.9, 8.2.2.12, 8.6.3.11.

### 8.2.4.5.3 Test purpose

To confirm that if the UE receives a TRANSPORT CHANNEL RECONFIGURATION message during a reconfiguring procedure due to a radio bearer message other than a TRANSPORT CHANNEL RECONFIGURATION, it shall keep its configuration as if the TRANSPORT CHANNEL RECONFIGURATION message had not been received and complete the reconfiguration procedure according to the previously received message.

### 8.2.4.5.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

### Test Procedure

The UE is in CELL\_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message before the "activation time" indicated in the RADIO BEARER RECONFIGURATION message expires. When the UE receives the TRANSPORT CHANNEL RECONFIGURATION message, the UE shall keep the configuration as if it had not received the TRANSPORT CHANNEL RECONFIGURATION message and shall transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the SS acknowledges the TRANSPORT CHANNEL RECONFIGURATION FAILURE message, the UE reconfigures the new physical configuration parameters upon the activation time and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on DCCH using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RECONFIGURATION	Including IE "Uplink DPCH info" for FDD mode
2		←	TRANSPORT CHANNEL RECONFIGURATION	Sent before the time specified in IE "Activation Time Info" of message in step 1 has elapsed.
3		→	TRANSPORT CHANNEL RECONFIGURATION FAILURE	The UE shall not change the configuration due to the reception of TRANSPORT CHANNEL RECONFIGURATION message.
4		→	RADIO BEARER RECONFIGURATION COMPLETE	This message is on DCCH using AM RLC.
5		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

### Specific Message Contents

#### RADIO BEARER RECONFIGURATION (Step 1) (FDD)

For RADIO BEARER RECONFIGURATION in step 1, use the message sub-type indicated as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8 ]
Uplink DPCH info - Scrambling code number	1

#### RADIO BEARER RECONFIGURATION (Step 1) (TDD)

For RADIO BEARER RECONFIGURATION in step 1, use the message sub-type indicated as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8 ]
Uplink DPCH timeslots and codes - First timeslot code list	Assigned by SS

## TRANSPORT CHANNEL RECONFIGURATION (Step 2) (FDD)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type indicated as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time Uplink DPCH info - Scrambling code number	Current CFN-[current CFN mod 8 + 8 ]  2

## TRANSPORT CHANNEL RECONFIGURATION (Step 2) (TDD)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type indicated as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time Uplink DPCH timeslots and codes - First timeslot code list	Current CFN-[current CFN mod 8 + 8 ]  A different code combination that used previously.

## TRANSPORT CHANNEL RECONFIGURATION FAILURE

The contents of TRANSPORT CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the TRANSPORT CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Incompatible simultaneous reconfiguration

## 8.2.4.5.5 Test requirement

After step 2 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "Incompatible simultaneous reconfiguration".

After step 3 the UE transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the new configuration specified in step 1.

## 8.2.4.6 Transport channel reconfiguration from CELL\_DCH to CELL\_DCH: Failure (Invalid message reception and Invalid configuration)

## 8.2.4.6.1 Definition

## 8.2.4.6.2 Conformance requirement

If the received reconfiguration message contains a protocol error causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;

- 2> set the IE "failure cause" to the cause value "protocol error";
- 2> include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL\_ERROR\_INFORMATION.

If the variable INVALID\_CONFIGURATION is set to TRUE the UE shall:

- 1> keep the configuration existing before the reception of the message;
- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
    - 3> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
    - 3> clear that entry.
  - 2> set the IE "failure cause" to "invalid configuration".
- 1> set the variable INVALID\_CONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a TRANSPORT CHANNEL RECONFIGURATION message:
  - ...
  - 2> transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.13, 8.2.2.11, 8.2.2.9.

### 8.2.4.6.3 Test purpose

To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, if the received TRANSPORT CHANNEL RECONFIGURATION message which does not include any IEs except IE "Message Type".

To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC if it receives a TRANSPORT CHANNEL RECONFIGURATION message including some IEs set to give an invalid configuration..

### 8.2.4.6.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT

message back to SS. The SS transmits an invalid TRANSPORT CHANNEL RECONFIGURATION message to the UE, which contains an unexpected critical message extension. The UE shall keep the old configuration and transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, specifying "protocol error" in IE "failure cause" and also indicating "Message extension not comprehended" in IE "Protocol error cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically. SS transmits a TRANSPORT CHANNEL RECONFIGURATION message including some IEs set to give an invalid configuration. The UE keeps current configuration and transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value "invalid configuration" to IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	TRANSPORT CHANNEL RECONFIGURATION	See specific message content.
2		→	TRANSPORT CHANNEL RECONFIGURATION FAILURE	The UE does not change its configuration.
2a		→	MEASUREMENT REPORT	
3		←	TRANSPORT CHANNEL RECONFIGURATION	This message includes IE set to give an invalid configuration
4				The UE does not change its configuration
5		→	TRANSPORT CHANNEL RECONFIGURATION FAILURE	The IE "failure cause" shall be set to "invalid configuration"
6		→	MEASUREMENT REPORT	

Specific Message Contents

MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

## MEASUREMENT REPORT (Step 0b, 2a and 6)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

## TRANSPORT CHANNEL RECONFIGURATION (Step 1)

Use the TRANSPORT CHANNEL RECONFIGURATION message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Critical extensions	'01'H

## TRANSPORT CHANNEL RECONFIGURATION FAILURE (Step 2)

The contents of TRANSPORT CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the TRANSPORT CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	Message extension not comprehended

## TRANSPORT CHANNEL RECONFIGURATION (Step 3) (FDD)

Use the message sub-type titled as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions.

Information Element	Value/remark
- Default DPCH Offset Value	512
- DPCH frame offset	1024

### TRANSPORT CHANNEL RECONFIGURATION (Step 3) (TDD)

Use the message sub-type titled as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
-PRACH TFCS	Present

### TRANSPORT CHANNEL RECONFIGURATION FAILURE (Step 5)

The contents of TRANSPORT CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the TRANSPORT CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Invalid configuration

#### 8.2.4.6.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 1 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC. The message shall specify "protocol error" in IE "failure cause" and set value "Message extension not comprehended" in IE "Protocol error cause".

After step 2, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 4 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to "invalid configuration".

After step 5, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

### 8.2.4.7 Transport channel reconfiguration from CELL\_DCH to CELL\_FACH: Success

#### 8.2.4.7.1 Definition

#### 8.2.4.7.2 Conformance requirement

If the UE receives:

- a TRANSPORT CHANNEL RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_FACH state, the UE shall, after the state transition:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:

- 2> select a suitable UTRA cell according to TS 25.304 on that frequency.
- 1> select PRACH according to TS 25.331 subclause 8.5.17;
- 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
- 1> use the transport format set given in system information;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> ignore that IE and stop using DRX.
- 1> if the contents of the variable C\_RNTI is empty:
  - 2> perform a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Cell reselection";

...

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

### 8.2.4.7.3 Test purpose

To confirm that the UE reconfigures the channel according to a TRANSPORT CHANNEL RECONFIGURATION message.

### 8.2.4.7.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108. An interactive/ background PS domain RAB has been established.

## Test Procedure

The UE is in CELL\_DCH state. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE and the UE performs a state transition from CELL\_DCH to CELL\_FACH in the same cell. The UE then reconfigures the new channels according to this message and system information messages. Finally, the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using AM RLC. SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	TRANSPORT CHANNEL RECONFIGURATION	
2				UE shall perform the reconfiguration
3		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	
4		↔	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

Specific Message Contents

### TRANSPORT CHANNEL RECONFIGURATION

Use the message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A with the following exception:

Information Element	Value/remark
New C-RNTI	0000 0000 0000 0001B
Frequency info	Not Present
Maximum allowed UL TX power	Not Present

#### 8.2.4.7.5 Test requirement

After step 2 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the common physical channel.

#### 8.2.4.8 Void

#### 8.2.4.9 Transport channel reconfiguration from CELL\_DCH to CELL\_FACH: Success (Cell re-selection)

##### 8.2.4.9.1 Definition

##### 8.2.4.9.2 Conformance requirement

If the UE receives:

- a TRANSPORT CHANNEL RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_FACH state, the UE shall, after the state transition:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency.

- 1> if the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD), and the UE selects another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD):
  - 2> initiate a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Cell reselection";
  - 2> when the cell update procedure completed successfully:
    - 1> select PRACH according to TS 25.331 subclause 8.5.17;
    - 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
    - 1> use the transport format set given in system information;
    - 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
      - 2> ignore that IE and stop using DRX.
  - 1> if the contents of the variable C\_RNTI is empty:
    - 2> perform a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Cell reselection";

...

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- includes "CN information elements"; or
- includes the IE "Ciphering mode info"; or
- includes the IE "Integrity protection mode info"; or
- includes the IE "New C-RNTI"; or
- includes the IE "New U-RNTI":

the UE shall:

- 1> transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4, 8.3.1.7.

## 8.2.4.9.3 Test purpose

To confirm that the UE transmits TRANSPORT CHANNEL RECONFIGURATION COMPLETE message after it completes a cell update procedure.

## 8.2.4.9.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in CELL\_DCH state. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message, which includes IE "Primary CPICH info" and no dedicated physical channel information to transit from CELL\_DCH to CELL\_FACH, to the UE. The UE shall initiate the cell re-selection procedure, because it selects another cell than the one for which the IE "New C-RNTI" provided by SS is valid. It transmits a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection". The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving a CELL UPDATE message. The UE then transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC. The UE transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1			Void	
2			Void	
3		←	TRANSPORT CHANNEL RECONGURATION	This message include IE "Primary CPICH info".
4		→	CELL UPDATE	The value "cell reselection" shall be set in IE "Cell update cause".
5		←	CELL UPDATE CONFIRM	See message content.
6		→	UTRAN MOBILITY INFORMATION CONFIRM	
7		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	

## Specific Message Contents

## TRANSPORT CHANNEL RECONFIGURATION (Step 3) (FDD)

Use the message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A with the following exceptions.

Information Element	Value/remark
Frequency info	Not Present
Maximum allowed UL TX power	Not Present
Downlink information for each radio links	Identifies the cell for which the IE "New C-RNTI" is valid
- Primary CPICH info	
- Primary scrambling code	150

## TRANSPORT CHANNEL RECONFIGURATION (Step 3) (TDD)

Use the message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A with the following exceptions.

Information Element	Value/remark
Downlink information for each radio links - Primary CCPCH info - Cell parameters ID	4

#### CELL UPDATE (Step 4)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"cell reselection"

#### CELL UPDATE CONFIRM (Step 5)

Use the same message type found in clause Annex A, with the following exceptions.

Information Element	Value/Remarks
New C-RNTI	'1010 1010 1010 1010'

#### UTRAN MOBILITY INFORMATION CONFIRM (Step 6)

Only the message type is checked.

#### TRANSPORT CHANNEL RECONFIGURATION COMPLETE (Step 7)

Use the message with the same message type specified in Annex A.

#### 8.2.4.9.5 Test requirement

After step 3 the UE shall transmit a CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection".

After step 5 UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC.

After step 6 UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

#### 8.2.4.10 Transport channel reconfiguration from CELL\_FACH to CELL\_DCH: Success

##### 8.2.4.10.1 Definition

##### 8.2.4.10.2 Conformance requirement

If the UE receives:

- a TRANSPORT CHANNEL RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

#### 8.2.4.10.3 Test purpose

To confirm that the UE reconfigures a new channel using dedicated physical channel according to a TRANSPORT CHANNEL RECONFIGURATION message.

#### 8.2.4.10.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state. The UE has previously stored radio bearer and transport channel parameters for use in CELL\_DCH. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message, which modifies the rate as compared to the stored configuration to the UE. The message also includes the physical layer parameters e.g. IE "Uplink DPCH info" and IE "Downlink DPCH info" leading to a state transition from CELL\_FACH to CELL\_DCH in the same cell, to the UE. The UE shall reconfigure the new channel according to this message. Finally, the UE transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	TRANSPORT CHANNEL RECONFIGURATION	Includes both IE "Uplink DPCH Info" and IE "Downlink DPCH Info" in the message.
2				Reconfiguration of transport channel
3		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	
4		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

## TRANSPORT CHANNEL RECONFIGURATION

Use the message sub-type titled "Packet to CELL\_DCH from CELL\_FACH in PS" in Annex A with the following exceptions:

Information Element	Value/remark
Added or Reconfigured UL TrCH information	Set to the same values as for "Packet to CELL_DCH from CELL_DCH in PS". Only the DCH for DTCH is included, since only for that TrCH the rate is changed as compared to the stored CELL_DCH configuration
Added or Reconfigured DL TrCH information	Set to the same values as for "Packet to CELL_DCH from CELL_DCH in PS". Only the DCH for DTCH is included, since only for that TrCH the rate is changed as compared to the stored CELL_DCH configuration
Frequency info	Not Present
Maximum allowed UL TX power	Not Present
Downlink information for each radio link list	
- Downlink information for each radio links	
- CHOICE mode	FDD
- Downlink DPCH info for each RL	
- DL channelisation code	
- Scrambling code change	Not Present

## TRANSPORT CHANNEL RECONFIGURATION COMPLETE

Use the message with the same message type specified in Annex A.

## 8.2.4.10.5 Test requirement

After step 2 the UE shall transmit a TRANSPORT RECONFIGURATION COMPLETE message on the newly configured DPCH.

## 8.2.4.11 Transport channel reconfiguration from CELL\_FACH to CELL\_DCH: Failure (Unsupported configuration)

## 8.2.4.11.1 Definition

## 8.2.4.11.2 Conformance requirement

If the UTRAN instructs the UE to use a configuration, which it does not support and/or if the received message causes the variable UNSUPPORTED\_CONFIGURATION to be set to TRUE, the UE shall:

- 1> transmit a failure response as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "configuration unsupported".
- 1> set the variable UNSUPPORTED\_CONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

1> in case of reception of a TRANSPORT CHANNEL RECONFIGURATION message:

...

2> transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.6, 8.2.2.9.

#### 8.2.4.11.3 Test purpose

To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC when it receives a TRANSPORT CHANNEL RECONFIGURATION message which includes unsupported configuration parameters.

#### 8.2.4.11.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message, which includes configuration parameters unsupported by the UE, to the UE. The UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting "configuration unsupported" in IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	TRANSPORT CHANNEL RECONGURATION	The message includes configuration unsupported by the UE
2		→	TRANSPORT CHANNEL RECONFIGURATION FAILURE	The UE shall not change its configuration.
3		→	MEASUREMENT REPORT	

#### Specific Message Contents

##### MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	RACHorCPCH
- UL Target Transport Channel ID	Not Present
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

### MEASUREMENT REPORT (Step 0b and 3)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

### TRANSPORT CHANNEL RECONFIGURATION (FDD) (Step 1)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info	
- UARFCN uplink (Nu)	0
- UARFCN downlink (Nd)	950

#### TRANSPORT CHANNEL RECONFIGURATION (TDD) (Step 1)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info	
- UARFCN (Nt)	0

#### TRANSPORT CHANNEL RECONFIGURATION FAILURE (Step 2)

The contents of TRANSPORT CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the TRANSPORT CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Configuration unsupported

#### 8.2.4.11.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 1 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC. The UE shall set "configuration unsupported" in IE "failure cause" of the message.

After step 2, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

#### 8.2.4.12 Transport channel reconfiguration from CELL\_FACH to CELL\_DCH: Failure (Physical channel failure and successful reversion to old channel)

##### 8.2.4.12.1 Definition

##### 8.2.4.12.2 Conformance requirement

When a physical dedicated channel establishment is initiated by the UE, the UE shall start a timer T312 and wait for layer 1 to indicate N312 "in sync" indications. On receiving N312 "in sync" indications, the physical channel is considered established and the timer T312 is stopped and reset.

If the timer T312 expires before the physical channel is established, the UE shall consider this as a "physical channel establishment failure".

If the received message caused the UE to be in CELL\_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

1> revert to the configuration prior to the reception of the message (old configuration);

...

1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

- 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "physical channel failure".
- 1> set the variable ORDERED\_RECONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a TRANSPORT CHANNEL RECONFIGURATION message:
- ...
- 2> transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.7, 8.2.2.9, 8.5.4.

#### 8.2.4.12.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, if the UE fails to reconfigure the new channel according to a TRANSPORT CHANNEL RECONFIGURATION message.

#### 8.2.4.12.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. SS transmits a TRANSPORT CHANNEL RECONFIGURATION message, which includes the new transport channel parameters, to the UE. However, SS keeps its current physical channel configuration.. Hence, the UE shall experience a failure in the reconfiguration process. After T312 expires, the UE shall revert to the old channel configuration. Then the UE transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, stating the reason "physical channel failure" in IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	TRANSPORT CHANNEL RECONGURATION	Message includes IE "Downlink DPCH Info" and IE "Uplink DPCH Info"
2				SS does not reconfigure the channel causing the UE to detect a physical channel failure.
3		→	TRANSPORT CHANNEL RECONFIGURATION FAILURE	After T312 expires the UE shall revert to the old configuration and transmit this message.
4		→	MEASUREMENT REPORT	

Specific Message Contents

MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	RACHorCPCH
- UL Target Transport Channel ID	Not Present
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

MEASUREMENT REPORT (Step 0b and 4)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

#### TRANSPORT CHANNEL RECONFIGURATION (Step 1)

Use the message sub-type titled "Packet to CELL\_DCH from CELL\_FACH in PS" in Annex A.

#### TRANSPORT CHANNEL RECONFIGURATION FAILURE (Step 2)

The contents of TRANSPORT CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the TRANSPORT CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Physical channel failure

#### 8.2.4.12.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 2 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value "physical channel failure" in IE "failure cause".

After step 3, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

#### 8.2.4.13 Transport channel reconfiguration from CELL\_FACH to CELL\_DCH: Failure (Physical channel failure and cell re-selection)

##### 8.2.4.13.1 Definition

##### 8.2.4.13.2 Conformance requirement

When a physical dedicated channel establishment is initiated by the UE, the UE shall start a timer T312 and wait for layer 1 to indicate N312 "in sync" indications. On receiving N312 "in sync" indications, the physical channel is considered established and the timer T312 is stopped and reset.

If the timer T312 expires before the physical channel is established, the UE shall consider this as a "physical channel establishment failure".

If the received message caused the UE to be in CELL\_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

- 1> revert to the configuration prior to the reception of the message (old configuration);  
...
- 1> if the old configuration does not include dedicated physical channels (CELL\_FACH state):
  - 2> select a suitable UTRA cell according to TS 25.304;
  - 2> if the UE selects another cell than the cell the UE camped on upon reception of the reconfiguration message:
    - 3> initiate a cell update procedure according to TS 25.331 subclause 8.3.1, using the cause "Cell reselection";
    - 3> after the cell update procedure has completed successfully:
      - 4> proceed as below.
- 1> transmit a failure response message as specified in TS 25.304 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "physical channel failure".
- 1> set the variable ORDERED\_RECONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- includes "CN information elements"; or
- includes the IE "Ciphering mode info"; or
- includes the IE "Integrity protection mode info"; or
- includes the IE "New C-RNTI"; or
- includes the IE "New U-RNTI":

the UE shall:

- 1> transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

The UE shall:

- 1> in case of reception of a TRANSPORT CHANNEL RECONFIGURATION message:

...

- 2> transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.7, 8.2.2.9, 8.3.1.7, 8.5.4.

### 8.2.4.13.3 Test purpose

To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message after it completes a cell update procedure, when the UE cannot reconfigure the new channel before timer T312 expires.

### 8.2.4.13.4 Method of test

#### Initial Condition

System Simulator: 2 cells - Cell 1 and 2 are active.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108 in cell 1.

#### Test Procedure

**Table 8.2.4.13**

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH Ec (FDD)	dBm/ 3.84 MHz	-60	-75	-75	-60
P-CCPCH RSCP (TDD)	dBm	-60	-75	-75	-60

Table 8.2.4.13 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings between columns "T0" and "T1", whenever the description in multi-cell condition specifies a reverse in the transmission power settings for cell 1 and cell 2.

The UE is in CELL\_FACH state in cell 1. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE in cell 1. The message includes a new configuration parameters. However, the SS does not reconfigure the specified configuration. At the same time, the SS configures its downlink transmission power settings according to columns "T1" in table 8.2.4.13. As a result, the UE cannot synchronise with the SS on the new DPCH before T312 expires. The UE initiates the cell re-selection procedure transmits a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection" in cell 2. The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving a CELL UPDATE message. The UE then transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC. The UE transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value "physical channel failure" to IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	TRANSPORT CHANNEL RECONFIGURATION	
2				The SS does not reconfigure L1 and transport channel in accordance with the settings in the message, and applies the downlink transmission power settings, according to the values in columns "T1" of table 8.2.4.13.
3			Void	
4				The UE shall find cell 2, camp onto it,
5		→	CELL UPDATE	This message include the value "cell reselection" set in IE "Cell update cause".
6		←	CELL UPDATE CONFIRM	See message content.
7		→	UTRAN MOBILITY INFORMATION CONFIRM	
8		→	TRANSPORT CHANNEL RECONFIGURATION FAILURE	The IE "failure cause" shall be set to "physical channel failure"

Specific Message Contents

TRANSPORT CHANNEL RECONFIGURATION (Step 1)

Use the message sub-type titled "Packet to CELL\_DCH from CELL\_FACH in PS" in Annex A.

CELL UPDATE (Step 5)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A with the following exceptions:

Information Element	Value/remark
U-RNTI	Assigned previously in cell 1
- SRNC Identity	Assigned previously in cell 1
- S-RNTI	"cell reselection"
Cell Update Cause	

CELL UPDATE CONFIRM (Step 6)

Use the same message type found in clause Annex A, with the following exceptions.

Information Element	Value/Remarks
New C-RNTI	'1010 1010 1010 1010'

UTRAN MOBILITY INFORMATION CONFIRM (Step 7)

Only the message type is checked.

TRANSPORT CHANNELRECONGURATION FAILURE (Step 8)

The contents of TRANSPORT CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the TRANSPORT CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	"physical channel failure"

#### 8.2.4.13.5 Test requirement

After step 4 the UE shall transmit a CELL UPDATE message on the uplink CCCH with IE "Cell update cause" set to "cell reselection" in cell 2.

After step 6 UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC.

After step 7 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the IE "failure cause" to "physical channel failure".

### 8.2.4.14 Transport Channel Reconfiguration from CELL\_FACH to CELL\_DCH: Failure (Incompatible simultaneous reconfiguration)

#### 8.2.4.14.1 Definition

#### 8.2.4.14.2 Conformance requirement

If the received message is any of the messages:

- TRANSPORT CHANNEL RECONFIGURATION; or

...

the UE shall:

- 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or

...

- 3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:

...

- 3> else:

- 4> reject the transaction; and

- 4> if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:

- 5> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

...

If the table "Rejected transactions" in the variable TRANSACTIONS is set due to the received message and the variable PROTOCOL\_ERROR\_REJECT is set to FALSE, the UE shall:

- 1> not apply the configuration contained in the received reconfiguration message;

- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:

- 2> include the IE "RRC transaction identifier"; and

- 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable TRANSACTIONS; and

- 2> clear that entry;
  - 2> set the IE "failure cause" to "incompatible simultaneous reconfiguration".
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a TRANSPORT CHANNEL RECONFIGURATION message:
  - ...
  - 2> transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.9, 8.2.2.12, clause 8.6.3.11.

#### 8.2.4.14.3 Test purpose

To confirm that if the UE receives a TRANSPORT CHANNEL RECONFIGURATION message during a reconfiguring procedure due to a radio bearer message other than a TRANSPORT CHANNEL RECONFIGURATION, it shall keep its configuration as if the TRANSPORT CHANNEL RECONFIGURATION message had not been received and complete the reconfiguration procedure according to the previously received message.

#### 8.2.4.14.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message before the "activation time" indicated in the RADIO BEARER RECONFIGURATION message expires. When the UE receives the TRANSPORT CHANNEL RECONFIGURATION message, the UE shall keep its current configuration as if it had not received the TRANSPORT CHANNEL RECONFIGURATION message and shall transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the SS acknowledges the TRANSPORT CHANNEL RECONFIGURATION FAILURE message, the UE reconfigures the new physical channel parameters upon the activation time and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on DCCH using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RECONFIGURATION	
2		←	TRANSPORT CHANNEL RECONFIGURATION	Sent before the elapse of the Activation time specified in step 1.
3		→	TRANSPORT CHANNEL RECONFIGURATION FAILURE	The UE does not reconfigure according to the TRANSPORT CHANNEL RECONFIGURATION message.
4		→	RADIO BEARER RECONFIGURATION COMPLETE	This message is on DCCH using AM RLC.
5		←→	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

Specific Message Contents

#### RADIO BEARER RECONFIGURATION (Step 1) (FDD)

For RADIO BEARER RECONFIGURATION in step 1, use the message sub-type indicated as "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions

Information Element	Value/remark
Activation Time Info	Current CFN-[current CFN mod 8 + 8 ]
Uplink DPCH info - Scrambling code number	1

#### RADIO BEARER RECONFIGURATION (Step 1) (TDD)

For RADIO BEARER RECONFIGURATION in step 1, use the message sub-type indicated as "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8 ]
Uplink DPCH timeslots and codes - First timeslot code list	Assigned by SS

#### TRANSPORT CHANNEL RECONFIGURATION (Step 2) (FDD)

For TRANSPORT CHANNEL RECONFIGURATION in step 2, use the message sub-type indicated as "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time Info	Not Present
Uplink DPCH info - Scrambling code number	2

#### TRANSPORT CHANNEL RECONFIGURATION (Step 2) (TDD)

For TRANSPORT CHANNEL RECONFIGURATION in step 2, use the message sub-type indicated as "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time	Not Present
- Uplink DPCH timeslots and codes - First timeslot code list	A different code combination that used previously .

## TRANSPORT CHANNEL RECONFIGURATION FAILURE

The contents of TRANSPORT CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the TRANSPORT CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Incompatible simultaneous reconfiguration

### 8.2.4.14.5 Test requirement

After step 2 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "Incompatible simultaneous reconfiguration".

After step 3 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message.

### 8.2.4.15 Transport channel reconfiguration from CELL\_FACH to CELL\_DCH: Failure (Invalid message reception and Invalid configuration)

#### 8.2.4.15.1 Definition

#### 8.2.4.15.2 Conformance requirement

If the received reconfiguration message contains a protocol error causing the variable `PROTOCOL_ERROR_REJECT` to be set to TRUE according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable `TRANSACTIONS`; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to the cause value "protocol error";
  - 2> include the IE "Protocol error information" with contents set to the value of the variable `PROTOCOL_ERROR_INFORMATION`.

If the variable `INVALID_CONFIGURATION` is set to TRUE the UE shall:

- 1> keep the configuration existing before the reception of the message;
- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
    - 3> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable `TRANSACTIONS`; and
    - 3> clear that entry.
  - 2> set the IE "failure cause" to "invalid configuration".
- 1> set the variable `INVALID_CONFIGURATION` to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

1> in case of reception of a TRANSPORT CHANNEL RECONFIGURATION message:

...

2> transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.13, 8.2.2.11, 8.2.2.9.

### 8.2.4.15.3 Test purpose

To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, if it receives an invalid TRANSPORT CHANNEL RECONFIGURATION message which does not include any IEs except IE "Message Type".

To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC if it receives a TRANSPORT CHANNEL RECONFIGURATION message including some IEs set to give an invalid configuration.

### 8.2.4.15.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits an invalid TRANSPORT CHANNEL RECONFIGURATION message, which contains an unexpected critical message extension, to the UE. The UE shall keep the old configuration and then transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC. This message shall contain the value "protocol error" in IE "failure cause" and also "Message extension not comprehended" in IE "Protocol error cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically. SS transmits TRANSPORT CHANNEL RECONFIGURATION message including some IEs set to give an invalid configuration. The UE keeps its current configuration and transmits a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to "invalid configuration". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	TRANSPORT CHANNEL RECONFIGURATION	See specific message content.
2		→	TRANSPORT CHANNEL RECONFIGURATION FAILURE	The UE does not change its configuration.
2a		→	MEASUREMENT REPORT	
3		←	TRANSPORT CHANNEL RECONFIGURATION	This message includes IEs which is set to give an invalid configuration
4				The UE does not change its configuration.
5		→	TRANSPORT CHANNEL RECONFIGURATION FAILURE	The IE "failure cause" shall be set to "invalid configuration"
6		→	MEASUREMENT REPORT	

Specific Message Contents

MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	RACHorCPCH
- UL Target Transport Channel ID	Not Present
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

MEASUREMENT REPORT (Step 0b, 2a and 6)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

#### TRANSPORT CHANNEL RECONFIGURATION (Step 1)

Use the TRANSPORT CHANNEL RECONFIGURATION message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Critical extensions	'01'H

#### TRANSPORT CHANNEL RECONFIGURATION FAILURE (Step 2)

The contents of TRANSPORT CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the TRANSPORT CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	Message extension not comprehended

#### TRANSPORT CHANNEL RECONFIGURATION (Step 3) (FDD)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
- Default DPCH Offset Value	512
- DPCH frame offset	1024

#### TRANSPORT CHANNEL RECONFIGURATION (Step 3) (TDD)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
-PRACH TFCS	Present

#### TRANSPORT CHANNEL RECONFIGURATION FAILURE (Step 5)

The contents of TRANSPORT CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the TRANSPORT CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Invalid configuration

#### 8.2.4.15.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 1 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC. The content of the message shall specify "protocol error" in IE "failure cause" and also "Message extension not comprehended" in IE "Protocol error cause".

After step 2, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 4 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to "invalid configuration".

After step 5, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

#### 8.2.4.16 Transport channel reconfiguration from CELL\_FACH to CELL\_FACH: Success with no transport channel type switching

##### 8.2.4.16.1 Definition

##### 8.2.4.16.2 Conformance requirement

If the UE receives:

- a TRANSPORT CHANNEL RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If the UE was in CELL\_FACH state upon reception of the reconfiguration message and remains in CELL\_FACH state, the UE shall:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency;
  - 2> if the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD), and the UE selected another cell than indicated by this IE or the received

reconfiguration message did not include the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD):

...

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

### 8.2.4.16.3 Test purpose

To confirm that the UE transits from CELL\_FACH in the current cell to CELL\_FACH in another cell according to a TRANSPORT CHANNEL RECONFIGURATION message received from the SS.

### 8.2.4.16.4 Method of test

#### Initial Condition

System Simulator: 2 cells – Cell 1 and 2 are active.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

**Table 8.2.4.16**

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH Ec (FDD)	dBm/3.84 MHz	-60	-75	-75	-60
P-CCPCH RSCP (TDD)	dBm	-60	-75	-75	-60

Table 8.2.4.16 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings between columns "T0" and "T1", whenever the description in multi-cell condition specifies a reverse in the transmission power settings for cell 1 and cell 2.

The UE is in CELL\_FACH state in cell 1. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message, to the UE. Then the SS configures its downlink transmission power settings according to columns "T1" in table 8.2.4.16. As a result of this, the UE re-selects cell 2 and configures the new transport channels and the common physical channel according to the system information messages. Since the SS included a C-RNTI that is valid within cell 2, the UE need not perform the cell update procedure but can proceed by transmitting a TRANSPORT CHANNEL

RECONFIGURATION COMPLETE message using AM RLC. SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	TRANSPORT CHANNEL RECONFIGURATION	
2				The SS applies the downlink transmission power settings, according to the values in columns "T1" of table 8.2.4.16.
3		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	
4		↔	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

Specific Message Contents

#### TRANSPORT CHANNEL RECONFIGURATION (FDD)

Use the message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in Annex A with the following exceptions.

Information Element	Value/remark
Downlink information for each radio links - Primary CPICH info - Primary scrambling code	150

#### TRANSPORT CHANNEL RECONFIGURATION (TDD)

Use the message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in Annex A with the following exceptions.

Information Element	Value/remark
Downlink information for each radio links - Primary CCPCH info - Cell parameters ID	4

#### 8.2.4.16.5 Test requirement

After step 2 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on DCCH using AM RLC in cell 2.

#### 8.2.4.17 Transport channel reconfiguration from CELL\_FACH to CELL\_FACH: Success (Cell re-selection)

##### 8.2.4.17.1 Definition

##### 8.2.4.17.2 Conformance requirement

If the UE was in CELL\_FACH state upon reception of the reconfiguration message and remains in CELL\_FACH state, the UE shall:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:

- 2> select a suitable UTRA cell according to TS 25.304 on that frequency;
- 2> if the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD), and the UE selected another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD):
  - 3> initiate a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "cell reselection";
  - 3> when the cell update procedure completed successfully:
    - 4> proceed as below.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- includes "CN information elements"; or
- includes the IE "Ciphering mode info"; or
- includes the IE "Integrity protection mode info"; or
- includes the IE "New C-RNTI"; or
- includes the IE "New U-RNTI":

the UE shall:

- 1> transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4, 8.3.1.7.

### 8.2.4.17.3 Test purpose

To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message after UE completes a cell update procedure indicated by a TRANSPORT CHANNEL RECONFIGURATION message.

### 8.2.4.17.4 Method of test

## Initial Condition

System Simulator: 2 cells - Cell 1 and 2 are active.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

Table 8.2.4.17

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH Ec (FDD)	dBm/3.84 MHz	-60	-75	-75	-60
P-CCPCH RSCP (TDD)	dBm	-60	-75	-75	-60

Table 8.2.4.17 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings between columns "T0" and "T1", whenever the description in multi-cell condition specifies a reverse in the transmission power settings for cell 1 and cell 2.

The UE is in CELL\_FACH state in cell 1. On transmitting a TRANSPORT CHANNEL RECONFIGURATION message, which does not include the IE "Primary CPICH info", the SS configures its downlink transmission power settings according to columns "T1" in table 8.2.4.17. The UE shall initiate the cell reselection procedure. The UE transmits a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection" in cell 2. The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving a CELL UPDATE message. The UE then transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC. The UE transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	TRANSPORT CHANNEL RECONFIGURATION	This message does not include IE "Primary CPICH info"
2				The SS applies the downlink transmission power settings, according to the values in columns "T1" of table 8.2.4.17.
3			Void	
4		→	CELL UPDATE	The value "cell reselection" shall be set in IE "Cell update cause".
5		←	CELL UPDATE CONFIRM	See message content.
6		→	UTRAN MOBILITY INFORMATION CONFIRM	
7		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	

## Specific Message Contents

## TRANSPORT CHANNEL RECONFIGURATION (Step 1) (FDD)

Use the message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in Annex A with the following exceptions:

Information Element	Value/remark
Downlink information for each radio links - Primary CPICH info - Primary scrambling code	Not Present

## TRANSPORT CHANNEL RECONFIGURATION (Step 1) (TDD)

Use the message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in Annex A with the following exceptions:

Information Element	Value/remark
Downlink information for each radio links - Primary CCPCH info - Cell parameters ID	Not present

## CELL UPDATE (Step 4)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A for FDD and Annex A for TDD.

## CELL UPDATE CONFIRM (Step 5)

Use the same message type found in clause Annex A, with the following exceptions.

Information Element	Value/Remarks
New C-RNTI	'1010 1010 1010 1010'

## UTRAN MOBILITY INFORMATION CONFIRM (Step 6)

Only the message type is checked.

## 8.2.4.17.5 Test requirement

After step 3 the UE shall transmit a CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection".

After step 5 UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC.

After step 6 UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

8.2.4.18 Transport Channel Reconfiguration from CELL\_DCH to CELL\_DCH:  
Success (Subsequently received)

## 8.2.4.18.1 Definition

## 8.2.4.18.2 Conformance requirement

If the IE "RRC transaction identifier" is included in a received message, the UE shall perform the actions below. The UE shall:

If the received message is any of the messages:

- TRANSPORT CHANNEL RECONFIGURATION; or
- ...

the UE shall:

- 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or
- 2> if the variable CELL\_UPDATE\_STARTED is set to TRUE; or

- 2> if the table "Accepted transactions" in the variable TRANSACTIONS contains an entry with an IE "Message Type" set to ACTIVE SET UPDATE; or
- 2> if the received message contains a protocol error according to TS 25.331 clause 9 causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE:
  - 3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:
    - 4> ignore the transaction; and
    - 4> continue with any ongoing processes and procedures as the message was not received;
    - 4> and end the procedure.
  - 3> else:
    - ...

## Reference

3GPP TS 25.331 clause 8.6.3.11.

### 8.2.4.18.3 Test purpose

To confirm that if the UE receives a TRANSPORT CHANNEL RECONFIGURATION message before the UE configures the radio bearer according to the previous TRANSPORT CHANNEL RECONFIGURATION message it ignores the second TRANSPORT CHANNEL RECONFIGURATION message and configures according to the previous TRANSPORT CHANNEL RECONFIGURATION message.

### 8.2.4.18.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

The UE is in CELL\_DCH state. When the SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE before the activation time specified in the previous TRANSPORT CHANNEL RECONFIGURATION message elapses, the UE ignores the new TRANSPORT CHANNEL RECONFIGURATION message and configures according to the previous TRANSPORT CHANNEL RECONFIGURATION message. Finally, the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	TRANSPORT CHANNEL RECONFIGURATION	For FDD, the "Secondary scrambling code is set to "1" and for TDD , the code combination is assigned by SS.
2		←	TRANSPORT CHANNEL RECONFIGURATION	SS send this message before the expiry of "activation time" specified in TRANSPORT CHANNEL SETUP message of step 1. For FDD the IE "Secondary scrambling code" is set to "2". For TDD the code combination assigned is different from that assigned in stage 1.
3		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	The UE ignores the TRANSPORT CHANNEL RECONFIGURATION message in step 2 and configures according to the TRANSPORT CHANNEL RECONFIGURATION message in step 1.
4		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

## TRANSPORT CHANNEL RECONFIGURATION (Step 1) (FDD)

The contents of TRANSPORT CHANNEL RECONFIGURATION messages in this test case is identical to the message sub-type title as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH Info - Scrambling code number	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256  1

## TRANSPORT CHANNEL RECONFIGURATION (Step 1) (TDD)

The contents of TRANSPORT CHANNEL RECONFIGURATION messages in this test case is identical to the message sub-type title as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH timeslots and codes - First timeslot code list	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256  Assigned in step 1

## TRANSPORT CHANNEL RECONFIGURATION (Step 2)

The contents of TRANSPORT CHANNEL RECONFIGURATION messages in this test case is identical to the message sub-type title as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH Info - Scrambling code number	Not Present  2

## TRANSPORT CHANNEL RECONFIGURATION (Step 2) (TDD)

The contents of TRANSPORT CHANNEL RECONFIGURATION messages in this test case is identical to the message sub-type title as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH timeslots and codes - First timeslot code list	Not Present  A different code combination to that used in step 1.

## 8.2.4.18.5 Test requirement

After step 2 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

## 8.2.4.19 Transport Channel Reconfiguration from CELL\_FACH to CELL\_DCH: Success (Subsequently received)

## 8.2.4.19.1 Definition

## 8.2.4.19.2 Conformance requirement

If the IE "RRC transaction identifier" is included in a received message, the UE shall perform the actions below. The UE shall:

If the received message is any of the messages:

- TRANSPORT CHANNEL RECONFIGURATION; or

...

the UE shall:

- 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or
- 2> if the variable CELL\_UPDATE\_STARTED is set to TRUE; or
- 2> if the table "Accepted transactions" in the variable TRANSACTIONS contains an entry with an IE "Message Type" set to ACTIVE SET UPDATE; or
- 2> if the received message contains a protocol error according to TS 25.331 clause 9 causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE:
- 3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:

4> ignore the transaction; and

4> continue with any ongoing processes and procedures as the message was not received;

4> and end the procedure.

3> else:

## Reference

3GPP TS 25.331 clause 8.6.3.11.

### 8.2.4.19.3 Test purpose

To confirm that if the UE receives a TRANSPORT CHANNEL RECONFIGURATION message before the UE configures the radio bearer according to the previous TRANSPORT CHANNEL RECONFIGURATION message it ignores the second TRANSPORT CHANNEL RECONFIGURATION message and configures according to the previous TRANSPORT CHANNEL RECONFIGURATION message.

### 8.2.4.19.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state. When the SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE before the activation time specified in the previous TRANSPORT CHANNEL RECONFIGURATION message elapses, the UE ignores the new TRANSPORT CHANNEL RECONFIGURATION message and configures according to the previous TRANSPORT CHANNEL RECONFIGURATION message. Finally, the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	TRANSPORT CHANNEL RECONFIGURATION	For FDD, the "Secondary scrambling code is set to "1" and for TDD, the code combination is assigned by SS.
2		←	TRANSPORT CHANNEL RECONFIGURATION	Sent before the elapse of the activation time specified in step 1. For FDD the IE "Secondary scrambling code" is set to "2". For TDD the code combination assigned is different that assigned in stage 1.
3		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	The UE ignores the TRANSPORT CHANNEL RECONFIGURATION message in step 2 and configures according to the TRANSPORT CHANNEL RECONFIGURATION message in step 1.
4		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

## TRANSPORT CHANNEL RECONFIGURATION (Step 1) (FDD)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time Info - Uplink DPCH Info - Scrambling code number	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256 1

## TRANSPORT CHANNEL RECONFIGURATION (Step 1) (TDD)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH timeslots and codes - First timeslot code list	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256 Assigned in step 1

## TRANSPORT CHANNEL RECONFIGURATION (Step 2) (FDD)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH Info - Scrambling code number	Not Present 2

## TRANSPORT CHANNEL RECONFIGURATION (Step 2) (TDD)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH timeslots and codes - First timeslot code list	Not Present A different code combination to that used in step 1.

## 8.2.4.19.5 Test requirement

After step 2 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

## 8.2.4.20 Transport Channel Reconfiguration from CELL\_DCH to CELL\_PCH: Success

## 8.2.4.20.1 Definition

#### 8.2.4.20.2 Conformance requirement

If the UE receives:

- a TRANSPORT CHANNEL RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency.
- 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS 25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.

...

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

#### 8.2.4.20.3 Test purpose

To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message and enters CELL\_PCH state after it receives a TRANSPORT CHANNEL RECONFIGURATION message, which invoke the UE to transit from CELL\_DCH to CELL\_PCH.

#### 8.2.4.20.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108.

### Test Procedure

The UE is in CELL\_DCH state. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message, which invoke the UE to transit from CELL\_DCH to CELL\_PCH. The UE transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using AM RLC and enters CELL\_PCH state. SS calls for generic procedure C.4 to check that UE is in CELL\_PCH state.

### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	TRANSPORT CHANNEL RECONFIGURATION	
2		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	
3				The UE is in CELL_PCH state.
4		↔	CALL C.4	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

### Specific Message Contents

#### TRANSPORT CHANNEL RECONFIGURATION (Step 1) (FDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3
Downlink information for each radio link	
- Primary CPICH info	
- Primary scrambling code	100

#### TRANSPORT CHANNEL RECONFIGURATION (Step 1) (TDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3
- Primary CCPCH info	
- Cell parameters ID	4

#### PAGING TYPE 1 (Step 4)

Use the same message sub-type titled "TM (Packet in PS)" in default message content of TS 34.108 with following exceptions:

Information Element	Value/remark
Paging record list	
Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	
- SRNC Identity	Previously assigned SRNC identity
- S-RNTI	Previously assigned S-RNTI

## CELL UPDATE (Step 5)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"paging response"

## 8.2.4.20.5 Test requirement

After step 1 the UE shall transmit TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on uplink DCCCH using AM RLC.

## 8.2.4.21 Transport Channel Reconfiguration from CELL\_DCH to URA\_PCH: Success

## 8.2.4.21.1 Definition

## 8.2.4.21.2 Conformance requirement

If the UE receives:

- a TRANSPORT CHANNEL RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters URA\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency.
- 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS 25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.

...

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

#### 8.2.4.21.3 Test purpose

To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message and enters URA\_PCH state after it received a TRANSPORT CHANNEL RECONFIGURATION message, which invoke the UE to transit from CELL\_DCH to URA\_PCH.

#### 8.2.4.21.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_DCH state. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message, which invoke the UE to transit from CELL\_DCH to URA\_PCH. The UE transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using AM RLC and enters URA\_PCH state. The SS transmits a PAGING TYPE 1 message, causing the UE to enter CELL\_FACH state. SS calls for generic procedure C.5 to check that UE is in URA\_PCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	TRANSPORT CHANNEL RECONFIGURATION	
2		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	
3				The UE is in URA_PCH state.
4		↔	CALL C.5	If the test result of C.5 indicates that UE is in URA_PCH state, the test passes, otherwise it fails.

#### Specific Message Contents

#### TRANSPORT CHANNEL RECONFIGURATION (Step 1) (FDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3
URA identity	Ref. to the Default setting in TS34.108 clause 6.1 (FDD)

## TRANSPORT CHANNEL RECONFIGURATION (Step 1) (TDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3
URA identity	Ref. to the Default setting in TS34.108 clause 6.1 (FDD)

## 8.2.4.21.5 Test requirement

After step 1 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on uplink DCCH using AM RLC.

## 8.2.4.22 Transport Channel Reconfiguration from CELL\_FACH to CELL\_PCH: Success

## 8.2.4.22.1 Definition

## 8.2.4.22.2 Conformance requirement

If the UE receives:

- a TRANSPORT CHANNEL RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency.
- 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS 25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.

...

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and

1> clear that entry;

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4

#### 8.2.4.22.3 Test purpose

To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message and enters CELL\_PCH state after it receives a TRANSPORT CHANNEL RECONFIGURATION message, which invokes the UE to transit from CELL\_FACH to CELL\_PCH state.

#### 8.2.4.22.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH(state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message, which invokes the UE to transit from CELL\_FACH to CELL\_PCH. The UE transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using AM RLC and enters CELL\_PCH state. SS calls for generic procedure C.4 to check that UE is in CELL\_PCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	TRANSPORT CHANNEL RECONFIGURATION	
2		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	
3				The UE is in CELL_PCH state.
4		↔	CALL C.4	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

#### Specific Message Contents

#### TRANSPORT CHANNEL RECONFIGURATION (Step 1)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3
Physical channel information	Not Present

## PAGING TYPE 1 (Step 4)

Use the same message sub-type titled "TM (Packet in PS)" in default message contents of TS 34.108 with following exceptions:

Information Element	Value/remark
Paging record list Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	UTRAN identity  Previously assigned SRNC identity Previously assigned S-RNTI

## CELL UPDATE (step 5)

The contents of CELL UPDATE is identical to "Contents of CELL UPDATE message" as found in Annex A with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"paging response"

## 8.2.4.22.5 Test requirement

After step 1 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on uplink DCCH using AM RLC.

8.2.4.23 Transport Channel Reconfiguration from CELL\_FACH to URA\_PCH:  
Success

## 8.2.4.23.1 Definition

## 8.2.4.23.2 Conformance requirement

If the UE receives:

- a TRANSPORT CHANNEL RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters URA\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency.
- 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS 25.331 subclause 8.6.3.2.

1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:

2> set the variable INVALID\_CONFIGURATION to TRUE.

...

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and

1> clear that entry;

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4

### 8.2.4.23.3 Test purpose

To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message and enters URA\_PCH state after it receives a TRANSPORT CHANNEL RECONFIGURATION message which invokes the UE to transit from CELL\_FACH to CELL\_PCH.

### 8.2.4.23.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH(state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message which invokes the UE to transit from CELL\_FACH to CELL\_PCH. The UE transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using AM RLC and enters URA\_PCH state. SS calls for generic procedure C.5 to check that UE is in URA\_PCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	TRANSPORT CHANNEL RECONFIGURATION	
2		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	
3				The UE is in URA_PCH state.
4		↔	CALL C.5	If the test result of C.5 indicates that UE is in URA_PCH state, the test passes, otherwise it fails.

## Specific Message Contents

## TRANSPORT CHANNEL RECONFIGURATION (Step 1)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in Annex A with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3
Physical channel information	Not Present

## PAGING TYPE 1 (Step 4)

Use the same message sub-type titled "TM (Packet in PS)" in default message contents of TS 34.108 with following exceptions:

Information Element	Value/remark
Paging record list Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	UTRAN identity  Previously assigned SRNC identity Previously assigned S-RNTI

## CELL UPDATE (step 5)

The contents of CELL UPDATE is identical to "Contents of CELL UPDATE message" as found in Annex A with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"paging response"

## 8.2.4.23.5 Test requirement

After step 1 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on uplink DCCH using AM RLC.

## 8.2.4.24 Transport channel reconfiguration from CELL\_DCH to CELL\_DCH: Success with uplink transmission rate modification

## 8.2.4.24.1 Definition

## 8.2.4.24.2 Conformance requirement

If the UE receives:

- a TRANSPORT CHANNEL RECONFIGURATION message:

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS25.214;
- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

1> enter a state according to TS25.331 subclause 8.6.3.3.

If the UE was in CELL\_DCH state upon reception of the reconfiguration message and remains in CELL\_DCH state, the UE shall:

- 1> if the IE "Uplink DPCH Info" is absent, not change its current UL Physical channel configuration;
- 1> if the IE "Downlink information for each radio link" is absent, not change its current DL Physical channel configuration.

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

### 8.2.4.24.3 Test purpose

To confirm that the UE transmits TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC after reconfigure its available uplink TFC according to a TRANSPORT CHANNEL RECONFIGURATION message.

### 8.2.4.24.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_DCH state of cell 1. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE to modify the transmission rate. This message includes a new uplink transport channel information in order to restricts available uplink TFC within assigned uplink TFCS. The UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC after reconfiguring its transport channel parameters. Next the SS transmits a TRANSPORT CHANNEL RECONFIGURATION message to the UE which includes a new uplink transport channel information in order to reconfigure uplink TFCS. The UE transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC after reconfiguring its transport channel parameters according to the TRANSPORT CHANNEL RECONFIGURATION message.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_DCH state of cell 1.
2		←	TRANSPORT CHANNEL RECONFIGURATION	This message includes the IE "TFC subset" and don't include UL/DL physical channel information.
3		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	
4		←	TRANSPORT CHANNEL RECONFIGURATION	
5		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	

## Specific Message Contents

## TRANSPORT CHANNEL RECONFIGURATION (Step 2)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type titled as "Packet to CELL\_DCH from CELL\_DCH in PS" as found in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
UL Transport channel information for all transport channels <ul style="list-style-type: none"> <li>- CHOICE mode</li> <li>- TFC subset</li> <li>- CHOICE Subset representation</li> <li>- Allowed transport format combination</li> </ul>	FDD  Allowed transport format combination list Indicate TFCs which are a part of the TFCS defined in this message to restrict uplink allowed TFC subset. Same contents as a RADIO BEARER SETUP message used in initial procedure.
- UL DCH TFCS	Not present
CHOICE channel requirement	Not present
Downlink information per radio link list	Not present

## TRANSPORT CHANNEL RECONFIGURATION (Step 4)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type titled as "Packet to CELL\_DCH from CELL\_DCH in PS" as found in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
UL Transport channel information for all transport channels <ul style="list-style-type: none"> <li>- CHOICE mode</li> <li>- TFC subset</li> <li>- UL DCH TFCS</li> </ul>	FDD  Reference to TS34.108 clause 6.10 Parameter Set Set different parameter which is included in a RADIO BEARER SETUP message used in initial procedure. Uplink DPCH info Same contents as a RADIO BEARER SETUP message used in initial procedure
CHOICE channel requirement	FDD
- Uplink DPCH power control info	Long
- CHOICE mode	0 (0 to 16777215)
- Scrambling code type	Not Present
- Scrambling code number	Reference to TS34.108 clause 6.10 Parameter Set Set different parameter which is included in a RADIO BEARER SETUP message used in initial procedure.
- Number of DPDCH	Reference to TS34.108 clause 6.10 Parameter Set Set different parameter which is included in a RADIO BEARER SETUP message used in initial procedure.
- Spreading factor	Not Present
- TFCI existence	Reference to TS34.108 clause 6.10 Parameter Set Set different parameter which is included in a RADIO BEARER SETUP message used in initial procedure.
- Number of FBI bit	Not Present
- Puncturing Limit	Reference to TS34.108 clause 6.10 Parameter Set Set different parameter which is included in a RADIO BEARER SETUP message used in initial procedure.
Downlink information per radio link list	Not present

## 8.2.4.24.5 Test requirement

After step 2 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

After step 4 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

## 8.2.4.25 Transport channel reconfiguration from CELL\_FACH to CELL\_DCH (Frequency band modification): Success

### 8.2.4.25.1 Definition

### 8.2.4.25.2 Conformance requirement

If the UE receives:

-a TRANSPORT CHANNEL RECONFIGURATION message;

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS25.214;
- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_DCH state, the UE shall, after the state transition:

- 1> remove any C-RNTI from MAC;
- 1> clear the C\_RNTI.

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC, using the new configuration after the state transition.
- 1> the procedure ends.

### Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

### 8.2.4.25.3 Test purpose

1. To confirm that the UE transits from CELL\_FACH to CELL\_DCH according to TRANSPORT CHANNEL RECONFIGURATION message.
2. To confirm that the UE transmits TRANSPORT CHANNEL RECONFIGURATION message on the uplink DCCH using AM RLC on dedicated physical channel in a different frequency.

### 8.2.4.25.4 Method of test

#### Initial Condition

System Simulator: 2 cells–Cell 1 is active and cell 6 is inactive.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

Table 8.2.4.25

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/ 3.84 MHz	-55	-55	Off	-55

Table 8.2.4.25 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in CELL\_FACH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.4.25. The SS switches its downlink transmission power settings to columns "T1" and transmits a TRANSPORT CHANNEL RECONFIGURATION message, which includes new frequency information leading to a state transition from CELL\_FACH to CELL\_DCH in cell 6. The UE shall reconfigure transport channel parameter and frequency band according to this message. Finally, the UE transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using AM RLC in cell 6. The SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The initial state of UE is in CELL_FACH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.4.25.
2				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.4.25.
3		←	TRANSPORT CHANNEL RECONFIGURATION	
4				Reconfiguration of transport channel.
5		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	The UE sends this message in cell 6.
6		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

## TRANSPORT CHANNEL RECONFIGURATION (Step 3)

Use the message sub-type titled "Packet to CELL\_DCH from CELL\_FACH in PS" in [9] TS 34.108 clause 9, with the following exception:

Information Element	Value/remark
Frequency info - UARFCN uplink(Nu) - UARFCN downlink(Nd) Downlink information for each radio links - Primary CPICH info - Primary Scrambling Code	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6  350

#### 8.2.4.25.5 Test requirement

After step 4 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCCH using AM RLC in cell 6.

After step 5 the UE shall be in CELL\_DCH state of cell 6.

#### 8.2.4.26 Transport Channel Reconfiguration for transition from CELL\_FACH to CELL\_PCH: Success

##### 8.2.4.26.1 Definition

##### 8.2.4.26.2 Conformance requirement

If the UE receives:

- a TRANSPORT CHANNEL RECONFIGURATION message;

it shall:

- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below
- 1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE on the uplink DCCCH using AM RLC, using the old configuration before the state transition.

If after state transition the UE enters CELL\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304 on that frequency.
- 1> if the IE "Frequency info" is not included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304.
- 1> prohibit periodical status transmission in RLC;
- 1> remove any C-RNTI from MAC;
- 1> clear the variable C\_RNTI;
- 1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS5.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:

- 2> keep the configuration existing before the reception of the message and transmit a failure response message as specified in TS25.331 subclause 8.2.2.9
- 1> if the UE enters CELL\_PCH state from CELL\_FACH state, and the received reconfiguration message included the IE "Primary CPICH info, and the UE selected another cell than indicated by this IE:
  - 2> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "cell reselection";
  - 2> when the cell update procedure is successfully completed:
    - 3> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.3, 8.5 and 8.6.

### 8.2.4.26.3 Test purpose

1. To confirm that the UE transmits TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_FACH to CELL\_PCH according to the TRANSPORT CHANNEL RECONFIGURATION message.

### 8.2.4.26.4 Method of test

#### Initial Condition

System Simulator: 1 cell– Cell 1 is active.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in CELL\_FACH state of cell 1. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message. The UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using AM RLC and enter CELL\_PCH state according to its message. Upon completion of the procedure, the SS calls for generic procedure C.4 to check that UE is in CELL\_PCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in CELL_FACH state of cell 1.
2		←	TRANSPORT CHANNEL RECONFIGURATION	
3		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	The UE transmits this message on uplink DCCH using AM RLC..
4				The SS waits for 5 s.
5		←	CALL C.	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

#### Specific Message Contents

##### TRANSPORT CHANNEL RECONFIGURATION (Step 2)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3

#### 8.2.4.26.5 Test requirement

After step 2 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on uplink DCCH using AM RLC.

After step 4 the UE shall be in CELL\_PCH state.

#### 8.2.4.27 Transport Channel Reconfiguration for transition from CELL\_DCH to URA\_PCH (Frequency band modification): Success

##### 8.2.4.27.1 Definition

##### 8.2.4.27.2 Conformance requirement

If the UE receives:

- a TRANSPORT CHANNEL RECONFIGURATION message;

it shall:

- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.
- 1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

If after state transition the UE enters URA\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304 on that frequency.
- 1> if the IE "Frequency info" is not included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304.
- 1> prohibit periodical status transmission in RLC;
- 1> remove any C-RNTI from MAC;
- 1> clear the variable C\_RNTI;
- 1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:

- 2> keep the configuration existing before the reception of the message and transmit a failure response message as specified in TS25.331 subclause 8.2.2.9
- 1> if the UE enters URA\_PCH state, and after cell selection the criteria for URA update caused by "URA reselection" according to TS25.331 subclause 8.3.1 is fulfilled:
  - 2> initiate a URA update procedure according to TS25.331 subclause 8.3.1 using the cause "URA reselection";
  - 2> when the URA update procedure is successfully completed:
    - 3> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

### 8.2.4.27.3 Test purpose

1. To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_DCH to URA\_PCH according to the TRANSPORT CHANNEL RECONFIGURATION message.
3. To confirm that the UE release the dedicated physical channel and reconfigures transport channel parameters and selects a common physical channel in a different frequency.

### 8.2.4.27.4 Method of test

#### Initial Condition

System Simulator: 2 cells – Cell 1 is active and cell 6 is inactive

UE: Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

#### Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

System Information Block type 11

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	Same downlink UARFCN as used for cell 6
- UARFCN uplink(Nu)	
- UARFCN downlink(Nd)	0dB
- Cell info	
- Cell individual offset	Not present
- Reference time difference to cell	
- Read SFN indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH info	Set to same code as used for cell 6
- Primary scrambling code	
- Primary CPICH Tx power	Not present
- Cell Selection and Re-selection Info	0dB
- Qoffset1 <sub>s,n</sub>	
- Qoffset2 <sub>s,n</sub>	Not present
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	Not present
- CHOICE mode	FDD
- Qualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

Test Procedure

Table 8.2.4.27

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-72	Off	-55

Table 8.2.4.27 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in idle mode of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.4.27. SS requests operator to make an outgoing call. The SS and UE execute procedure P5. Next The SS and the UE execute procedure P9 and then execute procedure P13. The SS switches its downlink transmission power settings to columns "T1" and transmits a TRANSPORT CHANNEL RECONFIGURATION message not including IE "Frequency info" and IE "Primary CPICH info". The UE transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using AM RLC and enters CELL\_URA state of cell 6. Upon completion of the procedure, the SS calls for generic procedure C.5 to check that UE is in URA\_PCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.4.27. SS requests operator to make an outgoing call.
2		←→	SS executes procedure P5 (clause 7.4.2.2.2) specified in TS 34.108.	
3		←→	SS executes procedure P9 (clause 7.4.2.4.2) specified in TS 34.108.	
4		←→	SS executes procedure P13 (clause 7.4.2.6.2) specified in TS 34.108.	
5				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.4.27.
6		←	TRANSPORT CHANNEL RECONFIGURATION	Not including IE "Frequency info" and IE "Primary CPICH info"
7		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	UE transmit this message on the dedicated physical channel in cell 1
8				The SS waits for 5 s.
9		←→	CALL C.5	If the test result of C.5 indicates that UE is in URA_PCH state, the test passes, otherwise it fails.

Specific Message Contents

#### TRANSPORT CHANNEL RECONFIGURATION (Step 6)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3
Frequency info	Not present
Downlink information for each radio link	Not present

#### 8.2.4.27.5 Test requirement

After step 6 the UE shall transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC in cell 1.

After step 8 the UE shall be in CELL\_PCH state in cell 6.

#### 8.2.4.28 Transport Channel Reconfiguration for transition from CELL\_FACH to URA\_PCH: Success

##### 8.2.4.28.1 Definition

##### 8.2.4.28.2 Conformance requirement

If the UE receives:

- a TRANSPORT CHANNEL RECONFIGURATION message;

it shall:

1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

If after state transition the UE enters URA\_PCH state, the UE shall, after the state transition and transmission of the response message:

1> if the IE "Frequency info" is included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304 on that frequency.

1> if the IE "Frequency info" is not included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304.

1> prohibit periodical status transmission in RLC;

1> remove any C-RNTI from MAC;

1> clear the variable C\_RNTI;

1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;

1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS25.331 subclause 8.6.3.2.

1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:

2> keep the configuration existing before the reception of the message and transmit a failure response message as specified in TS25.331 subclause 8.2.2.9

1> if the UE enters URA\_PCH state, and after cell selection the criteria for URA update caused by "URA reselection" according to TS25.331 subclause 8.3.1 is fulfilled:

2> initiate a URA update procedure according to TS25.331 subclause 8.3.1 using the cause "URA reselection";

2> when the URA update procedure is successfully completed:

3> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.3, 8.5 and 8.6.

### 8.2.4.28.3 Test purpose

1. To confirm that the UE transmits the TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_FACH to URA\_PCH according to the TRANSPORT CHANNEL RECONFIGURATION message.
3. To confirm that the UE reconfigures the transport channel parameters and selects a common physical channel.

## 8.2.4.28.4 Method of test

## Initial Condition

System Simulator: 1 cell– Cell 1 is active.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in CELL\_FACH state of cell 1. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message. The UE shall reconfigure its transport channel parameters and enter URA\_PCH state after it transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using AM RLC. Upon completion of the procedure, the SS calls for generic procedure C.5 to check that UE is in URA\_PCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in CELL_FACH state of cell 1.
2		←	TRANSPORT CHANNEL RECONFIGURATION	
3		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	The UE transmits this message on uplink DCCH using AM RLC.
4		←		The SS waits for 5 s.
5		←→	CALL C.5	If the test result of C.5 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

## Specific Message Contents

## TRANSPORT CHANNEL RECONFIGURATION (Step 2)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3

## 8.2.4.28.5 Test requirement

After step 2 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on uplink DCCH using AM RLC.

After step 4 the UE shall be in URA\_PCH state.

## 8.2.4.29 Transport Channel Reconfiguration for transition from CELL\_DCH to CELL\_DCH (Frequency band modification): Success

## 8.2.4.29.1 Definition

## 8.2.4.29.2 Conformance requirement

If the UE receives:

- a TRANSPORT CHANNEL RECONFIGURATION message;

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS25.214;
- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.
- 1> enter a state according to TS25.331 subclause 8.6.3.3.

If the UE was in CELL\_DCH state upon reception of the reconfiguration message and remains in CELL\_DCH state, the UE shall:

- 1> if the IE "Uplink DPCH Info" is absent, not change its current UL Physical channel configuration;
- 1> if the IE "Downlink information for each radio link" is absent, not change its current DL Physical channel configuration.

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

#### 8.2.4.29.3 Test purpose

1. To confirm that the UE transits from CELL\_DCH to CELL\_DCH according to the TRANSPORT CHANNEL RECONFIGURATION message.
2. To confirm that the UE transmits the TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC on a dedicated physical channel in a different frequency.

#### 8.2.4.29.4 Method of test

#### Initial Condition

System Simulator: 2 cells–Cell 1 is active and cell 6 is inactive.

UE: CS-DCCH\_DTCH\_DCH (state 6-9) or PS\_DCCH\_DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

**Table 8.2.4.29**

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/ 3.84 MHz	-55	-72	Off	-55

Table 8.2.4.29 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in CELL\_DCH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.4.29. The SS switches its downlink transmission power settings to columns "T1" and

transmits a TRANSPORT CHANNEL RECONFIGURATION message including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code which is assigned to P-CPICH of cell 6. The UE shall select cell 6 and reconfigure its transport channel parameters after receiving this message, and then remain in CELL\_DCH state. The UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using AM RLC after completes configuration according to receiving TRANSPORT CHANNEL RECONFIGURATION message. Upon completion of the procedure, the SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The initial state of UE is in CELL_DCH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.4.29.
2				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.4.29.
3		←	TRANSPORT CHANNEL RECONFIGURATION	Including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6
4				The UE select cell 6.
5		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	The UE sends this message on a dedicated physical channel in cell 6.
6		↔		If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

#### Specific Message Contents

##### TRANSPORT CHANNEL RECONFIGURATION (Step 3)

The contents TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical the message subtype indicated by "Packet to CELL\_DCH from CELL\_DCH in PS" or "Speech in CS" or "Non speech from in CS" in [9] TS 34.108 clause 9, with the following exception:

Information Element	Value/remark
Frequency info - UARFCN uplink(Nu) - UARFCN downlink(Nd)	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
Downlink information for each radio links - Primary CPICH info - Primary Scrambling Code	Set to same code as used for cell 6

##### 8.2.4.29.5 Test requirement

After step 4 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC in cell 6.

After step 5 the UE shall be in CELL\_DCH state in cell 6.

### 8.2.4.30 Transport Channel Reconfiguration from CELL\_DCH to CELL\_FACH (Transport channel type switching with frequency band modification): Success

#### 8.2.4.30.1 Definition

#### 8.2.4.30.2 Conformance requirement

If the UE receives:

- a TRANSPORT CHANNEL RECONFIGURATION message;

it shall:

- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

- 1> enter a state according to TS25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_FACH state, the UE shall, after the state transition:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:

- 2> select a suitable UTRA cell according to TS25.304 on that frequency.

- 1> if the IE "Frequency info" is not included in the received reconfiguration message:

- 2> select a suitable UTRA cell according to TS25.304.

- 1> if the received reconfiguration message included the IE "Primary CPICH info", and the UE selects another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info":

- 2> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "Cell reselection";

- 1> select PRACH according to TS25.331 subclause 8.5.17;

- 1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;

- 1> use the transport format set given in system information;

- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

- 2> ignore that IE and stop using DRX.

- 1> if the contents of the variable C\_RNTI is empty:

- 2> perform a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Cell reselection";

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC, using the new configuration after the state transition.

- 1> the procedure ends.

#### Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

#### 8.2.4.30.3 Test purpose

1. To confirm that the UE transits from CELL\_DCH to CELL\_FACH according to the TRANSPORT CHANNEL RECONFIGURATION message.

2. To confirm that the UE transmits TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC on a common physical channel in a different frequency.

#### 8.2.4.30.4 Method of test

##### Initial Condition

System Simulator: 2 cells – Cell 1 is active and cell 6 is inactive.

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

##### Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

##### System Information Block type 11

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	Same downlink UARFCN as used for cell 6
- UARFCN uplink(Nu)	
- UARFCN downlink(Nd)	0dB
- Cell info	
- Cell individual offset	Not present
- Reference time difference to cell	
- Read SFN indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH info	Set to same code as used for cell 6
- Primary scrambling code	
- Primary CPICH Tx power	Not present
- Cell Selection and Re-selection Info	0dB
- Qoffset1s,n	
- Qoffset2s,n	Not present
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	Not present
- CHOICE mode	FDD
- Qqualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

## Test Procedure

Table 8.2.4.30

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-72	Off	-55

Table 8.2.4.30 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in idle of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.4.30. SS requests operator to make an outgoing call. The SS and UE execute procedure P5. Next The SS and the UE execute procedure P9 and then execute procedure P13. The SS switches its downlink transmission power settings to columns "T1" and transmits a TRANSPORT CHANNEL RECONFIGURATION message not including IE "Frequency info" and IE "Primary CPICH info". The UE shall select cell 6 and initiate CELL UPDATE procedure with IE "Cell update cause" set to "cell reselection". Upon completion of the cell update procedure, the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using AM RLC after it completes configuring of transport channel parameters according to SIB5 or SIB6. Upon completion of the procedure, the SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.4.30. SS requests operator to make an outgoing call.
2	←→		SS executes procedure P5 (clause 7.4.2.2.2) specified in TS 34.108.	
3	←→		SS executes procedure P9 (clause 7.4.2.4.2) specified in TS 34.108.	
4	←→		SS executes procedure P13 (clause 7.4.2.6.2) specified in TS 34.108.	
5				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.4.30.
6	←		TRANSPORT CHANNEL RECONFIGURATION	Not including IE "Frequency info" and IE "Primary CPICH info"
7	→		CELL UPDATE	The IE "Cell update cause" is set to "cell reselection".
8	←		CELL UPDATE CONFIRM	Including the IE "New C-RNTI"
9	→		UTRAN MOBILITY INFORMATION CONFIRM	
10	→		TRANSPORT CHANNEL RECONFIGURATION COMPLETE	The UE transmits this message on the common physical channel in cell 6.
11	←→		CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

## Specific Message Contents

## TRANSPORT CHANNEL RECONFIGURATION (Step 6)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in [9] TS 34.108 clause 9 with the following exception:

Information Element	Value/remark
Frequency info	Not present
Downlink information for each radio link	Not present

## CELL UPDATE (Step 7)

The contents of CELL UPDATE message are identical as "Contents of CELL UPDATE message" as found in [9] TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"cell reselection"

## CELL UPDATE CONFIRM (Step 8)

The contents of CELL UPDATE CONFIRM message are identical as "CELL UPDATE CONFIRM message" as found in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
New C-RNTI	0000 0000 0000 0001B

## UTRAN MOBILITY UPDATE CONFIRM (Step 9)

The contents of UTRAN MOBILITY UPDATE CONFIRM message is identical as "UTRAN MOBILITY UPDATE CONFIRM message" as found in [9] TS 34.108 clause 9.

## 8.2.4.30.5 Test requirement

After step 6 the UE shall transmit a CELL UPDATE message on the CCCH in cell 6.

After step 8 the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC in cell 6.

After step 9 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

After step 10 the UE shall be in CELL\_FACH state of cell 6.

## 8.2.4.31 Transport Channel Reconfiguration for transition from CELL\_FACH to CELL\_FACH (Frequency band modification): Success

## 8.2.4.31.1 Definition

## 8.2.4.31.2 Conformance requirement

If the UE receives:

-a TRANSPORT CHANNEL RECONFIGURATION message;

it shall:

1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

1> enter a state according to TS25.331 subclause 8.6.3.3.

If the UE was in CELL\_FACH state upon reception of the reconfiguration message and remains in CELL\_FACH state, the UE shall:

1> if the IE "Frequency info" is included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304 on that frequency;

2> if the received reconfiguration message included the IE "Primary CPICH info", and the UE selected another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info":

3> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "cell reselection";

3> when the cell update procedure completed successfully:

4> proceed as below.

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

### 8.2.4.31.3 Test purpose

1. To confirm that the UE transits from CELL\_FACH to CELL\_FACH according to the TRANSPORT CHANNEL RECONFIGURATION message.
2. To confirm that the UE transmits TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC on a common physical channel in a different frequency.

### 8.2.4.31.4 Method of test

#### Initial Condition

System Simulator: 2 cells – Cell 1 is active and cell 6 is inactive.

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS".

#### Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

System Information Block type 11

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	Same downlink UARFCN as used for cell 6
- UARFCN uplink(Nu)	
- UARFCN downlink(Nd)	0dB
- Cell info	
- Cell individual offset	Not present
- Reference time difference to cell	
- Read SFN indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH info	Set to same code as used for cell 6
- Primary scrambling code	
- Primary CPICH Tx power	Not present
- Cell Selection and Re-selection Info	0dB
- Qoffset1 <sub>s,n</sub>	
- Qoffset2 <sub>s,n</sub>	Not present
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	Not present
- CHOICE mode	FDD
- Qualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

Test Procedure

Table 8.2.4.31

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-72	Off	-55

Table 8.2.4.31 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in CELL\_FACH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.4.31. SS requests operator to make an outgoing call. The SS and UE execute procedure P6. Next The SS and the UE execute procedure P10 and then execute procedure P14. The SS switches its downlink transmission power settings to columns "T1" and transmits a TRANSPORT CHANNEL RECONFIGURATION message including IE "Frequency info" set to frequency information of cell 6 but not IE "Primary CPICH info". The UE shall select cell 6 and initiates CELL UPDATE procedure with IE "Cell update cause" set to "cell reselection". The UE shall reconfigure its transport channel parameters after completing cell reselection procedure, and then remain in CELL\_FACH state. The UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using AM RLC after it completes configuration according to the received TRANSPORT CHANNEL RECONFIGURATION message. Upon completion of the procedure, the SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.4.31. SS requests operator to make an outgoing call.
2	←→		SS executes procedure P6 (clause 7.4.2.2.2) specified in TS 34.108.	
3	←→		SS executes procedure P10 (clause 7.4.2.4.2) specified in TS 34.108.	
4	←→		SS executes procedure P14 (clause 7.4.2.6.2) specified in TS 34.108.	
5				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.4.31.
6	←		TRANSPORT CHANNEL RECONFIGURATION	Including IE "Frequency info" set to frequency information of cell 6
7	→		CELL UPDATE	The IE "Cell update cause" is set to "cell reselection".
8	←		CELL UPDATE CONFIRM	Including the IE "New C-RNTI"
9	→		UTRAN MOBILITY INFORMATION CONFIRM	
10	→		TRANSPORT CHANNEL RECONFIGURATION COMPLETE	The UE sends this message on a common physical channel in cell 6.
11	←→		CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

### Specific Message Contents

#### TRANSPORT CHANNEL RECONFIGURATION (Step 6)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case are identical the message sub-type indicated by "Packet to CELL\_FACH from CELL\_FACH in PS" in [9] TS 34.108 clause 9, with the following exception:

Information Element	Value/remark
Frequency info - UARFCN uplink(Nu) - UARFCN downlink(Nd)	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
Downlink information for each radio links	Not present

#### CELL UPDATE (Step 7)

The contents of CELL UPDATE message are identical as "Contents of CELL UPDATE message" as found in [9] TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"cell reselection"

#### CELL UPDATE CONFIRM (Step 8)

The contents of CELL UPDATE CONFIRM message are identical as "CELL UPDATE CONFIRM message" as found in [9] TS 34.108 clause 9. with the following exceptions:

Information Element	Value/remark
New C-RNTI	0000 0000 0000 0001B

## UTRAN MOBILITY UPDATE CONFIRM (Step 9)

The contents of UTRAN MOBILITY UPDATE CONFIRM message is identical as "UTRAN MOBILITY UPDATE CONFIRM message" as found in [9] TS 34.108 clause 9.

### 8.2.4.31.5 Test requirement

After step 6 the UE shall transmit a CELL UPDATE message on the CCCH in cell 6.

After step 8 the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC in cell 6.

After step 9 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC in cell 6.

After step 10 the UE shall be in CELL\_FACH state in cell 6.

## 8.2.4.32 Transport Channel Reconfiguration for transition from CELL\_FACH to CELL\_PCH (Frequency band modification): Success

### 8.2.4.32.1 Definition

### 8.2.4.32.2 Conformance requirement

If the UE receives:

- a TRANSPORT CHANNEL RECONFIGURATION message;

it shall:

- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.
- 1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

If after state transition the UE enters CELL\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304 on that frequency.
- 1> if the IE "Frequency info" is not included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304.
- 1> prohibit periodical status transmission in RLC;
- 1> remove any C-RNTI from MAC;
- 1> clear the variable C\_RNTI;
- 1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS25.331 subclause 8.6.3.2.

- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
  - 2> keep the configuration existing before the reception of the message and transmit a failure response message as specified in TS25.331 subclause 8.2.2.9
- 1> if the UE enters CELL\_PCH state from CELL\_FACH state, and the received reconfiguration message included the IE "Primary CPICH info", and the UE selected another cell than indicated by this IE:
  - 2> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "cell reselection";
  - 2> when the cell update procedure is successfully completed:
    - 3> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

### 8.2.4.32.3 Test purpose

1. To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_FACH to CELL\_PCH according to the TRANSPORT CHANNEL RECONFIGURATION message.
3. To confirm that the UE selects a common physical channel in a different frequency.

### 8.2.4.32.4 Method of test

#### Initial Condition

System Simulator: 2 cells – Cell 1 in active and cell 6 inactive

UE: Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

#### Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

System Information Block type 11

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	Same downlink UARFCN as used for cell 6
- UARFCN uplink(Nu)	
- UARFCN downlink(Nd)	0dB
- Cell info	
- Cell individual offset	Not present
- Reference time difference to cell	
- Read SFN indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH info	Set to same code as used for cell 6
- Primary scrambling code	
- Primary CPICH Tx power	Not present
- Cell Selection and Re-selection Info	0dB
- Qoffset1 <sub>s,n</sub>	
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	Not present
- CHOICE mode	FDD
- Qualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

Test Procedure

Table 8.2.4.32

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-72	Off	-55

Table 8.2.4.32 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in idle mode of cell1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.4.32. SS requests operator to make an outgoing call. The SS and UE execute procedure P6. Next The SS and the UE execute procedure P10 and then execute procedure P14. The SS switches its downlink transmission power settings to columns "T1" and. The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message not including IE "Frequency info" and IE "Primary CPICH info". The UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using AM RLC and enter CELL\_PCH state in cell 6. Upon completion of the procedure, the SS calls for generic procedure C.4 to check that UE is in CELL\_PCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.4.32. SS requests operator to make an outgoing call.
2		←→	SS executes procedure P6 (clause 7.4.2.2.2) specified in TS 34.108.	
3		←→	SS executes procedure P10 (clause 7.4.2.4.2) specified in TS 34.108.	
4		←→	SS executes procedure P14 (clause 7.4.2.6.2) specified in TS 34.108.	
5				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.4.32.
6		←	TRANSPORT CHANNEL RECONFIGURATION	Not including IE "Frequency info" and IE "Primary CPICH info"
7		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	The UE transmit this message on the common physical channel in cell 1.
8				The SS waits for 5 s.
9		←→	CALL C.4	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

Specific Message Contents

#### TRANSPORT CHANNEL RECONFIGURATION (Step 6)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3
Frequency info	Not Present
Downlink information for each radio link	

#### 8.2.4.32.5 Test requirement

After step 6 the UE shall transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC in cell 1.

After step 8 the UE shall be in CELL\_PCH state in cell 6.

#### 8.2.4.33 Transport channel reconfiguration for transition from CELL\_FACH to URA\_PCH (Frequency band modification): Success

##### 8.2.4.33.1 Definition

##### 8.2.4.33.2 Conformance requirement

If the UE receives:

- a TRANSPORT CHANNEL RECONFIGURATION message;

it shall:

1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

If after state transition the UE enters URA\_PCH state, the UE shall, after the state transition and transmission of the response message:

1> if the IE "Frequency info" is included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304 on that frequency.

1> if the IE "Frequency info" is not included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304.

1> prohibit periodical status transmission in RLC;

1> remove any C-RNTI from MAC;

1> clear the variable C\_RNTI;

1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;

1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS25.331 subclause 8.6.3.2.

1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:

2> keep the configuration existing before the reception of the message and transmit a failure response message as specified in TS25.331 subclause 8.2.2.9

1> if the UE enters URA\_PCH state, and after cell selection the criteria for URA update caused by "URA reselection" according to TS25.331 subclause 8.3.1 is fulfilled:

2> initiate a URA update procedure according to TS25.331 subclause 8.3.1 using the cause "URA reselection";

2> when the URA update procedure is successfully completed:

3> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

### 8.2.4.33.3 Test purpose

1. To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_FACH to URA\_PCH according to the TRANSPORT CHANNEL RECONFIGURATION message.
3. To confirm that the UE reconfigures the transport channel parameters and selects a common physical channel in a different frequency.

8.2.4.33.4 Method of test

Initial Condition

System Simulator: 2 cells–Cell 1 is active and cell 6 is inactive

UE: Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

System Information Block type 11

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	0dB
- UARFCN uplink(Nu)	Not present
- UARFCN downlink(Nd)	FALSE
- Cell info	FDD
- Cell individual offset	Set to same code as used for cell 6
- Reference time difference to cell	
- Read SFN indicator	Not present
- CHOICE mode	0dB
- Primary CPICH info	Not Present
- Primary scrambling code	Reference to table 6.1.1
- Primary CPICH Tx power	Not present
- Cell Selection and Re-selection Info	Not present
- Qoffset1s,n	FDD
- Qoffset2s,n	Reference to table 6.1.1
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	Reference to table 6.1.1
- CHOICE mode	Not present
- Qqualmin	Not present
- Qrxlevmin	Not present
- Cell for measurement	Not present

Test Procedure

Table 8.2.4.33

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-72	Off	-55

Table 8.2.4.33 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in idle mode of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.4.33. SS requests operator to make an outgoing call. The SS and UE execute procedure P6. Next The SS and the UE execute procedure P10 and then execute procedure P14. The SS switches its downlink transmission power settings to columns "T1" and transmits a TRANSPORT CHANNEL RECONFIGURATION not including IE "Frequency info" and IE "Primary CPICH info". The UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using AM RLC and enter URA\_PCH state of cell 6. Upon completion of the procedure, the SS calls for generic procedure C.5 to check that UE is in URA\_PCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.4.33. SS requests operator to make an outgoing call.
2		←→	SS executes procedure P6 (clause 7.4.2.2.2) specified in TS 34.108.	
3		←→	SS executes procedure P10 (clause 7.4.2.4.2) specified in TS 34.108.	
4		←→	SS executes procedure P14 (clause 7.4.2.6.2) specified in TS 34.108.	
5				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.4.33.
6		←	TRANSPORT CHANNEL RECONFIGURATION	Not including IE "Frequency info" set to and IE "Primary CPICH info"
7		→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	UE transmit this message 1 on the common physical channel in cell 1.
8		←		The SS transmits this message with a matched identity.
9		→	CALL C.5	If the test result of C.5 indicates that UE is in URA_PCH state, the test passes, otherwise it fails.

#### Specific Message Contents

##### TRANSPORT CHANNEL RECONFIGURATION COMPLETE (Step 6)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3
Frequency info	Not present
Downlink information for each radio link	Not present

##### 8.2.4.33.5 Test requirement

After step 6 the UE shall transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC in cell 1.

After step 8 the UE shall be in URA\_PCH state in cell 6.

## 8.2.4.34 Transport channel reconfiguration for transition from CELL\_DCH to CELL\_PCH (Frequency band modification): Success

### 8.2.4.34.1 Definition

### 8.2.4.34.2 Conformance requirement

If the UE receives:

- a TRANSPORT CHANNEL RECONFIGURATION message;

it shall:

- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.
- 1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the procedure was triggered by reception of a TRANSPORT CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

If after state transition the UE enters CELL\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304 on that frequency.
- 1> if the IE "Frequency info" is not included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304.
- 1> prohibit periodical status transmission in RLC;
- 1> remove any C-RNTI from MAC;
- 1> clear the variable C\_RNTI;
- 1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
  - 2> keep the configuration existing before the reception of the message and transmit a failure response message as specified in TS25.331 subclause 8.2.2.9
- 1> if the UE enters CELL\_PCH state from CELL\_DCH state, and the received reconfiguration message included the IE "Primary CPICH info" and the UE selected another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info"
  - 2> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "cell reselection";
  - 2> when the cell update procedure completed successfully:
    - 3> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

## 8.2.4.34.3 Test purpose

1. To confirm that the UE transmits a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_DCH to CELL\_PCH according to the TRANSPORT CHANNEL RECONFIGURATION message.
3. To confirm that the UE release the dedicated physical channel and selects a common physical channel in a different frequency.

## 8.2.4.34.4 Method of test

## Initial Condition

System Simulator: 2 cells – Cell 1 is active and cell 6 is inactive

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

## Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

## System Information Block type 11

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	Same downlink UARFCN as used for cell 6
- UARFCN uplink(Nu)	
- UARFCN downlink(Nd)	0dB
- Cell info	
- Cell individual offset	Not present
- Reference time difference to cell	
- Read SFN indicator	FALSE
- CHOICE mode	
- Primary CPICH info	FDD
- Primary scrambling code	
- Primary CPICH Tx power	Set to same code as used for cell 6
- Cell Selection and Re-selection Info	
- Qoffset1 <sub>s,n</sub>	Not present
- Qoffset2 <sub>s,n</sub>	
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	Not present
- CHOICE mode	FDD
- Qqualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

## Test Procedure

Table 8.2.4.34

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-72	Off	-55

Table 8.2.4.34 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in idle mode of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.4.34. SS requests operator to make an outgoing call. The SS and UE execute procedure P5. Next The SS and the UE execute procedure P9 and then execute procedure P13. The SS switches its downlink transmission power settings to columns "T1" and transmits a TRANSPORT CHANNEL RECONFIGURATION message not including IE "Frequency info" and IE "Primary CPICH info". The UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message using AM RLC and enter CELL\_PCH state. The UE shall select cell 6 and initiate CELL UPDATE procedure with IE "Cell update cause" set to "cell reselection".

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.4.34. SS requests operator to make an outgoing call.
2	←→		SS executes procedure P5 (clause 7.4.2.2.2) specified in TS 34.108.	
3	←→		SS executes procedure P9 (clause 7.4.2.4.2) specified in TS 34.108.	
4	←→		SS executes procedure P13 (clause 7.4.2.6.2) specified in TS 34.108.	
5				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.4.34.
6	←		TRANSPORT CHANNEL RECONFIGURATION	Not including IE "Frequency info" and no IE "Primary CPICH info"
7	→		TRANSPORT CHANNEL RECONFIGURATION COMPLETE	UE transmit this message on the dedicated physical channel in cell 1.
8	→		CELL UPDATE	The IE "Cell update cause" is set to "cell reselection".
9	←		CELL UPDATE CONFIRM	IE "RRC State Indicator" is set to "CELL_PCH".

## Specific Message Contents

## TRANSPORT CHANNEL RECONFIGURATION (Step 3)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3
Frequency info	Not present
Downlink information for each radio link	Not present

### CELL UPDATE (Step 6)

The contents of CELL UPDATE message are identical as "Contents of CELL UPDATE message" as found in [9] TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"cell reselection"

### CELL UPDATE CONFIRM (Step 7)

The contents of CELL UPDATE CONFIRM message are identical as "CELL UPDATE CONFIRM message" as found in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
RRC State Indic	CELL_PCH
UTRAN DRX cycle length coefficient	3

#### 8.2.4.34.5 Test requirement

After step 6 the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC in cell 1.

After step 7 the UE shall transmit a CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection" in cell 6.

## 8.2.5 Transport format combination control

### 8.2.5.1 Transport format combination control in CELL\_DCH: restriction

#### 8.2.5.1.1 Definition

#### 8.2.5.1.2 Conformance requirement

The UE shall change the subset of the allowed uplink transport format combination when the UE receives TRANSPORT FORMAT COMBINATION CONTROL message.

#### Reference

3GPP TS 25.331 clause 8.2.5.

#### 8.2.5.1.3 Test purpose

To confirm that the UE does not transmit any data on the DCH for the user data radio bearer on the uplink, following the reception of TRANSPORT FORMAT COMBINATION CONTROL message sent from the SS, which is set to the value in IE "Restricted TrCH information".

## 8.2.5.1.4 Method of test

## Initial Condition

System Simulator: 1 cell

UE: DCCH+DTCH\_DCH (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

PS case:

For the PS case the reference radio bearer configuration specified in TS 34.108, clause 6.10.3.4.1.26 (Interactive or background / UL:64 DL:64 kbps / PS RAB) is used.

RLC is configured for no discard.

CS case:

For the CS case the reference radio bearer configuration specified in TS 34.108, clause 6.10.2.4.1.13 (UL:64/DL:64 kbps CS RAB, 20 ms TTI) is used.

RLC is configured for no segmentation and 'Timer based discard without explicit signalling' with Timer\_discard value set to 100ms.

## Test Procedure

- a. The UE is in CELL\_DCH state.
- b. The SS close the UE test loop.
- c. The SS transmits a TRANSPORT FORMAT COMBINATION CONTROL message using AM\_RLC on the DCCH, which indicates that only TF0 is allowed on the uplink for DCH transport channel on the DTCH.
- d. The SS transmits data to the UE.
- e. The SS waits to check that no data is returned in uplink.
- f. The SS transmits a TRANSPORT FORMAT COMBINATION CONTROL message using AM\_RLC on the DCCH, which enables all transport formats on the uplink for DCH transport channel on the DTCH.
- g. For the CS case the SS send data (the previous data should have been discarded by the TM RLC entity)
- h. The SS checks that the sent data is returned from the UE.

## Expected sequence

## CS paging procedure

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION (BCCH)	Broadcast
2	<--		PAGING TYPE 1 (PCCH)	Paging (CS domain, TMSI)
3	-->		RRC CONNECTION REQUEST (CCCH)	RRC
4	<--		RRC CONNECTION SETUP (CCCH)	RRC
5	-->		RRC CONNECTION SETUP COMPLETE (DCCH)	RRC
6	-->		PAGING RESPONSE (DCCH)	RR

**PS paging procedure**

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION (BCCH)	Broadcast
2	<--		PAGING TYPE 1 (PCCH)	Paging (PS domain, P-TMSI)
3	-->		RRC CONNECTION REQUEST (CCCH)	RRC
4	<--		RRC CONNECTION SETUP (CCCH)	RRC
5	-->		RRC CONNECTION SETUP COMPLETE (DCCH)	RRC
6a	-->		SERVICE REQUEST (DCCH)	GMM
6b	<--		SECURITY MODE COMMAND	RRC see note 1
6c	-->		SECURITY MODE COMPLETE	RRC see note 1
NOTE	Step 6b and Step 6c are inserted in order to stop T3317 timer in the UE, which starts after transmitting SERVICE REQUEST message.			

Step	Direction		Message	Comments
	UE	SS		
1			Paging	Use the CS paging procedure for testing of CS and combined CS/PS reference radio bearer configurations.  Use the PS paging procedure for testing of PS reference radio bearer configurations.
2	<--		ACTIVATE RB TEST MODE (DCCH)	TC
3	-->		ACTIVATE RB TEST MODE COMPLETE (DCCH)	TC
4	<--		RADIO BEARER SETUP (DCCH)	RRC
5	-->		RADIO BEARER SETUP COMPLETE (DCCH)	RRC
6	<--		CLOSE UE TEST LOOP (DCCH)	TC UE test mode 1 RLC SDU size is for every active radio bearer set to "UL RLC SDU size", as specified for the sub-test.
7	-->		CLOSE UE TEST LOOP COMPLETE (DCCH)	TC
8	<--		TRANSPORT FORMAT COMBINATION CONTROL (DCCH)	RRC Transport format combinations is limited to TF0 (no data)
9	<--		PS case: 1 RLC SDU CS case: 2xRLC SDU	For the PS case one RLC SDU of size 312 bits is sent (payload size minus size of 7 bit length indicator and expansion bit). For the CS case two RLC SDUs of size 640 bits are sent.
10				SS waits 5 seconds to secure that no data is returned by the UE
11	<--		TRANSPORT FORMAT COMBINATION CONTROL (DCCH)	RRC All transport format combinations are enabled
12			CS case: 2xRLC SDU	For the CS case two RLC SDUs of size 640 bits are sent.
13	-->		PS case: 1 RLC SDU CS case: 2xRLC SDU	UE returns data
14	<--		OPEN UE TEST LOOP (DCCH)	TC
15	-->		OPEN UE TEST LOOP COMPLETE (DCCH)	TC
16			RB RELEASE (DCCH)	RRC Optional step
17	<--		DEACTIVATE RB TEST MODE (DCCH)	TC Optional step
18	-->		DEACTIVATE RB TEST MODE COMPLETE (DCCH)	TC Optional step

### Specific Message Contents

#### TRANSPORT FORMAT COMBINATION CONTROL (step 8)

Use the same message sub-type titled "TRANSPORT FORMAT COMBINATION CONTROL" in Annex A with following exceptions:

Information Element	Value/remark
TrCH information elements	
-DPCH/PUSCH TFCS uplink in uplink	
- Restricted TrCH information	
- Uplink transport channel type	DCH
- Restricted UL TrCH identity	1
- Allowed TFI	0

#### TRANSPORT FORMAT COMBINATION CONTROL (step 11)

Use the same message sub-type titled "TRANSPORT FORMAT COMBINATION CONTROL" in Annex A with following exceptions:

Information Element	Value/remark
TrCH information elements -DPCH/PUSCH TFCS uplink in uplink - Restricted TrCH information - Uplink transport channel type - Restricted UL TrCH identity - Full transport format combination set	DCH 1 Null

#### 8.2.5.1.5 Test requirement

1. At step 10 no data shall be sent by the UE.
2. At step 13:
  - For PS case: SS shall receive one RLC SDU from the UE
  - For CS case: SS shall receive two RLC SDUs from the UE

#### 8.2.5.2 Transport format combination control in CELL\_DCH: release a restriction

Implicitely tested in test case 8.2.5.1.

#### 8.2.5.3 Void

#### 8.2.5.4 Transport format combination control in CELL\_DCH: Failure (Invalid message reception and Invalid configuration)

##### 8.2.5.4.1 Definition

##### 8.2.5.4.2 Conformance requirement

If the TRANSPORT FORMAT COMBINATION CONTROL message contains a protocol error causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

- 1> transmit a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the uplink DCCH using AM RLC setting the information elements as specified below:
  - 2> set the IE "RRC transaction identifier" in the TRANSPORT FORMAT COMBINATION CONTROL FAILURE message to the value of "RRC transaction identifier" in the entry for the TRANSPORT FORMAT COMBINATION CONTROL message in the table "Rejected transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to the cause value "protocol error";
  - 2> include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL\_ERROR\_INFORMATION.
- 1> when the TRANSPORT FORMAT COMBINATION CONTROL FAILURE message has been submitted to lower layers for transmission:
  - 2> continue with any ongoing processes and procedures as if the invalid TRANSPORT FORMAT COMBINATION CONTROL message has not been received;
  - 2> and the procedure ends.

If the variable INVALID\_CONFIGURATION is set to TRUE due to the received TRANSPORT FORMAT COMBINATION CONTROL message the UE shall:

- 1> if the TRANSPORT FORMAT COMBINATION CONTROL message was received on AM RLC:
  - 2> keep the TFC subset existing before the TRANSPORT FORMAT COMBINATION CONTROL message was received;
  - 2> transmit a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the DCCH using AM RLC;
  - 2> set the IE "RRC transaction identifier" in the TRANSPORT FORMAT COMBINATION CONTROL FAILURE message to the value of "RRC transaction identifier" in the entry for the TRANSPORT FORMAT COMBINATION CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "invalid configuration";
  - 2> when the TRANSPORT FORMAT COMBINATION CONTROL FAILURE message has been submitted to lower layers for transmission the procedure ends.
- 1> if the TRANSPORT FORMAT COMBINATION CONTROL message was received on UM RLC:
  - 2> ignore the TRANSPORT FORMAT COMBINATION CONTROL message.

## Reference

3GPP TS 25.331 clause 8.2.5.4, 8.2.5.5

### 8.2.5.4.3 Test purpose

To confirm after the UE receives an invalid TRANSPORT FORMAT COMBINATION CONTROL message, it transmits a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message and keeps the TFC subset as if no TRANSPORT FORMAT COMBINATION CONTROL message has been received.

To confirm that the UE transmits a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the DCCH using AM RLC if it receives a TRANSPORT FORMAT COMBINATION CONTROL message including some IEs set to give an invalid configuration.

### 8.2.5.4.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: DCCH+DTCH\_DCH (state 6-9 or state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits an invalid TRANSPORT FORMAT COMBINATION CONTROL message which does not include any IEs except IE "Message Type". The UE shall transmit a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message which is set to "ASN.1 violation or encoding error" in IE "Protocol error cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically. SS transmits a TRANSPORT FORMAT COMBINATION CONTROL message including some IEs set to get an invalid configuration. The UE keeps its current configuration and transmits a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the DCCH using AM RLC, setting the value "invalid configuration" to IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1				UE is in CELL_DCH state with a DCH for a signalling radio bearer and a DCH for a radio access bearer.
2		←	TRANSPORT FORMAT COMBINATION CONTROL	See specific message content.
3		→	RRC STATUS	The UE shall not change its configuration
3a		→	MEASUREMENT REPORT	
4		←	TRANSPORT FORMAT COMBINATION CONTROL	This message includes IEs set to give an invalid configuration.
5		→	TRANSPORT FORMAT COMBINATION CONTROL FAILURE	The UE shall not change its configuration
6		→	MEASUREMENT REPORT	

Specific Message Contents

MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

MEASUREMENT REPORT (Step 0b, 3a and 6)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

## TRANSPORT FORMAT COMBINATION CONTROL (Step 2)

Information Element	Value/remark
All IEs	Not Present

## RRC STATUS (Step 3)

Information Element	Value/remark
Message Type Protocol Error Information - Protocol Error Cause	ASN.1 violation or encoding

## TRANSPORT FORMAT COMBINATION CONTROL (Step 5)

Use the same message sub-type titled "TRANSPORT FORMAT COMBINATION CONTROL" in Annex A with following exceptions:

Information Element	Value/remark
TrCH information elements -DPCH/PUSCH TFCS uplink in uplink - Restricted TrCH information - Uplink transport channel type - Restricted UL TrCH identity - Allowed TFI	DCH 15 ( for RACH transport channel identity) 0

## TRANSPORT FORMAT COMBINATION CONTROL FAILURE (Step 6)

Information Element	Value/remark
Message Type	"TRANSPORT FORMAT COMBINATION CONTROL FAILURE"
RRC transaction identifier	Checked to see if it is set to identical value of the same IE in the downlink TRANSPORT FORMAT COMBINATION CONTROL message.
Integrity check info	The presence if this IE is dependent on IXT statements in TS 34.123-2. if integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
Failure cause	Invalid configuration

## 8.2.5.4.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 2 the UE shall transmit a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the DCCH using AM RLC. The UE shall set the value "protocol error" in IE "Failure cause" and the value "ASN.1 violation or encoding error" in IE "protocol error information".

After step 3, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 4 the UE shall transmit a TRANSPORT FORMAT COMBINATION CONTROL FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to "invalid configuration".

After step 5, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

## 8.2.6 Physical channel reconfiguration

## 8.2.6.1 Physical channel reconfiguration for transition from CELL\_DCH to CELL\_DCH (code modification): Success

## 8.2.6.1.1 Definition

## 8.2.6.1.2 Conformance requirement

If the UE receives:

- a PHYSICAL CHANNEL RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If the UE was in CELL\_DCH state upon reception of the reconfiguration message and remains in CELL\_DCH state, the UE shall:

- 1> if the IE "Uplink DPCH Info" is absent, not change its current UL Physical channel configuration;

- 1> if the IE "Downlink information for each radio link" is absent, not change its current DL Physical channel configuration.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

### 8.2.6.1.3 Test purpose

To confirm that the UE reconfigures the physical channel parameters according to a PHYSICAL CHANNEL RECONFIGURATION message received from the SS. After the reconfiguration, the UE shall be able to communicate with the SS on the new physical channel.

### 8.2.6.1.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending to the CN domain(s) supported by the UE.

#### Test Procedure

The UE is in CELL\_DCH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE, which includes a new several physical layer parameters. The UE shall reconfigure the physical channel at the activation time specified in this message and transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH AM RLC after its transition. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PHYSICAL CHANNEL RECONFIGURATION	See message contents
2		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
3		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

## PHYSICAL CHANNEL RECONFIGURATION (FDD)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type titled as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A, with the following exceptions:

Information Element	Value/remark
Maximum allowed UL Tx power	31dBm
Uplink DPCH info	
- Scrambling code number	1
Downlink information common for all radio links	
Downlink information for each radio link	
- Code number	1

## PHYSICAL CHANNEL RECONFIGURATION (TDD)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type titled as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A, with the following exceptions:

Information Element	Value/remark
- Uplink DPCH timeslots and codes	
- First timeslot code list	Assigned by SS
Downlink information common for all radio links	Absent

## 8.2.6.1.5 Test requirement

After step 1 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

## 8.2.6.2 Physical channel reconfiguration for transition from CELL\_DCH to CELL\_DCH (code modification): Failure (Unsupported configuration)

## 8.2.6.2.1 Definition

## 8.2.6.2.2 Conformance requirement

If the UTRAN instructs the UE to use a configuration, which it does not support and/or if the received message causes the variable UNSUPPORTED\_CONFIGURATION to be set to TRUE, the UE shall:

- 1> transmit a failure response as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "configuration unsupported".
- 1> set the variable UNSUPPORTED\_CONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

1> in case of reception of a PHYSICAL CHANNEL RECONFIGURATION message:

...

2> transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.6, 8.2.2.9.

#### 8.2.6.2.3 Test purpose

To confirm that the UE keeps its configuration and transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC if the received PHYSICAL CHANNEL RECONFIGURATION message includes unsupported configuration parameters for the UE.

#### 8.2.6.2.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE which includes configuration parameters unsupported by the UE. The UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC which is set to "configuration unsupported" in IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	PHYSICAL CHANNEL RECONFIGURATION	Includes configuration unsupported by the UE
2		→	PHYSICAL CHANNEL RECONFIGURATION FAILURE	The UE shall not reconfigure and continue to communicate using the old configuration.
3		→	MEASUREMENT REPORT	

#### Specific Message Contents

##### MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

## MEASUREMENT REPORT (Step 0b and 3)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

## PHYSICAL CHANNEL RECONFIGURATION (FDD) (Step 1)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info	
- UARFCN uplink (Nu)	0
- UARFCN downlink (Nd)	950

## PHYSICAL CHANNEL RECONFIGURATION (TDD) (Step 1)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_DCH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info	
- UARFCN (Nt)	0

## PHYSICAL CHANNEL RECONFIGURATION FAILURE (Step 2)

The contents of PHYSICAL CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the PHYSICAL CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Configuration unsupported

## 8.2.6.2.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 1 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC and set "configuration unsupported" in IE "failure cause".

After step 2, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

## 8.2.6.3 Physical channel reconfiguration for transition from CELL\_DCH to CELL\_DCH (code modification): Failure (Physical channel failure and reversion to old channel)

## 8.2.6.3.1 Definition

## 8.2.6.3.2 Conformance requirement

When a physical dedicated channel establishment is initiated by the UE, the UE shall start a timer T312 and wait for layer 1 to indicate N312 "in sync" indications. On receiving N312 "in sync" indications, the physical channel is considered established and the timer T312 is stopped and reset.

If the timer T312 expires before the physical channel is established, the UE shall consider this as a "physical channel establishment failure".

If the received message caused the UE to be in CELL\_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

1> revert to the configuration prior to the reception of the message (old configuration);

...

1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and

2> clear that entry;

2> set the IE "failure cause" to "physical channel failure".

1> set the variable ORDERED\_RECONFIGURATION to FALSE;

1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

1> in case of reception of a PHYSICAL CHANNEL RECONFIGURATION message:

...

2> transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.7, 8.2.2.9, 8.5.4.

### 8.2.6.3.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC if the UE fails to reconfigure the new physical channel according to the received PHYSICAL CHANNEL RECONFIGURATION message before timer T312 expiry.

### 8.2.6.3.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE which includes new UL scrambling code. However, the SS keeps its current dedicated physical channel configuration. The UE fails to synchronise with the SS on the new physical channel and after T312 timer expires the UE shall revert to the old configuration. Finally, the UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC specifies "physical channel failure" in IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	PHYSICAL CHANNEL RECONFIGURATION	Including a new UL scrambling code for FDD and First timeslot code list for TDD.
2				The SS does not reconfigure the physical channel so that the UE fails to synchronise on the new physical channel.
3		→	PHYSICAL CHANNEL RECONFIGURATION FAILURE	After T312 expires, the UE shall revert to the old configuration and transmits this message.
4		→	MEASUREMENT REPORT	

Specific Message Contents

#### PHYSICAL CHANNEL RECONFIGURATION (FDD) (Step 1)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type titled as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A, with the following exceptions:

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8 ]
Uplink DPCH info - Scrambling code number	1
Downlink information common for all radio links - Downlink DPCH info common for all RL - Timing Indicator	Maintain

#### PHYSICAL CHANNEL RECONFIGURATION (TDD) (Step 1)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type titled as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A, with the following exceptions:

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8 ]
- Uplink DPCH timeslots and codes - First timeslot code list	Assigned by SS
Downlink information common for all radio links - Downlink DPCH info common for all RL - Timing Indicator	Maintain

#### PHYSICAL CHANNEL RECONFIGURATION FAILURE (Step 2)

The contents of PHYSICAL CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the PHYSICAL CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Physical channel failure

### 8.2.6.3.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 2 the UE shall revert to the old configuration and transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, with the value "physical channel failure" in IE "failure cause".

After step 3, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

## 8.2.6.4 Physical channel reconfiguration for transition from CELL\_DCH to CELL\_DCH (code modification): Failure (Physical channel failure and cell reselection)

### 8.2.6.4.1 Definition

### 8.2.6.4.2 Conformance requirement

If the received message caused the UE to be in CELL\_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

- 1> revert to the configuration prior to the reception of the message (old configuration);
- 1> if the old configuration includes dedicated physical channels (CELL\_DCH state) and the UE is unable to revert to the old configuration:
  - 2> initiate a cell update procedure according to TS 25.331 subclause 8.3.1, using the cause "radio link failure";
  - 2> after the cell update procedure has completed successfully:
    - 3> proceed as below.
- ...
- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "physical channel failure".
- 1> set the variable ORDERED\_RECONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- includes "Physical channel information elements":

the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message using AM RLC.

The UE shall:

1> in case of reception of a PHYSICAL CHANNEL RECONFIGURATION message:

...

2> transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.7, 8.2.2.9, 8.3.1.7.

#### 8.2.6.4.3 Test purpose

To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message after UE completes a cell update procedure when the UE fails synchronise on the old physical channel after the UE cannot synchronise on the new physical channel according to the received PHYSICAL CHANNEL RECONFIGURATION message.

#### 8.2.6.4.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

The UE is in CELL\_DCH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE, which includes new UL scrambling code, but the SS does not configure the new physical channel and release the old configuration. The UE fails to synchronise on the new dedicated physical channel and tries to revert to the old configuration. But the SS already deleted the old physical channel configuration and the UE cannot revert to the old configuration. The UE transmits a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "radio link failure". The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC and subsequently transmits PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value "physical channel failure" to IE "failure cause".

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1			Void	
2			Void	
3		←	PHYSICAL CHANNEL RECONFIGURATION	The message includes new UL scrambling code for FDD and First timeslot code list for TDD .
4				SS does not configure any dedicated physical channel and at the same time, it deletes the old configuration so the UE cannot reconfigure the new physical channel and cannot revert to the old configuration.
5		→	CELL UPDATE	This message includes the value "radio link failure" set in IE "Cell update cause".
6		←	CELL UPDATE CONFIRM	This message includes IE "Physical channel information elements".
7				The SS configures the dedicated physical channel according to the IE "Physical channel information elements" included in the CELL UPDATE CONFIRM message.
8		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
9		→	PHYSICAL CHANNEL RECONFIGURATION FAILURE	The IE "failure cause" shall be set to "physical channel failure"

Specific Message Contents

#### PHYSICAL CHANNEL RECONFIGURATION (Step 3) (FDD)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type titled as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A, with the following exceptions:

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8 ]
Uplink DPCH info	
- Scrambling code number	1
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	
- Timing Indicator	Maintain

#### PHYSICAL CHANNEL RECONFIGURATION (Step 3) (TDD)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type titled as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A, with the following exceptions:

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8 ]
- Uplink DPCH timeslots and codes	
- First timeslot code list	Assigned by SS
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	
- Timing Indicator	Maintain

## CELL UPDATE (Step 5)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A for FDD and Annex A for TDD with the following exceptions:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' "radio link failure"

## CELL UPDATE CONFIRM (Step 6) (FDD)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex A with the following exceptions:

Information Element	Value/remark
U-RNTI RRC State indicator UplinkDPCH Info Downlink information for each radio links	Same as CELL UPDATE message in step 4 CELL_DCH Same as RADIO BEARER SETUP message used to move to initial condition Same as RADIO BEARER SETUP message used to move to initial condition

## CELL UPDATE CONFIRM (Step 6) (TDD)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex A with the following exceptions:

Information Element	Value/remark
U-RNTI RRC State Indicator Uplink DPCH timeslots and codes Downlink information for each radio links	Same as CELL UPDATE message in step 4 CELL_DCH Same as RADIO BEARER SETUP message used to move to initial condition Same as RADIO BEARER SETUP message used to move to initial condition

## PHYSICAL CHANNEL RECONGURATION FAILURE (Step 9)

The contents of PHYSICAL CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the PHYSICAL CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	"physical channel failure"

## 8.2.6.4.5 Test requirement

After step 4 the UE shall transmits a CELL UPDATE message using RLC-TM mode on the uplink CCCH with IE "Cell update cause" set to "radio link failure".

After step 7 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

After step 8 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the IE "failure cause" to "physical channel failure".

## 8.2.6.5 Physical channel reconfiguration for transition from CELL\_DCH to CELL\_DCH (code modification): Failure (Incompatible simultaneous reconfiguration)

### 8.2.6.5.1 Definition

### 8.2.6.5.2 Conformance requirement

If the received message is any of the messages:

- PHYSICAL CHANNEL RECONFIGURATION; or

...

the UE shall:

- 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or

...

- 3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:

...

- 3> else:

- 4> reject the transaction; and

- 4> if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:

- 5> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

...

If the table "Rejected transactions" in the variable TRANSACTIONS is set due to the received message and the variable PROTOCOL\_ERROR\_REJECT is set to FALSE, the UE shall:

- 1> not apply the configuration contained in the received reconfiguration message;

- 1> transmit a failure response message as specified in subclause TS 25.331 8.2.2.9, setting the information elements as specified below:

- 2> include the IE "RRC transaction identifier"; and

- 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable TRANSACTIONS; and

- 2> clear that entry;

- 2> set the IE "failure cause" to "incompatible simultaneous reconfiguration".

- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a PHYSICAL CHANNEL RECONFIGURATION message:

...

- 2> transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.9, 8.2.2.12, clause 8.6.3.11.

### 8.2.6.5.3 Test purpose

To confirm that if the UE receives a PHYSICAL CHANNEL RECONFIGURATION message during a reconfiguring procedure due to a radio bearer message other than PHYSICAL CHANNEL RECONFIGURATION, it shall keep its configuration as if the PHYSICAL CHANNEL RECONFIGURATION message had not been received and complete the reconfiguration procedure according to the previously received message.

### 8.2.6.5.4 Method of test

## Initial Condition

System Simulator: 1 cell

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

The UE is in CELL\_DCH state. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message before the "activation time" indicated in the RADIO BEARER RECONFIGURATION message expires. When the UE receives the PHYSICAL CHANNEL RECONFIGURATION message, the UE shall keep the configuration as if it had not received the PHYSICAL CHANNEL RECONFIGURATION message and shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the SS acknowledges the PHYSICAL CHANNEL RECONFIGURATION FAILURE message, the UE reconfigures the new physical channel parameters upon the activation time and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on DCCH using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	RADIO BEARER RECONFIGURATION	
2		←	PHYSICAL CHANNEL RECONFIGURATION	Sent before the "activation time" specified in the message in step 1 has elapsed.
3		→	PHYSICAL CHANNEL RECONFIGURATION FAILURE	The UE does not change the configuration due to the reception of a PHYSICAL CHANNEL RECONFIGURATION message.
4		→	RADIO BEARER RECONFIGURATION COMPLETE	This message is on DCCH using AM RLC.
5		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

### RADIO BEARER RECONFIGURATION (Step 1) (FDD)

For RADIO BEARER RECONFIGURATION in step 1, use the message sub-type indicated as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time Info	Current CFN-[current CFN mod 8 + 8 ]
Uplink DPCH info	1
- Scrambling code number	
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	
- Timing Indicator	Maintain

#### RADIO BEARER RECONFIGURATION (Step 1) (TDD)

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8 ]
- Uplink DPCH timeslots and codes	
- First timeslot code list	Assigned by SS
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	
- Timing Indicator	Maintain

#### PHYSICAL CHANNEL RECONFIGURATION (Step 2) (FDD)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type titled as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A, with the following exceptions:

Information Element	Value/remark
Activation Time	Not Present
Uplink DPCH info	
- Scrambling code number	2
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	
- Timing Indicator	Maintain

#### PHYSICAL CHANNEL RECONFIGURATION (Step 2) (TDD)

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8 ]
- Uplink DPCH timeslots and codes	
- First timeslot code list	Different as assigned in Step 1
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	
- Timing Indicator	Maintain

#### PHYSICAL CHANNEL RECONFIGURATION FAILURE (step 3)

The contents of PHYSICAL CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the PHYSICAL CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Incompatible simultaneous reconfiguration

#### 8.2.6.5.5 Test requirement

After step 2 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "Incompatible simultaneous reconfiguration".

After step 3 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message using AM RLC on the DCCH.

## 8.2.6.6 Physical channel reconfiguration for transition from CELL\_DCH to CELL\_DCH (code modification): Failure (Invalid message reception and Invalid configuration)

### 8.2.6.6.1 Definition

### 8.2.6.6.2 Conformance requirement

If the received reconfiguration message contains a protocol error causing the variable `PROTOCOL_ERROR_REJECT` to be set to `TRUE` according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable `TRANSACTIONS`; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to the cause value "protocol error";
  - 2> include the IE "Protocol error information" with contents set to the value of the variable `PROTOCOL_ERROR_INFORMATION`.

If the variable `INVALID_CONFIGURATION` is set to `TRUE` the UE shall:

- 1> keep the configuration existing before the reception of the message;
- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
    - 3> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable `TRANSACTIONS`; and
    - 3> clear that entry.
  - 2> set the IE "failure cause" to "invalid configuration".
- 1> set the variable `INVALID_CONFIGURATION` to `FALSE`;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a `PHYSICAL CHANNEL RECONFIGURATION` message:
  - ...
  - 2> transmit a `PHYSICAL CHANNEL RECONFIGURATION FAILURE` as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.13, 8.2.2.11, 8.2.2.9.

## 8.2.6.6.3 Test purpose

To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC if it receives an invalid PHYSICAL CHANNEL RECONFIGURATION message which does not include any IEs except IE "Message Type".

To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC if it receives a PHYSICAL CHANNEL RECONFIGURATION message including some IEs set to give an invalid configuration.

## 8.2.6.6.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

## Test Procedure

The UE is in CELL\_DCH state. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits an invalid PHYSICAL CHANNEL RECONFIGURATION message to the UE, which contains an unexpected critical message extension. The UE keeps the old configuration and transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, with a value "protocol error" in IE "failure cause" and also a value "Message extension not comprehended" in IE "Protocol error cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically. SS transmits a PHYSICAL CHANNEL RECONFIGURATION message including some IEs which are set to give an invalid configuration. The UE keeps its initial configuration and transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the value "invalid configuration" to IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1		←	PHYSICAL CHANNEL RECONFIGURATION	See specific message content.
2		→	PHYSICAL CHANNEL RECONFIGURATION FAILURE	The UE does not change its configuration.
2a		→	MEASUREMENT REPORT	
3		←	PHYSICAL CHANNEL RECONFIGURATION	This message includes IEs which is set to give an invalid configuration
4				The UE does not change its configuration
5		→	PHYSICAL CHANNEL RECONFIGURATION FAILURE	The IE "failure cause" shall be set to "invalid configuration"
6		→	MEASUREMENT REPORT	

## Specific Message Contents

## MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	Acknowledged mode RLC
- Measurement Report Transfer Mode	Periodical Reporting
- Periodical Reporting / Event Trigger Reporting Mode	
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

### MEASUREMENT REPORT (Step 0b, 2a and 6)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

### PHYSICAL CHANNEL RECONFIGURATION (Step 1)

Use the PHYSICAL CHANNEL RECONFIGURATION message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Critical extensions	'01'H

## PHYSICAL CHANNEL RECONFIGURATION FAILURE (Step 2)

The contents of PHYSICAL CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the PHYSICAL CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	Message extension not comprehended

## PHYSICAL CHANNEL RECONFIGURATION (Step 3) (FDD)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
- Default DPCH Offset Value	512
- DPCH frame offset	1024

## PHYSICAL CHANNEL RECONFIGURATION (Step 3) (TDD)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_FACH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
-PRACH TFCS	Present

## PHYSICAL CHANNEL RECONFIGURATION FAILURE (Step 5)

The contents of PHYSICAL CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the PHYSICAL CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Invalid configuration

## 8.2.6.6.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 1 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting value "protocol error" in IE "failure cause" and also setting value "Message extension not comprehended" in IE "Protocol error cause".

After step 2, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 4 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to "invalid configuration".

After step 5, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

## 8.2.6.7 Physical channel reconfiguration for transition from CELL\_DCH to CELL\_FACH: Success

### 8.2.6.7.1 Definition

### 8.2.6.7.2 Conformance requirement

If the UE receives:

- a PHYSICAL CHANNEL RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_FACH state, the UE shall, after the state transition:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency.
- 1> select PRACH according to TS 25.331 subclause 8.5.17;
- 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
- 1> use the transport format set given in system information;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> ignore that IE and stop using DRX.
- 1> if the contents of the variable C\_RNTI is empty:
  - 2> perform a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Cell reselection";

...

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

## 8.2.6.7.3 Test purpose

To confirm that the UE reconfigures a common physical channel according to the PHYSICAL CHANNEL RECONFIGURATION message, which invoke the UE to transit from CELL\_DCH to CELL\_FACH.

## 8.2.6.7.4 Method of test

## Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

## Test Procedure

The UE is in CELL\_DCH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE. The UE shall then reconfigure the specified common physical channel according to this message and the system information messages. Following this, it shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC on the DCCH. SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PHYSICAL CHANNEL RECONFIGURATION	IE "Uplink DPCH Info" and IE "Downlink DPCH Info" are not specified.
2				UE shall perform the reconfiguration.
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
4		↔	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

## Specific Message Contents

## PHYSICAL CHANNEL RECONFIGURATION

Use the message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A with the following exception:

Information Element	Value/remark
New C-RNTI	0000 0000 0000 0001B

## 8.2.6.7.5 Test requirement

After step 2 the UE shall transit from CELL\_DCH to CELL\_FACH and transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the common physical channel.

## 8.2.6.8 Physical channel reconfiguration for transition from CELL\_DCH to CELL\_FACH: Success (Cell re-selection)

## 8.2.6.8.1 Definition

## 8.2.6.8.2 Conformance requirement

If the UE receives:

- a PHYSICAL CHANNEL RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_FACH state, the UE shall, after the state transition:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency.
- 1> if the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD), and the UE selects another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD):
  - 2> initiate a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Cell reselection";
  - 2> when the cell update procedure completed successfully:
    - 1> select PRACH according to TS 25.331 subclause 8.5.17;
    - 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
    - 1> use the transport format set given in system information;
    - 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
      - 2> ignore that IE and stop using DRX.
  - 1> if the contents of the variable C\_RNTI is empty:
    - 2> perform a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Cell reselection";

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- includes "CN information elements"; or
- includes the IE "Ciphering mode info"; or
- includes the IE "Integrity protection mode info"; or
- includes the IE "New C-RNTI"; or
- includes the IE "New U-RNTI":

the UE shall:

- 1> transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and

1> clear that entry;

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4, 8.3.1.7.

#### 8.2.6.8.3 Test purpose

To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message after the UE completes a cell update procedure.

#### 8.2.6.8.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

#### Test Procedure

The UE is in CELL\_DCH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message, which includes IE "Primary CPICH info" and no dedicated physical channel information to invoke the UE to transit from CELL\_DCH to CELL\_FACH. As the UE cannot detect the specified cell, the UE shall initiate the cell update procedure. The UE transmits a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection". The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving a CELL UPDATE message. The UE then transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC. The UE transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1			Void	
2		←	PHYSICAL CHANNEL RECONFIGURATION	This message include IE "Primary CPICH info" for FDD and Primary CCPCH info for TDD.
3			Void	
4		→	CELL UPDATE	The value "cell reselection" shall be set in IE "Cell update cause".
5		←	CELL UPDATE CONFIRM	See message content.
6		→	UTRAN MOBILITY INFORMATION CONFIRM	
7		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	

#### Specific Message Contents

##### PHYSICAL CHANNEL RECONFIGURATION (Step 3) (FDD)

Use the message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A with the following exceptions:

Information Element	Value/remark
Downlink information for each radio links - Primary CPICH info - Primary scrambling code	150

### PHYSICAL CHANNEL RECONFIGURATION (Step 3) (TDD)

Use the message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A with the following exceptions:

Information Element	Value/remark
Downlink information for each radio links - Primary CCPCH info - Cell parameters ID	4

### CELL UPDATE (Step 4)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A for FDD and Annex A for TDD with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"cell reselection"

### CELL UPDATE CONFIRM (Step 5)

Use the same message type found in clause Annex A, with the following exceptions.

Information Element	Value/Remarks
New C-RNTI	'1010 1010 1010 1010'

### UTRAN MOBILITY INFORMATION CONFIRM (Step 6)

Only the message type is checked.

#### 8.2.6.8.5 Test requirement

After step 3 the UE shall transmit a CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection".

After step 5 UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC.

After step 6 UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

#### 8.2.6.9 Physical channel reconfiguration for transition from CELL\_FACH to CELL\_DCH: Success

##### 8.2.6.9.1 Definition

##### 8.2.6.9.2 Conformance requirement

If the UE receives:

- a PHYSICAL CHANNEL RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

#### 8.2.6.9.3 Test purpose

To confirm that the UE reconfigures a new physical channel according to a PHYSICAL CHANNEL RECONFIGURATION message, which invoke UE to transit from CELL\_FACH to CELL\_DCH.

#### 8.2.6.9.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

#### Test Procedure

The UE is in CELL\_DCH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE to transit from CELL\_DCH to CELL\_FACH. The UE shall reconfigure the common physical channel correctly according to this message. To complete this procedure, the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE to invoke the UE to transit from CELL\_FACH to CELL\_DCH. The UE shall reconfigure the new dedicated physical channel correctly according to this message. To complete this procedure, the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PHYSICAL CHANNEL RECONFIGURATION	IE "Uplink DPCH Info" and IE "Downlink DPCH Info" are not specified.
2				UE shall perform the reconfiguration.
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
4		←	PHYSICAL CHANNEL RECONFIGURATION	
5				The UE shall configure the allocated dedicated physical channels.
6		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
7		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

### Specific Message Contents

#### PHYSICAL CHANNEL RECONFIGURATION (Step 1)

Use the message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A for FDD and Annex A for TDD.

#### PHYSICAL CHANNEL RECONFIGURATION (Step 4)

Use the message sub-type titled "Packet to CELL\_DCH from CELL\_FACH in PS" in Annex A.

#### 8.2.6.9.5 Test requirement

After step 2 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION message on the common physical channel.

After step 5 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION message on the new dedicated physical channel.

#### 8.2.6.10 Physical channel reconfiguration for transition from CELL\_FACH to CELL\_DCH: Failure (Unsupported configuration)

##### 8.2.6.10.1 Definition

##### 8.2.6.10.2 Conformance requirement

If the UTRAN instructs the UE to use a configuration, which it does not support and/or if the received message causes the variable UNSUPPORTED\_CONFIGURATION to be set to TRUE, the UE shall:

- 1> transmit a failure response as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;

- 2> set the IE "failure cause" to "configuration unsupported".
- 1> set the variable UNSUPPORTED\_CONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a PHYSICAL CHANNEL RECONFIGURATION message:
  - ...
  - 2> transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.6, 8.2.2.9

### 8.2.6.10.3 Test purpose

To confirm that the UE keeps its configuration and transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, if the received PHYSICAL CHANNEL RECONFIGURATION message includes unsupported configuration parameters.

### 8.2.6.10.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

## Test Procedure

The UE is in CELL\_DCH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE to invoke the UE to transit from CELL\_DCH to CELL\_FACH. The UE shall reconfigure the common physical channel correctly according to this message. To complete this procedure, the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE, which includes unsupported frequency for the UE. The UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting "configuration unsupported" in IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PHYSICAL CHANNEL RECONFIGURATION	IE "Uplink DPCH Info" and IE "Downlink DPCH Info" are not specified.
2				UE shall perform the reconfiguration
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
3a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
3b		→	MEASUREMENT REPORT	
4		←	PHYSICAL CHANNEL RECONFIGURATION	Includes unsupported frequencies for the UE
5		→	PHYSICAL CHANNEL RECONFIGURATION FAILURE	The UE shall not change the physical channel configuration, this message shall be sent using the old configuration.
6		→	MEASUREMENT REPORT	

## Specific Message Contents

### PHYSICAL CHANNEL RECONFIGURATION (Step 1)

Use the message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A.

### MEASUREMENT CONTROL (Step 3a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	RACHorCPCH
- UL Target Transport Channel ID	Not Present
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

#### MEASUREMENT REPORT (Step 3b and 6)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

#### PHYSICAL CHANNEL RECONFIGURATION (Step 4) (FDD)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info	
- UARFCN uplink (Nu)	0
- UARFCN downlink (Nd)	950

#### PHYSICAL CHANNEL RECONFIGURATION (Step 4) (TDD)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Frequency info	
- UARFCN (Nt)	0

#### PHYSICAL CHANNEL RECONFIGURATION FAILURE (Step 5)

The contents of PHYSICAL CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the PHYSICAL CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Configuration unsupported

#### 8.2.6.10.5 Test requirement

After step 2 the UE shall transit from CELL\_DCH to CELL\_FACH and transmit a PHYSICAL CHANNEL RECONFIGURATION message on the common physical channel.

After step 3a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 4 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, the IE "failure cause" shall be set to "configuration unsupported".

After step 5, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

#### 8.2.6.11 Physical channel reconfiguration for transition from CELL\_FACH to CELL\_DCH: Failure (Physical channel failure and successful reversion to old configuration)

##### 8.2.6.11.1 Definition

##### 8.2.6.11.2 Conformance requirement

When a physical dedicated channel establishment is initiated by the UE, the UE shall start a timer T312 and wait for layer 1 to indicate N312 "in sync" indications. On receiving N312 "in sync" indications, the physical channel is considered established and the timer T312 is stopped and reset.

If the timer T312 expires before the physical channel is established, the UE shall consider this as a "physical channel establishment failure".

If the received message caused the UE to be in CELL\_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

- 1> revert to the configuration prior to the reception of the message (old configuration);

...

- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "physical channel failure".
- 1> set the variable ORDERED\_RECONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a PHYSICAL CHANNEL RECONFIGURATION message:
  - ...
  - 2> transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2.7, 8.2.2.9, 8.5.4.

#### 8.2.6.11.3 Test purpose

To confirm that the UE reverts to the old configuration and transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC if the UE fails to reconfigure the new physical channel according to a PHYSICAL CHANNEL RECONFIGURATION message before the T312 expiry.

#### 8.2.6.11.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

#### Test Procedure

The UE is in CELL\_DCH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE to invoke the UE to transit from CELL\_DCH to CELL\_FACH. The UE shall reconfigure the common physical channel correctly according to this message. To complete this procedure, the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE to invoke the UE to transit from CELL\_FACH to CELL\_DCH. However, the SS keeps its current physical channel configuration and then the UE cannot synchronise with the SS. After T312 expires, the UE attempt to revert to the old configuration. Then the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC which is set "physical channel failure" in IE "failure cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PHYSICAL CHANNEL RECONFIGURATION	IE "Uplink DPCH Info" and IE "Downlink DPCH Info" are not specified.
2				UE shall perform the reconfiguration
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
3a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
3b		→	MEASUREMENT REPORT	
4		←	PHYSICAL CHANNEL RECONFIGURATION	
5				The SS does not reconfigure the physical channel, hence the UE shall detect a failure to reconfigure to the new physical channel.
6		→	PHYSICAL CHANNEL RECONFIGURATION FAILURE	After T312 expires the UE reverts to the old configuration and transmits this message.
7		→	MEASUREMENT REPORT	

Specific Message Contents

#### PHYSICAL CHANNEL RECONFIGURATION (Step 1)

Use the message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A for FDD and Annex A for TDD.

#### MEASUREMENT CONTROL (Step 3a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	RACHorCPCH
- UL Target Transport Channel ID	Not Present
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

## MEASUREMENT REPORT (Step 3b and 7)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

## PHYSICAL CHANNEL RECONFIGURATION (Step 4)

Use the message sub-type titled "Packet to CELL\_DCH from CELL\_FACH in PS" in Annex A for FDD and Annex A for TDD..

## PHYSICAL CHANNEL RECONFIGURATION FAILURE (Step 6)

The contents of PHYSICAL CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the PHYSICAL CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Physical channel failure

## 8.2.6.11.5 Test requirement

After step 2 the UE shall transit from CELL\_DCH to CELL\_FACH and transmit a PHYSICAL CHANNEL RECONFIGURATION message on the common physical channel.

After step 3a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 5 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, specifying "physical channel failure" in IE "failure cause".

After step 6, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

## 8.2.6.12 Physical channel reconfiguration for transition from CELL\_FACH to CELL\_DCH: Failure (Physical channel failure and cell re-selection)

### 8.2.6.12.1 Definition

### 8.2.6.12.2 Conformance requirement

When a physical dedicated channel establishment is initiated by the UE, the UE shall start a timer T312 and wait for layer 1 to indicate N312 "in sync" indications. On receiving N312 "in sync" indications, the physical channel is considered established and the timer T312 is stopped and reset.

If the timer T312 expires before the physical channel is established, the UE shall consider this as a "physical channel establishment failure".

If the received message caused the UE to be in CELL\_DCH state and the UE failed to establish the dedicated physical channel(s) indicated in the received message the UE shall:

1> revert to the configuration prior to the reception of the message (old configuration);

...

1> if the old configuration does not include dedicated physical channels (CELL\_FACH state):

2> select a suitable UTRA cell according to TS 25.304;

2> if the UE selects another cell than the cell the UE camped on upon reception of the reconfiguration message:

3> initiate a cell update procedure according to TS 25.331 subclause 8.3.1, using the cause "Cell reselection";

3> after the cell update procedure has completed successfully:

4> proceed as below.

1> transmit a failure response message as specified in TS 25.304 subclause 8.2.2.9, setting the information elements as specified below:

2> include the IE "RRC transaction identifier"; and

2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and

2> clear that entry;

2> set the IE "failure cause" to "physical channel failure".

1> set the variable ORDERED\_RECONFIGURATION to FALSE;

1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- does not include "CN information elements"; and
- does not include the IE "Ciphering mode info"; and
- does not include the IE "Integrity protection mode info"; and

- does not include the IE "New C-RNTI"; and
- does not include the IE "New U-RNTI";

the UE shall:

- 1> transmit no response message.

The UE shall:

- 1> in case of reception of a PHYSICAL CHANNEL RECONFIGURATION message:

...

- 2> transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.7, 8.2.2.9, 8.3.1.7, 8.5.4

### 8.2.6.12.3 Test purpose

To confirm that the UE initiates a cell update procedure after it fails to reconfigure the new physical channel and selects another cell.

To confirm that UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message after UE completes cell update procedure.

### 8.2.6.12.4 Method of test

#### Initial Condition

System Simulator: 2 cells - Cell 1 and 2 are active.

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108 in cell 1

#### Test Procedure

**Table 8.2.6.12**

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH Ec (FDD)	dBm/3.84 MHz	-60	-75	-75	-60
P-CCPCH RSCP (TDD)	dBm	-60	-75	-75	-60

Table 8.2.6.12 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings between columns "T0" and "T1", whenever the description in multi-cell condition specifies a reverse in the transmission power settings for cell 1 and cell 2.

The UE is in CELL\_DCH state in cell 1. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE to invoke the UE to transit from CELL\_DCH to CELL\_FACH. The UE shall reconfigure the common physical channel correctly according to this message. To complete this procedure, the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC. The SS transmits a PHYSICAL

CHANNEL RECONFIGURATION message to the UE, but the SS does not reconfigure L1 accordingly. The SS configures its downlink transmission power settings according to columns "T1" in table 8.2.6.12. As a result, the UE fails to synchronise on the new physical channel before timer T312 expires and reselect cell 2 and then the UE shall transmit a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "Cell reselection". The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving a CELL UPDATE message. The UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to "physical channel failure".

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PHYSICAL CHANNEL RECONFIGURATION	IE "Uplink DPCH Info" and IE "Downlink DPCH Info" are not specified.
2				UE shall perform the reconfiguration
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
4		←	PHYSICAL CHANNEL RECONFIGURATION	
5				The SS does not configure the new dedicated physical channel in accordance with the settings in the message and applies the downlink transmission power settings, according to the values in columns "T1" of table 8.2.6.12.
6			Void	
7		→	CELL UPDATE	This message includes the value "cell reselection" set in IE "Cell update cause".
8		←	CELL UPDATE CONFIRM	
9			Void	
10		→	PHYSICAL CHANNEL RECONGURATION FAILURE	UE shall transmit this message in the cell 2.

#### Specific Message Contents

##### PHYSICAL CHANNEL RECONFIGURATION (Step 1)

Use the message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A for FDD and Annex A for TDD.

##### PHYSICAL CHANNEL RECONFIGURATION (Step 4)

Use the message sub-type titled "Packet to CELL\_DCH from CELL\_FACH in PS" in Annex A for FDD and Annex A for TDD.

##### CELL UPDATE (Step 7)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A for FDD and Annex A for TDD with the following exceptions:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Assigned previously in cell 1
- S-RNTI	Assigned previously in cell 1
Cell Update Cause	"cell reselection"

## CELL UPDATE CONFIRM (Step 8)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex A.

## PHYSICAL CHANNEL RECONGURATION FAILURE (Step 10)

The contents of PHYSICAL CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the PHYSICAL CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	"physical channel failure"

## 8.2.6.12.5 Test requirement

After step 2 the UE shall transit from CELL\_DCH to CELL\_FACH and transmit a PHYSICAL CHANNEL RECONFIGURATION message on the common physical channel.

After step 6 the UE shall transmit a CELL UPDATE message using RLC-TM mode on the uplink CCCH with IE "Cell update cause" set to "cell reselection" in cell 2.

After step 9 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the IE "failure cause" to "physical channel failure".

## 8.2.6.13 Physical channel reconfiguration for transition from CELL\_FACH to CELL\_DCH: Failure (Incompatible simultaneous reconfiguration)

## 8.2.6.13.1 Definition

## 8.2.6.13.2 Conformance requirement

If the received message is any of the messages:

- PHYSICAL CHANNEL RECONFIGURATION; or

...

the UE shall:

- 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or

...

- 3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:

...

- 3> else:

- 4> reject the transaction; and

- 4> if the IE "Message Type" of the received message is not present in the table "Rejected transactions" in the variable TRANSACTIONS:

- 5> store the IE "Message type" and the IE "RRC transaction identifier" of the received message in the table "Rejected transactions" in the variable TRANSACTIONS.

...

If the table "Rejected transactions" in the variable TRANSACTIONS is set due to the received message and the variable PROTOCOL\_ERROR\_REJECT is set to FALSE, the UE shall:

- 1> not apply the configuration contained in the received reconfiguration message;
- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable TRANSACTIONS; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to "incompatible simultaneous reconfiguration".
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a PHYSICAL CHANNEL RECONFIGURATION message:
  - ...
  - 2> transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clauses 8.2.2.9, 8.2.2.12, 8.6.3.11.

### 8.2.6.13.3 Test purpose

To confirm that if the UE receives a PHYSICAL CHANNEL RECONFIGURATION message during a reconfiguring procedure due to a radio bearer message other than a PHYSICAL CHANNEL RECONFIGURATION, it shall keep its configuration as if the PHYSICAL CHANNEL RECONFIGURATION message had not been received and complete the reconfiguration procedure according to the previously received message.

### 8.2.6.13.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

#### Test Procedure

The UE is in CELL\_DCH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE to invoke the UE to transit from CELL\_DCH to CELL\_FACH. The UE shall reconfigure the common physical channel correctly according to this message. To complete this procedure, the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC. The SS transmits a RADIO BEARER RECONFIGURATION message to the UE. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message before the "activation time" indicated in the RADIO BEARER RECONFIGURATION message expires. When the UE receives the PHYSICAL CHANNEL RECONFIGURATION message, the UE shall keep its configuration as if it had not received the PHYSICAL CHANNEL RECONFIGURATION message and shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "incompatible simultaneous reconfiguration". After the UE transmits the PHYSICAL CHANNEL RECONFIGURATION FAILURE message, the UE reconfigures the new physical channel parameters upon the activation time and transmits a RADIO BEARER RECONFIGURATION COMPLETE message on DCCH using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PHYSICAL CHANNEL RECONFIGURATION	IE "Uplink DPCH Info" and IE "Downlink DPCH Info" are not specified.
2				UE shall perform the reconfiguration
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	The UE enters CELL_FACH state.
4		←	RADIO BEARER RECONFIGURATION	
5		←	PHYSICAL CHANNEL RECONFIGURATION	Sent before the elapse of the frame number specified in IE "Activation time" of the message dispatched in step 4.
6		→	PHYSICAL CHANNEL RECONFIGURATION FAILURE	The UE does not change the configuration due to the reception of PHYSICAL CHANNEL RECONFIGURATION message.
7		→	RADIO BEARER RECONFIGURATION COMPLETE	This message is on DCCH using AM RLC.
8		←→	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

Specific Message Contents

#### PHYSICAL CHANNEL RECONFIGURATION (Step 1)

Use the message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A.

#### RADIO BEARER RECONFIGURATION (Step 4) (FDD)

For RADIO BEARER RECONFIGURATION in step 1, use the message sub-type indicated as "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time Info	Current CFN-[current CFN mod 8 + 8 ]
Uplink DPCH info - Scrambling code number	1

#### RADIO BEARER RECONFIGURATION (Step 4) (TDD)

For RADIO BEARER RECONFIGURATION in step 1, use the message sub-type indicated as "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions

Information Element	Value/remark
Activation Time - Uplink DPCH timeslots and codes	Current CFN-[current CFN mod 8 + 8 ]
- First timeslot code list	Assigned by SS

#### PHYSICAL CHANNEL RECONFIGURATION (Step 5) (FDD)

For PHYSICAL CHANNEL RECONFIGURATION in step 5, use the message sub-type indicated as "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time Info	Not Present
Uplink DPCH info - Scrambling code number	2

### PHYSICAL CHANNEL RECONFIGURATION (Step 5) (TDD)

For PHYSICAL CHANNEL RECONFIGURATION in step 5, use the message sub-type indicated as "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
Activation Time	Not present
- Uplink DPCH timeslots and codes - First timeslot code list	Different as assigned previously

### PHYSICAL CHANNEL RECONFIGURATION FAILURE (Step 6)

The contents of PHYSICAL CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the PHYSICAL CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Incompatible simultaneous reconfiguration

#### 8.2.6.13.5 Test requirement

After step 2 the UE shall transit from CELL\_DCH to CELL\_FACH and transmit a PHYSICAL CHANNEL RECONFIGURATION message on the common physical channel.

After step 5 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC with IE "failure cause" set to "Incompatible simultaneous reconfiguration".

After step 6 the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

#### 8.2.6.14 Physical channel reconfiguration for transition from CELL\_FACH to CELL\_DCH: Failure (Invalid message reception and Invalid configuration)

##### 8.2.6.14.1 Definition

##### 8.2.6.14.2 Conformance requirement

If the received reconfiguration message contains a protocol error causing the variable `PROTOCOL_ERROR_REJECT` to be set to `TRUE` according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
  - 2> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Rejected transactions" in the variable `TRANSACTIONS`; and
  - 2> clear that entry;
  - 2> set the IE "failure cause" to the cause value "protocol error";

- 2> include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL\_ERROR\_INFORMATION.

If the variable INVALID\_CONFIGURATION is set to TRUE the UE shall:

- 1> keep the configuration existing before the reception of the message;
- 1> transmit a failure response message as specified in TS 25.331 subclause 8.2.2.9, setting the information elements as specified below:
  - 2> include the IE "RRC transaction identifier"; and
    - 3> set it to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
    - 3> clear that entry.
  - 2> set the IE "failure cause" to "invalid configuration".
- 1> set the variable INVALID\_CONFIGURATION to FALSE;
- 1> continue with any ongoing processes and procedures as if the reconfiguration message was not received.

The UE shall:

- 1> in case of reception of a PHYSICAL CHANNEL RECONFIGURATION message:
  - ...
  - 2> transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE as response message on the DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.13, 8.2.2.11, 8.2.2.9

### 8.2.6.14.3 Test purpose

To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC if the received message does not include any IEs except IE "Message Type".

To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC if it receives a PHYSICAL CHANNEL RECONFIGURATION message including some IEs which are set to give an invalid configuration.

### 8.2.6.14.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

#### Test Procedure

The UE is in CELL\_DCH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE to invoke the UE to transit from CELL\_DCH to CELL\_FACH. The UE shall reconfigure the common physical channel correctly according to this message. To complete this procedure, the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. The SS transmits an invalid PHYSICAL CHANNEL

RECONFIGURATION message to the UE which contains an unexpected critical message extension. The UE keeps the old configuration and transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting "protocol error" in IE "failure cause" and also setting "Message extension not comprehended" in IE "Protocol error cause". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically. SS transmits PHYSICAL CHANNEL RECONFIGURATION message including some IEs which are set to give an invalid configuration. The UE keeps current configuration and transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to "invalid configuration". UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PHYSICAL CHANNEL RECONFIGURATION	IE "Uplink DPCH Info" and IE "Downlink DPCH Info" are not specified.
2				UE shall perform the reconfiguration
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	The UE enters CELL_FACH state.
3a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
3b		→	MEASUREMENT REPORT	
4		←	PHYSICAL CHANNEL RECONFIGURATION	See specific message content.
5		→	PHYSICAL CHANNEL RECONFIGURATION FAILURE	The UE does not change the configuration.
5a		→	MEASUREMENT REPORT	
6		←	PHYSICAL CHANNEL RECONFIGURATION	This message includes IEs which are set to give an invalid configuration.
7				The UE does not change the configuration
8		→	PHYSICAL CHANNEL RECONFIGURATION FAILURE	The IE "failure cause" shall be set to "invalid configuration"
9		→	MEASUREMENT REPORT	

#### Specific Message Contents

##### PHYSICAL CHANNEL RECONFIGURATION (Step 1)

Use the message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A for FDD and Annex A for TDD.

##### MEASUREMENT CONTROL (Step 3a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	Acknowledged mode RLC
- Measurement Report Transfer Mode	Periodical Reporting
- Periodical Reporting / Event Trigger Reporting Mode	
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	RACHorCPCH
- UL Target Transport Channel ID	Not Present
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

#### MEASUREMENT REPORT (Step 3b, 5a and 9)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

#### PHYSICAL CHANNEL RECONFIGURATION (Step 4)

Use the PHYSICAL CHANNEL RECONFIGURATION message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Critical extensions	'01'H

## PHYSICAL CHANNEL RECONFIGURATION FAILURE (Step 5)

The contents of PHYSICAL CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the PHYSICAL CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	
- Failure cause	Protocol error
- Protocol error information	
- Protocol error cause	Message extension not comprehended

## PHYSICAL CHANNEL RECONFIGURATION (Step 6) (FDD)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
- Default DPCH Offset Value	512
- DPCH frame offset	1024

## PHYSICAL CHANNEL RECONFIGURATION (Step 6) (TDD)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
-PRACH TFCS	Present

## PHYSICAL CHANNEL RECONFIGURATION FAILURE (Step 7)

The contents of PHYSICAL CHANNEL RECONFIGURATION FAILURE message in this test case is the same as the PHYSICAL CHANNEL RECONFIGURATION FAILURE message as found in Annex A, with the following exceptions:

Information Element	Value/remark
Failure cause	Invalid configuration

## 8.2.6.14.5 Test requirement

After step 2 the UE shall transit from CELL\_DCH to CELL\_FACH and transmit a PHYSICAL CHANNEL RECONFIGURATION message on the common physical channel.

After step 3a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 4 the UE shall keep its old configuration, transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC with "protocol error" in IE "failure cause" and also "Message extension not comprehended" in IE "Protocol error cause".

After step 5, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 7 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting IE "failure cause" to "invalid configuration".

After step 8, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

8.2.6.15 Void

8.2.6.16 Physical channel reconfiguration for transition from CELL\_FACH to CELL\_FACH: (Cell re-selection)

8.2.6.16.1 Definition

8.2.6.16.2 Conformance requirement

If the UE was in CELL\_FACH state upon reception of the reconfiguration message and remains in CELL\_FACH state, the UE shall:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency;
  - 2> if the received reconfiguration message included the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD), and the UE selected another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD):
    - 3> initiate a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "cell reselection";
    - 3> when the cell update procedure completed successfully:
      - 4> proceed as below.

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- includes "CN information elements"; or
- includes the IE "Ciphering mode info"; or
- includes the IE "Integrity protection mode info"; or
- includes the IE "New C-RNTI"; or
- includes the IE "New U-RNTI";

the UE shall:

- 1> transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4, 8.3.1.7

## 8.2.6.16.3 Test purpose

To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message after the UE completes a cell update procedure indicated by a PHYSICAL CHANNEL RECONFIGURATION message.

## 8.2.6.16.4 Method of test

## Initial Condition

System Simulator: 2 cells - Cell 1 and 2 are active.

UE: PS-DCCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

## Test Procedure

**Table 8.2.6.16**

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH Ec (FDD)	dBm/ 3.84 MHz	-60	-75	-75	-60
P-CCPCH RSCP (TDD)	dBm	-60	-75	-75	-60

Table 8.2.6.16 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings between columns "T0" and "T1", whenever the description in multi-cell condition specifies a reverse in the transmission power settings for cell 1 and cell 2.

The UE is in CELL\_FACH state in cell 1. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message, which does not include the IE "Primary CPICH info". When receiving the PHYSICAL CHANNEL RECONFIGURATION COMPLETE message sent by the UE on the uplink DCCH using AM RLC, the SS will not acknowledge the concerning RLC PDUs and configures its downlink transmission power settings according to columns "T1" in table 8.2.6.16. The UE shall initiate the cell update procedure and transmits a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection" in cell 2. The SS shall transmit a CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmits a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC and re-transmit the PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PHYSICAL CHANNEL RECONFIGURATION	This message does not include IE "Primary CPICH info" (FDD).
2		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	The SS shall not acknowledge the received RLC PDU's and configure the transmission power settings, according to the values in columns "T1" of table 8.2.6.16.
3			Void	
4		→	CELL UPDATE	The value "cell reselection" shall be set in IE "Cell update cause".
5		←	CELL UPDATE CONFIRM	
6		→	UTRAN MOBILITY INFORMATION CONFIRM	
7		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	

### Specific Message Contents

#### PHYSICAL CHANNEL RECONFIGURATION (Step 1) (FDD)

Use the message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in Annex A.

#### PHYSICAL CHANNEL RECONFIGURATION (Step 1) (TDD)

Use the message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in Annex A.

#### CELL UPDATE (Step 4)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in Annex A for FDD and Annex A for TDD with the following exceptions:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Assigned previously in cell 1
- S-RNTI	Assigned previously in cell 1
Cell Update Cause	"cell reselection"

#### CELL UPDATE CONFIRM (Step 5)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in Annex A for FDD and Annex A for TDD. with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 4
New U-RNTI	
- SRNC Identity	'0000 0000 0000 0001'
- S-RNTI	Different from previous S-RNTI
New C-RNTI	Different from previous C-RNTI

#### 8.2.6.16.5 Test requirement

After step 3 the UE shall transmit a CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection" in cell 2.

After step 5 the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 6 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCCH using AM RLC.

### 8.2.6.17 Physical channel reconfiguration for transition from CELL\_DCH to CELL\_DCH (code modification): Success (Subsequently received)

#### 8.2.6.17.1 Definition

#### 8.2.6.17.2 Conformance requirement

If the IE "RRC transaction identifier" is included in a received message, the UE shall perform the actions below. The UE shall:

If the received message is any of the messages:

- PHYSICAL CHANNEL RECONFIGURATION; or

...

the UE shall:

- 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or
- 2> if the variable CELL\_UPDATE\_STARTED is set to TRUE; or
- 2> if the table "Accepted transactions" in the variable TRANSACTIONS contains an entry with an IE "Message Type" set to ACTIVE SET UPDATE; or
- 2> if the received message contains a protocol error according to TS 25.331 clause 9 causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE:
  - 3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable TRANSACTIONS:
    - 4> ignore the transaction; and
    - 4> continue with any ongoing processes and procedures as the message was not received;
    - 4> and end the procedure.
  - 3> else:

...

#### Reference

3GPP TS 25.331 clause 8.6.3.11.

#### 8.2.6.17.3 Test purpose

To confirm that if the UE receives a PHYSICAL CHANNEL RECONFIGURATION message before the UE reconfigures the radio bearer according to the previous PHYSICAL CHANNEL RECONFIGURATION message it ignores the new PHYSICAL CHANNEL RECONFIGURATION message and reconfigures according to the previous PHYSICAL CHANNEL RECONFIGURATION message.

#### 8.2.6.17.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

### Test Procedure

The UE is in the CELL\_DCH state. When the SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE before the activation time specified in the previous PHYSICAL CHANNEL RECONFIGURATION message elapses, the UE ignores the new PHYSICAL CHANNEL RECONFIGURATION message and reconfigures according to the previous PHYSICAL CHANNEL RECONFIGURATION message received. Finally, the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PHYSICAL CHANNEL RECONFIGURATION	For FDD mode the "Secondary scrambling code is set to "1". For TDD mode a code combination is assigned by SS.
2		←	PHYSICAL CHANNEL RECONFIGURATION	SS send this message before the expiry of "activation time" specified in PHYSICAL CHANNEL RECONFIGURATION message of step 1. For FDD, the IE "Secondary scrambling code" is set to "2". For TDD, the code combination assigned is different to that assigned in stage 1.
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	The UE ignores the PHYSICAL CHANNEL RECONFIGURATION message in step 2 and confirms configuration according to the PHYSICAL CHANNEL RECONFIGURATION message in step 1.
4		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

### Specific Message Contents

#### PHYSICAL CHANNEL RECONFIGURATION (Step 1) (FDD)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A for FDD and Annex A for TDD with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time Info - Uplink DPCH info - Scrambling code number	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256 1

#### PHYSICAL CHANNEL RECONFIGURATION (Step 1) (TDD)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH timeslots and codes - First timeslot code list	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256  Assigned in step 1

### PHYSICAL CHANNEL RECONFIGURATION (Step 2) (FDD)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH info - Scrambling code number	Not Present  2

### PHYSICAL CHANNEL RECONFIGURATION (Step2) (TDD)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_DCH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH timeslots and codes - First timeslot code list	Not Present  A different code combination to that used in step 1.

#### 8.2.6.17.5 Test requirement

After step 2 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

#### 8.2.6.18 Physical channel reconfiguration for transition from CELL\_FACH to CELL\_DCH: Success (Subsequently received)

##### 8.2.6.18.1 Definition

##### 8.2.6.18.2 Conformance requirement

If the IE "RRC transaction identifier" is included in a received message, the UE shall perform the actions below. The UE shall:

If the received message is any of the messages:

- PHYSICAL CHANNEL RECONFIGURATION; or

...

the UE shall:

- 2> if the variable ORDERED\_RECONFIGURATION is set to TRUE; or
- 2> if the variable CELL\_UPDATE\_STARTED is set to TRUE; or
- 2> if the table "Accepted transactions" in the variable TRANSACTIONS contains an entry with an IE "Message Type" set to ACTIVE SET UPDATE; or

- 2> if the received message contains a protocol error according to TS 25.331 clause 9 causing the variable `PROTOCOL_ERROR_REJECT` to be set to `TRUE`:
- 3> if the IE "RRC transaction identifier" of the received message is identical to the "RRC transaction identifier" stored for the same "Message Type" as the received message in the table "Accepted transactions" in the variable `TRANSACTIONS`:
  - 4> ignore the transaction; and
  - 4> continue with any ongoing processes and procedures as the message was not received;
  - 4> and end the procedure.
- 3> else:

## Reference

3GPP TS 25.331 clause 8.6.3.11.

### 8.2.6.18.3 Test purpose

To confirm that if the UE receives a `PHYSICAL CHANNEL RECONFIGURATION` message before the UE reconfigures the radio bearer according to the previous `PHYSICAL CHANNEL RECONFIGURATION` message it ignores the new `PHYSICAL CHANNEL RECONFIGURATION` message and reconfigures according to the previous `PHYSICAL CHANNEL RECONFIGURATION` message.

### 8.2.6.18.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

#### Test Procedure

The UE is in `CELL_DCH` state. The SS transmits a `PHYSICAL CHANNEL RECONFIGURATION` message to the UE to invoke the UE to transit from `CELL_DCH` to `CELL_FACH`. The UE shall reconfigure the common physical channel correctly according to this message. To complete this procedure, the UE shall transmit a `PHYSICAL CHANNEL RECONFIGURATION COMPLETE` message using AM RLC. When the SS transmits a `PHYSICAL CHANNEL RECONFIGURATION` message to the UE before the activation time specified in the previous `PHYSICAL CHANNEL RECONFIGURATION` message, the UE ignores the new `PHYSICAL CHANNEL RECONFIGURATION` message and reconfigures according to the previous `PHYSICAL CHANNEL RECONFIGURATION` message received. Finally, the UE shall transmit a `PHYSICAL CHANNEL RECONFIGURATION COMPLETE` message on the DCCH using AM RLC. SS calls for generic procedure C.3 to check that UE is in `CELL_DCH` state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PHYSICAL CHANNEL RECONFIGURATION	IE "Uplink DPCH Info" and IE "Downlink DPCH Info" are not specified.
2				UE shall perform the reconfiguration
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	The UE enters CELL_FACH state.
4		←	PHYSICAL CHANNEL RECONFIGURATION	The "Secondary scrambling code" is set to "1" for FDD mode and A code combination is assigned by SS for TDD
5		←	PHYSICAL CHANNEL RECONFIGURATION	SS send this message before the expiry of "activation time" specified in PHYSICAL CHANNEL RECONFIGURATION message of step 4. For FDD the IE "Secondary scrambling code" is set to "2". For TDD, the code combination assigned is different from that assigned in stage 4.
6		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	The UE ignores the PHYSICAL CHANNEL RECONFIGURATION message in step 5 and confirms configuration according to the PHYSICAL CHANNEL RECONFIGURATION message in step 4.
7		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

### Specific Message Contents

#### PHYSICAL CHANNEL RECONFIGURATION (Step 1)

Use the message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A.

#### PHYSICAL CHANNEL RECONFIGURATION (Step 4) (FDD)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A for FDD and Annex A for TDD with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time Info - Uplink DPCH info - Scrambling code number	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256 1

#### PHYSICAL CHANNEL RECONFIGURATION (Step 4) (TDD)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" as found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH timeslots and codes - First timeslot code list	[256+Current CFN-[current CFN mod 8 + 8 ]]MOD 256  Assigned in step 1

#### PHYSICAL CHANNEL RECONFIGURATION (Step 5) (FDD)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH info - Scrambling code number	Not Present  2

#### PHYSICAL CHANNEL RECONFIGURATION (Step 5) (TDD)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_FACH in PS" found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Activation Time - Uplink DPCH timeslots and codes - First timeslot code list	Not Present  A different code combination to that used in step 1.

#### 8.2.6.18.5 Test requirement

After step 2 the UE shall transit from CELL\_DCH to CELL\_FACH and transmit a PHYSICAL CHANNEL RECONFIGURATION message on the common physical channel.

After step 5 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

#### 8.2.6.19 Physical Channel Reconfiguration from CELL\_DCH to CELL\_PCH: Success

##### 8.2.6.19.1 Definition

##### 8.2.6.19.2 Conformance requirement

If the UE receives:

- a PHYSICAL CHANNEL RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
    - 2> select a suitable UTRA cell according to TS 25.304 on that frequency.
  - 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
  - 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
    - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS 25.331 subclause 8.6.3.2.
  - 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
    - 2> set the variable INVALID\_CONFIGURATION to TRUE.
- ...

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

### 8.2.6.19.3 Test purpose

To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message and enter CELL\_PCH state after it received a PHYSICAL CHANNEL RECONFIGURATION message, which invokes the UE to transit from CELL\_DCH to CELL\_PCH.

### 8.2.6.19.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

#### Test Procedure

The UE is in CELL\_DCH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message, which invokes the UE to transit from CELL\_DCH to CELL\_PCH. The UE transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC and enters CELL\_PCH state. SS calls for generic procedure C.4 to check that UE is in CELL\_PCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PHYSICAL CHANNEL RECONFIGURATION	
2		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
3				The UE is in CELL_PCH state.
4		↔	CALL C.4	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

Specific Message Contents

#### PHYSICAL CHANNEL RECONFIGURATION (Step 1) (FDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A with following exceptions:

Information Element	Value/remark
New C-RNTI	Not Present
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3
Downlink information for each radio link - Primary CPICH info - Primary scrambling code	100

#### PHYSICAL CHANNEL RECONFIGURATION (Step 1) (TDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A with following exceptions:

Information Element	Value/remark
New C-RNTI	Not Present
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3
Downlink information for each radio links - Primary CCPCH info -Cell parameters ID	4

#### 8.2.6.19.5 Test requirement

After step 1 the UE shall transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

#### 8.2.6.20 Physical Channel Reconfiguration from CELL\_DCH to URA\_PCH: Success

##### 8.2.6.20.1 Definition

##### 8.2.6.20.2 Conformance requirement

If the UE receives:

- a PHYSICAL CHANNEL RECONFIGURATION message; or

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;

- 1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS 25.331 subclause 8.6.3.3.

If after state transition the UE enters URA\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS 25.304 on that frequency.
- 1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS 25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.

...

The UE shall transmit a response message as specified in TS 25.331 subclause 8.2.2.4, setting the information elements as specified below. The UE shall:

- 1> set the IE "RRC transaction identifier" to the value of "RRC transaction identifier" in the entry for the received message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

## Reference

3GPP TS 25.331 clause 8.2.2.3, 8.2.2.4.

### 8.2.6.20.3 Test purpose

To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message and enter URA\_PCH state after it received a PHYSICAL CHANNEL RECONFIGURATION message, which invokes the UE to transit from CELL\_DCH to URA\_PCH.

### 8.2.6.20.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

#### Test Procedure

The UE is in the CELL\_DCH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message, which invoke the UE to transit from CELL\_DCH to URA\_PCH. The UE transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC and enters URA\_PCH state. SS calls for generic procedure C.5 to check that UE is in URA\_PCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PHYSICAL CHANNEL RECONFIGURATION	
2		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
3				The UE is in URA_PCH state.
4		←→	CALL C.5	If the test result of C.5 indicates that UE is in URA_PCH state, the test passes, otherwise it fails.

Specific Message Contents

#### PHYSICAL CHANNEL RECONFIGURATION (Step 1) (FDD)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in Annex A with following exceptions:

Information Element	Value/remark
New C-RNTI	Not Present
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3
URA Identity	0000 0000 0000 0001B

#### PHYSICAL CHANNEL RECONFIGURATION (Step 1) (TDD)

Information Element	Value/remark
New C-RNTI	Not Present
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3
URA Identity	0000 0000 0000 0001B

#### 8.2.6.20.5 Test requirement

After step 1 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC.

#### 8.2.6.21 Physical Channel Reconfiguration from CELL\_FACH to URA\_PCH: Success

##### 8.2.6.21.1 Definition

##### 8.2.6.21.2 Conformance requirement

- In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:
  - transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC;
- If the new state is CELL\_PCH or URA\_PCH, the response message shall be transmitted using the old configuration before the state transition, but the new C-RNTI shall be used if the IE "New C-RNTI" was included in the received reconfiguration message, and the UE shall:
  - when RLC has confirmed the successful transmission of the response message:
    - for each radio bearer in the variable PDCP\_SN\_INFO:
      - if the IE "RB started" in the variable ESTABLISHED\_RABS is set to "started":

- configure the RLC entity for that radio bearer to "continue";
- enter the new state (CELL\_PCH or URA\_PCH, respectively);

#### Reference

3GPP TS 25.331 clause 8.2.2.4

#### 8.2.6.21.3 Test purpose

1. To verify that the UE, when receiving a PHYSICAL CHANNEL RECONFIGURATION message, responds by transmitting a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.
2. To verify that the response message is transmitted using the old configuration before the state transition, and that the UE enters the URA\_PCH state.

#### 8.2.6.21.4 Method of test

##### Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

##### Test Procedure

The UE is in the CELL\_FACH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message. The UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to the SS using AM RLC and enters into URA\_PCH state. SS calls for generic procedure C.5 to check that UE is in URA\_PCH state.

##### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PHYSICAL CHANNEL RECONFIGURATION	
2		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	The UE sends this message before start state transition.
3				Reconfiguration of Physical Channel after state transition.
4		↔	CALL C.5	If the test result of C.5 indicates that UE is in URA_PCH state, the test passes, otherwise it fails.

##### Specific Message Contents

##### PHYSICAL CHANNEL RECONFIGURATION (Step 1)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in Annex A with following exceptions:

Information Element	Value/remark
New C-RNTI	Not Present
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3
Downlink information for each radio link	Not Present

#### 8.2.6.21.5 Test requirement

1. After step 1 the UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to the UE on uplink DCCH using AM RLC.

### 8.2.6.22 Physical Channel Reconfiguration from CELL\_FACH to CELL\_PCH: Success

#### 8.2.6.22.1 Definition

#### 8.2.6.22.2 Conformance requirement

1. In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:
  - transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC;
2. If the new state is CELL\_PCH or URA\_PCH, the response message shall be transmitted using the old configuration before the state transition, but the new C-RNTI shall be used if the IE "New C-RNTI" was included in the received reconfiguration message, and the UE shall:
  - when RLC has confirmed the successful transmission of the response message:
    - for each radio bearer in the variable PDCP\_SN\_INFO:
      - if the IE "RB started" in the variable ESTABLISHED\_RABS is set to "started":
        - configure the RLC entity for that radio bearer to "continue";
      - enter the new state (CELL\_PCH or URA\_PCH, respectively);

#### Reference

3GPP TS 25.331 clause 8.2.2.4

#### 8.2.6.22.3 Test purpose

1. To verify that the UE, when receiving a PHYSICAL CHANNEL RECONFIGURATION message, responds by transmitting a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.
2. To verify that the response message is transmitted using the old configuration before the state transition, and that the UE enters the CELL\_PCH state.

#### 8.2.6.22.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH(state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in the CELL\_FACH state. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message. The UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to the SS using AM RLC and enters into CELL\_PCH state. SS calls for generic procedure C.4 to check that UE is in CELL\_PCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PHYSICAL CHANNEL RECONFIGURATION	
2		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	The UE sends this message before start state transition.
3				Reconfiguration of Physical Channel after state transition.
4		↔	CALL C.4	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

Specific Message Contents

#### PHYSICAL CHANNEL RECONFIGURATION (Step 1)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in Annex A with following exceptions:

Information Element	Value/remark
New C-RNTI	Not Present
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3
Downlink information for each radio link	Not Present

#### 8.2.6.22.5 Test requirement

1. After step 1 the UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to the UE on uplink DCCH using AM RLC.

#### 8.2.6.23 Physical channel reconfiguration for transition from CELL\_DCH to CELL\_DCH (Hard handover to another frequency with timing maintain): Success

##### 8.2.6.23.1 Definition

##### 8.2.6.23.2 Conformance requirement

If the UE receives:

- a PHYSICAL CHANNEL RECONFIGURATION message:

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS25.214;
- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS25.331 subclause 8.6.3.3.

If the UE was in CELL\_DCH state upon reception of the reconfiguration message and remains in CELL\_DCH state, the UE shall:

- 1> if the IE "Uplink DPCH Info" is absent, not change its current UL Physical channel configuration;

- 1> if the IE "Downlink information for each radio link" is absent, not change its current DL Physical channel configuration.

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.
- 1> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

### 8.2.6.23.3 Test purpose

To confirm that the UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC, on a dedicated physical channel in a different frequency band.

### 8.2.6.23.4 Method of test

## Initial Condition

System Simulator: 2 cells–Cells 1 is active and cell 6 is inactive.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending to the CN domain(s) supported by the UE.

## Test Procedure

**Table 8.2.6.23**

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-55	Off	-55

Table 8.2.6.23 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in CELL\_DCH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.6.23. The SS switches its downlink transmission power settings to columns "T1" and transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE, which includes new frequency information and IE "Timing indicator" set to maintain. The UE shall reconfigure the physical channel parameters according to PHYSICAL CHANNEL RECONFIGURATION message and establish a radio link with the SS using a dedicated physical channel in cell 6. The UE then transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message in cell 6 on the uplink DCCH AM RLC after its transition. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The initial state of UE is in CELL_DCH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.6.23.
2				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.6.23.
3		←	PHYSICAL CHANNEL RECONFIGURATION	Including new frequency information. IE "Timing indicator" is set to maintain.
4				The UE remains in CELL_DCH state after connecting to the SS on a dedicated physical channel in cell 6.
5		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	The UE transmits this message in cell 6.
6		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

Specific Message Contents

#### PHYSICAL CHANNEL RECONFIGURATION (Step 3)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type titled as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8 ]
Uplink DPCH info	
- Scrambling code number	1
Frequency info	
- UARFCN uplink(Nu)	Same uplink UARFCN as used for cell 6
- UARFCN downlink(Nd)	Same downlink UARFCN as used for cell 6
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	
- Timing Indicator	Maintain
Downlink information for each radio links	
- Primary CPICH info	
- Primary Scrambling Code	350

#### 8.2.6.23.5 Test requirement

After step 4 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC in cell 6.

## 8.2.6.24 Physical channel reconfiguration for transition from CELL\_DCH to CELL\_DCH (modify uplink physical channel rate): Success

### 8.2.6.24.1 Definition

### 8.2.6.24.2 Conformance requirement

If the UE receives:

- a PHYSICAL CHANNEL RECONFIGURATION message:

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS25.214;
- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE may first release the physical channel configuration used at reception of the reconfiguration message. The UE shall then:

- 1> enter a state according to TS25.331 subclause 8.6.3.3.

If the UE was in CELL\_DCH state upon reception of the reconfiguration message and remains in CELL\_DCH state, the UE shall:

- 1> if the IE "Uplink DPCH Info" is absent, not change its current UL Physical channel configuration;
- 1> if the IE "Downlink information for each radio link" is absent, not change its current DL Physical channel configuration.

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

### Reference

3GPP TS 25.331 clause 8.2.2 and 8.5 and 8.6

### 8.2.6.24.3 Test purpose

To confirm that the UE modifies uplink physical channel rate according to a PHYSICAL CHANNEL RECONFIGURATION message and transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

### 8.2.6.24.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108.

- NOTE: Transmission rate shall be set to the maximum rate for the UE during the radio bearer establishment procedure.

#### Test Procedure

The UE is in CELL\_DCH state of cell 1. The radio bearer is placed into UE test loop mode 1 described in 34.109 clause 5.3 and the UL RLC\_SDU size for the loopback scheme is set to the maximum size possible when the maximum uplink

TFS, as indicated in RADIO BEARER SETUP message during radio bearer establishment procedure, is used. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE, which assign a new UL puncture limit and minimum spreading factor to the UE to modify uplink physical channel rate. The UE shall reconfigure the physical channel according to this message and transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH AM RLC. UL MAC restriction is imposed on the SS so that SS can only received using the maximum TFS and minimum TFS. Both TFSs belong to the restricted TFS(i.e. the TFS after reconfiguration) by the specified spreading factor. In this procedure SS transmits a RLC\_SDU whose size is the same as the UL RLC\_SDU size for the loopback scheme . The UE shall selects the maximum uplink TFS in the restricted TFS(i.e. the TFS after reconfiguration) on the radio access bearer. The SS should receive the expected data as a RLC\_SDU that is sent back by UE. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_DCH state of cell 1.
2		←	PHYSICAL CHANNEL RECONFIGURATION	This message is including new IE "Uplink DPCH info" and don't include IE "Downlink information for each radio link".
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
4		←	DOWNLINK RLC SDU	
5		→	UPLINK RLC SDU	
6		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

#### Specific Message Contents

##### PHYSICAL CHANNEL RECONFIGURATION (Step 2)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type titled as "Packet to CELL\_DCH from CELL\_DCH in PS" as found in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
CHOICE channel requirement	Uplink DPCH info
- Uplink DPCH power control info	Same contents as a RADIO BEARER SETUP message used in initial procedure
- CHOICE mode	FDD
- Scrambling code type	Long
- Scrambling code number	0 (0 to 16777215)
- Number of DPDCH	Not Present
- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set Set different parameter which is included in a RADIO BEARER SETUP message used in initial procedure.
- TFCI existence	Reference to TS34.108 clause 6.10 Parameter Set Set different parameter which is included in a RADIO BEARER SETUP message used in initial procedure.
- Number of FBI bit	Not Present
- Puncturing Limit	Reference to TS34.108 clause 6.10 Parameter Set Set different parameter which is included in a RADIO BEARER SETUP message used in initial procedure.
Downlink information per radio link list	Not present

##### 8.2.6.24.5 Test requirement

After step 2 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

After step 4 the UE shall transmit a RLC\_SDU that is same as the transmitted data from SS in step 4 on the radio access bearer.

## 8.2.6.25 Physical channel reconfiguration for transition from CELL\_DCH to CELL\_FACH (Frequency band modification): Success

### 8.2.6.25.1 Definition

### 8.2.6.25.2 Conformance requirement

If the UE receives:

-a PHYSICAL CHANNEL RECONFIGURATION message;

it shall:

1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

1> enter a state according to TS25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_FACH state, the UE shall, after the state transition:

1> if the IE "Frequency info" is included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304 on that frequency.

1> if the IE "Frequency info" is not included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304.

1> if the received reconfiguration message included the IE "Primary CPICH info" (, and the UE selects another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info":

2> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "Cell reselection";

2> when the cell update procedure completed successfully:

3> if the UE is in CELL\_PCH or URA\_PCH state:

4> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "Uplink data transmission";

4> proceed as below.

1> select PRACH according to TS25.331 subclause 8.5.17;

1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;

1> use the transport format set given in system information;

1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

2> ignore that IE and stop using DRX.

1> if the contents of the variable C\_RNTI is empty:

2> perform a cell update procedure according to TS 25.331 subclause 8.3.1 using the cause "Cell reselection";

2> when the cell update procedure completed successfully:

3> if the UE is in CELL\_PCH or URA\_PCH state:

4> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "Uplink data transmission";

4> proceed as below.

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC, using the new configuration after the state transition.
- 1> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

### 8.2.6.25.3 Test purpose

1. To confirm that the UE transits from CELL\_DCH to CELL\_FACH according to the PHYSICAL CHANNEL RECONFIGURATION message.
2. To confirm that the UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC on a common physical channel in a different frequency..

### 8.2.6.25.4 Method of test

#### Initial Condition

System Simulator: 2 cells–Cell 1 is active and cell 6 is inactive.

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

#### Test Procedure

**Table 8.2.6.25**

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/ 3.84 MHz	-55	-72	Off	-55

Table 8.2.6.25 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in idle mode of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.6.25. The SS modifies the contents of System information block 11 in cell 1, so that include IE "Inter frequency measurement system information" about cell 6. The SS and UE execute procedure P5. Next The SS and the UE execute procedure P9 and then execute procedure P13. The SS switches its downlink transmission power settings to columns "T1" and transmits a PHYSICAL CHANNEL RECONFIGURATION message with no IE "Frequency info" and IE "Primary CPICH info". The UE selects cell 6 and initiates CELL UPDATE procedure with IE "Cell update cause" set to "cell reselection". Upon completion of the cell update procedure, UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC on the DCCH in cell 6. The SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	System Information Block type 11	The UE is in idle mode and camped on cell 1. The contents of System Information Block type 11 message are different from the default settings and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.6.25.
1a	←→		SS executes procedure P5 (clause 7.4.2.2.2) specified in TS 34.108.	
1b	←→		SS executes procedure) P9 (clause 7.4.2.4.2) specified in TS 34.108.	
1c	←→		SS executes procedure P13 (clause 7.4.2.6.2) specified in TS 34.108.	
2				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.6.25.
3		←	Void	
4		←	PHYSICAL CHANNEL RECONFIGURATION	No including IE "Frequency info" and IE "Primary CPICH info"
5		→	CELL UPDATE	The IE "Cell update cause" is set to "cell reselection".
6		←	CELL UPDATE CONFIRM	Including the IE "New C-RNTI"
7		→	UTRAN MOBILITY INFORMATION CONFIRM	
8		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	The UE sends this message on a common physical channel in cell 6.
9		←→	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

## Specific Message Contents

## System Information Block type 11 (Step 1)

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	0dB
- UARFCN uplink(Nu)	Not present
- UARFCN downlink(Nd)	FALSE
- Cell info	FDD
- Cell individual offset	Set to same code as used for cell 6
- Reference time difference to cell	
- Read SFN indicator	Not present
- CHOICE mode	FDD
- Primary CPICH info	Not present
- Primary scrambling code	
- Primary CPICH Tx power	0dB
- Cell Selection and Re-selection Info	Not present
- Qoffset1s,n	Reference to table 6.1.1
- Qoffset2s,n	Not present
- Maximum allowed UL TX power	FDD
- HCS neighbouring cell information	Reference to table 6.1.1
- CHOICE mode	Reference to table 6.1.1
- Qqualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

## PHYSICAL CHANNEL RECONFIGURATION (Step 4)

Use the message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in [9] TS 34.108 clause 9, with the following exception:

Information Element	Value/remark
Frequency info	Not Present
Downlink information for each radio link	Not Present

## CELL UPDATE (Step 5)

The contents of CELL UPDATE message are identical as "Contents of CELL UPDATE message" as found in [9] TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"cell reselection"

## CELL UPDATE CONFIRM (Step 6)

The contents of CELL UPDATE CONFIRM message are identical as "CELL UPDATE CONFIRM message" as found in [9] TS 34.108 clause 9. with the following exceptions:

Information Element	Value/remark
New C-RNTI	0000 0000 0000 0001B

## UTRAN MOBILITY UPDATE CONFIRM (Step 7)

The contents of UTRAN MOBILITY UPDATE CONFIRM message are identical as "UTRAN MOBILITY UPDATE CONFIRM message" as found in [9] TS 34.108 clause 9.

### 8.2.6.25.5 Test requirement

After step 4 the UE shall transmit a CELL UPDATE message on the CCCH in cell 6.

After step 6 the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC in cell 6.

After step 7 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC in cell 6.

After step 8 the UE shall be in CELL\_FACH state of cell 6.

## 8.2.6.26 Physical Channel Reconfiguration from CELL\_DCH to CELL\_PCH (Frequency band modification): Success

### 8.2.6.26.1 Definition

### 8.2.6.26.2 Conformance requirement

If the UE receives:

-a PHYSICAL CHANNEL RECONFIGURATION message;

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS25.214;
- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

If after state transition the UE enters CELL\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304 on that frequency.
- 1> if the IE "Frequency info" is not included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS5.304.
- 1> prohibit periodical status transmission in RLC;
- 1> remove any C-RNTI from MAC;
- 1> clear the variable C\_RNTI;
- 1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;

- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS25.331 subclause 8.6.3.2.
- 1> if the UE enters CELL\_PCH state from CELL\_DCH state, and the received reconfiguration message included the IE "Primary CPICH info", and the UE selected another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info":
  - 2> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "cell reselection";
  - 2> when the cell update procedure completed successfully:
    - 3> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

### 8.2.6.26.3 Test purpose

1. To confirm that the UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_DCH to CELL\_PCH according to the PHYSICAL CHANNEL RECONFIGURATION message.
3. To confirm that the UE releases a dedicated physical channel and selects a common physical channel in a different frequency.

### 8.2.6.26.4 Method of test

#### Initial Condition

System Simulator: 2 cells–Cell 1 is active and cell 6 is inactive

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

#### Test Procedure

**Table 8.2.6.26**

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/ 3.84 MHz	-55	-72	Off	-55

Table 8.2.6.26 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in idle mode of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.6.26. The SS modifies the contents of System information block 11 in cell 1, so that include IE "Inter frequency measurement system information" about cell 6. The SS and UE execute procedure P5. Next The SS and the UE execute procedure P9 and then execute procedure P13. The SS switches its downlink transmission power settings to columns "T1" and transmits a PHYSICAL CHANNEL RECONFIGURATION message, which invokes the UE to transit from CELL\_DCH to CELL\_PCH. The UE transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC and enters CELL\_PCH state. The UE selects cell 6 and initiates CELL UPDATE

procedure with IE "Cell update cause" set to "cell reselection". Upon completion of the procedure, the SS calls for generic procedure C.4 to check that UE is in CELL\_PCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	System Information Block type 11	The UE is in idle mode and camped on cell 1. The contents of System Information Block type 11 message are different from the default and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.6.26.
1a	←→		SS executes procedure P5 (clause 7.4.2.2.2) specified in TS 34.108.	
1b	←→		SS executes procedure P9 (clause 7.4.2.4.2) specified in TS 34.108..	
1c	←→		SS executes procedure P13 (clause 7.4.2.6.2) specified in TS 34.108.	
2				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.6.26.
3			Void	
4		←	PHYSICAL CHANNEL RECONFIGURATION	Not including IE "frequency info" and IE "Primary CPICH info"
5		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE transmit this message in cell 1.
6		→	CELL UPDATE	The IE "Cell update cause" is set to "cell reselection".
7		←	CELL UPDATE CONFIRM	IE "RRC State Indicator" is set to "CELL_PCH".
8				The SS waits for 5 s.
9	←→		CALL C.4	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

## Specific Message Contents

## System Information Block type 11 (Step 1)

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	0dB
- UARFCN uplink(Nu)	Not present
- UARFCN downlink(Nd)	FALSE
- Cell info	FDD
- Cell individual offset	Set to same code as used for cell 6
- Reference time difference to cell	
- Read SFN indicator	Not present
- CHOICE mode	0dB
- Primary CPICH info	Not Present
- Primary scrambling code	Reference to table 6.1.1
- Primary CPICH Tx power	Not present
- Cell Selection and Re-selection Info	FDD
- Qoffset1s,n	Reference to table 6.1.1
- Qoffset2s,n	Reference to table 6.1.1
- Maximum allowed UL TX power	Not present
- HCS neighbouring cell information	FDD
- CHOICE mode	Reference to table 6.1.1
- Qqualmin	Reference to table 6.1.1
- Qrxlevmin	Not present
- Cell for measurement	

## PHYSICAL CHANNEL RECONFIGURATION (Step 4)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3
Frequency info	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
- UARFCN uplink (Nu)	
- UARFCN downlink (Nd)	

## CELL UPDATE (Step 6)

The contents of CELL UPDATE message are identical as "Contents of CELL UPDATE message" as found in [9] TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"cell reselection"

## CELL UPDATE CONFIRM (Step 7)

The contents of CELL UPDATE CONFIRM message are identical as "CELL UPDATE CONFIRM message" as found in [9] TS 34.108 clause 9. with the following exceptions:

Information Element	Value/remark
RRC State Indic	CELL_PCH
UTRAN DRX cycle length coefficient	3

#### 8.2.6.26.5 Test requirement

After step 4 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC in cell 1.

After step 5 the UE shall transmit a CELL UPDATE message on the CCCH with IE "Cell update cause" set to "cell reselection" in cell 6.

After step 8 the UE shall be in CELL\_PCH state in cell 6.

### 8.2.6.27 Physical channel reconfiguration from CELL\_FACH to CELL\_PCH: Success

#### 8.2.6.27.1 Definition

#### 8.2.6.27.2 Conformance requirement

If the UE receives:

- a PHYSICAL CHANNEL RECONFIGURATION message;

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS25.214;
- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

If after state transition the UE enters CELL\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304 on that frequency.
- 1> if the IE "Frequency info" is not included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304.
- 1> prohibit periodical status transmission in RLC;
- 1> remove any C-RNTI from MAC;
- 1> clear the variable C\_RNTI;
- 1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

- 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS5.331 subclause 8.6.3.2.
- 1> if the UE enters CELL\_PCH state from CELL\_FACH state, and the received reconfiguration message included the IE "Primary CPICH info", and the UE selected another cell than indicated by this IE:
- 2> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "cell reselection";
- 2> when the cell update procedure is successfully completed:
- 3> the procedure ends.

3GPP TS 25.331 clause 8.2.2,8.3, 8.5 and 8.6.

#### 8.2.6.27.3 Test purpose

1. To confirm that the UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_FACH to CELL\_PCH according to the PHYSICAL CHANNEL RECONFIGURATION message.
3. To confirm that the UE replies with CELL UPDATE message in cell 6 when the SS transmits PAGING TYPE 1 message to the UE.

#### 8.2.6.27.4 Method of test

##### Initial Condition

System Simulator: 1 cell– Cell 1 is active.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

##### Test Procedure

The UE is in CELL\_FACH state of cell 1. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message. The UE transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC and enters CELL\_PCH state. The SS calls for generic procedure C.4 to check that UE is in CELL\_PCH state.

##### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in CELL_FACH state of cell 1.
2		←	PHYSICAL CHANNEL RECONFIGURATION	
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
4				The SS waits for 5 s.
5	←→		CALL C.4	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

##### Specific Message Contents

##### PHYSICAL CHANNEL RECONFIGURATION (Step 2)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3

#### 8.2.6.27.5 Test requirement

After step 2 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on uplink DCCH using AM RLC.

After step 4 the UE shall be in CELL\_PCH state in cell 6.

#### 8.2.6.28 Physical channel reconfiguration for transition from CELL\_DCH to CELL\_DCH (Downlink channelisation code modification): Success

##### 8.2.6.28.1 Definition

##### 8.2.6.28.2 Conformance requirement

If the UE receives:

-a PHYSICAL CHANNEL RECONFIGURATION message;

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS25.214;
- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.
- 1> enter a state according to TS25.331 subclause 8.6.3.3.

If the UE was in CELL\_DCH state upon reception of the reconfiguration message and remains in CELL\_DCH state, the UE shall:

- 1> if the IE "Uplink DPCH Info" is absent, not change its current UL Physical channel configuration;

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6..

##### 8.2.6.28.3 Test purpose

1. To confirm that the UE change assigned downlink channelisation code by SS according to a PHYSICAL CHANNEL RECONFIGURATION message.
2. To confirm that the UE response PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC

## 8.2.6.28.4 Method of test

## Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending to the CN domain(s) supported by the UE.

## Test Procedure

The UE is in CELL\_DCH state of cell 1. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE, which includes IE " DL channelisation code " set to New DL channelisation code. The UE shall change its downlink channelisation code for a dedicated physical channel, and then transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH AM RLC. The SS transmits UE CAPABILITY ENQUIRY message to confirm whether the UE correctly reconfigure the DL DPCH The UE shall respond with UE CAPABILITY INFORMATION message.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The initial state of UE is in CELL_DCH state of cell 1. .
2		←	PHYSICAL CHANNEL RECONFIGURATION	Including IE " DL channelisation code " set to New DL channelisation code
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
4		←	UE CAPABILITY ENQUIRY	The SS transmits this message to confirm whether the UE can correctly reconfigure the DL DPCH.
5		→	UE CAPABILITY INFORMATION	
6		←	UE CAPABILITY INFORMATION CONFIRM	

## Specific Message Contents

## PHYSICAL CHANNEL RECONFIGURATION (Step 2)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type titled as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Downlink information for each radio link list - Downlink information for each radio link - Downlink DPCH info for each RL - DL channelisation code - Spreading factor  - Code number	Same value as a RADIO BEARER SETUP message used in initial procedure. Different value as a RADIO BEARER SETUP message used in initial procedure

## 8.2.6.28.5 Test requirement

After step 2 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

After step 4 the UE shall transmit a UE CAPABILITY INFORMATION message on the uplink DCCH using AM RLC.

## 8.2.6.29 Physical channel reconfiguration for transition from CELL\_DCH to CELL\_DCH (Compressed mode initiation): Success

### 8.2.6.29.1 Definition

### 8.2.6.29.2 Conformance requirement

If the UE receives:

-a PHYSICAL CHANNEL RECONFIGURATION message;

it shall:

1> perform the physical layer synchronisation procedure as specified in TS25.214;

1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

1> enter a state according to TS25.331 subclause 8.6.3.3.

If the UE was in CELL\_DCH state upon reception of the reconfiguration message and remains in CELL\_DCH state, the UE shall:

1> if the IE "Uplink DPCH Info" is absent, not change its current UL Physical channel configuration; 1> if the IE "Downlink information for each radio link" is absent, not change its current DL Physical channel configuration.

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

### Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6..

### 8.2.6.29.3 Test purpose

1. To confirm that the UE activates compressed mode according to a PHYSICAL CHANNEL RECONFIGURATION message.
2. To confirm that the UE response PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC after compressed mode is activated.
3. To confirm that the UE deactivates compressed mode according to a PHYSICAL CHANNEL RECONFIGURATION message.
4. To confirm that the UE response PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC after compressed mode is deactivated..

### 8.2.6.29.4 Method of test

#### Initial Condition

System Simulator: 2 cells–Cell 1 is active and cell 6 is inactive

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending to the CN domain(s) supported by the UE.

### Test Procedure

**Table 8.2.6.29**

Parameter	Unit	Cell 1				Cell 6			
		T0	T1	T2	T3	T0	T1	T2	T3
UTRA RF Channel Number		Ch. 1				Ch. 2			
CPICH Ec	dBm/3 .84MH z	-60	-60	-60	-60	Off	-60	-90	-60

Table 8.2.6.29 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1" or "T1" to "T2" or "T2" to "T3", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in CELL\_DCH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.6.29. The SS transmits MEASUREMENT CONTROL message in order for the UE to perform Inter-frequency measurements and report event 2c. The SS switches its downlink transmission power setting according to columns "T1" in table 8.2.6.29, but the UE shall not transmit any MEASUREMENT REPORT messages. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message, which includes IE "DPCH compressed mode info" with "TGPS Status Flag" set to "Activate". The UE shall transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC. The UE shall transmit MEASUREMENT REPORT message to report event 2c with the measured CPICH RSCP value for cell 6 to the SS. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message, which includes IE "DPCH compressed mode info" with "TGPS Status Flag" set to "deactivate". The UE shall respond with the PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC. After the SS switches its downlink transmission power settings to columns "T2" in table 8.2.6.29 and 10s is passed, the SS switches its downlink transmission power settings to columns "T3" in table 8.2.6.29. The UE shall not send any MEASUREMENT REPORT messages on the uplink DCCH because the UE cannot measure the CPICH RSCP on non used frequency as the compressed mode operation has been deactivated.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in CELL_DCH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.6.29.
2			MEASUREMENT CONTROL	SS commands the UE to perform Inter-frequency measurements and to report event 2c.
3				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.6.29.
4				The SS checks that no MEASUREMENT REPORT messages receives for 10 s.
5		←	PHYSICAL CHANNEL RECONFIGURATION	Including IE"DPCH compressed mode info", which include parameter "TGPS Status Flag" set to activate.
6		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
7			MEASUREMENT REPORT	The UE shall report event 2c with the measured CPICH RSCP value for cell 6.
8		←	PHYSICAL CHANNEL RECONFIGURATION	Including IE"DPCH compressed mode info", which include parameter "TGPS Status Flag" set to deactivate.
9		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
10				The SS switches its downlink transmission power settings to columns "T2" in table 8.2.6.29.
11				After 10 s is passed ,the SS switches its downlink transmission power settings to columns "T3" in table 8.2.6.29.
12				The SS checks that no MEASUREMENT REPORT messages receives for 10 s..

## Specific Message Contents

## MEASUREMENT CONTROL (Step 2)

Use the same message sub-type found in [9] TS 34.108 clause 9, with the following exceptions in the IE(s) concerned:

Information Element	Value/remark
Measurement Identity	15
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Event Trigger
Additional measurements list	Not Present
CHOICE measurement type	Inter-frequency measurement
- Inter-frequency measurement object list	
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency cells	
- Inter-frequency cell id	6
- Frequency info	
- UARFCN uplink (Nu)	UARFCN of the uplink frequency for cell 6
- UARFCN downlink (Nd)	UARFCN of the downlink frequency for cell 6
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 6
- Primary CPICH TX power	Not Present
- Primary CPICH TX power	
- TX Diversity Indicator	Not Present
- Cell for measurement	Not Present
- Inter-frequency measurement quantity	
- CHOICE reporting criteria	Inter-frequency reporting criteria
- Filter Coefficient	0
- CHOICE Mode	FDD
- Measurement quantity for frequency quality estimate	CPICH RSCP
- Inter-frequency reporting quantity	
- UTRA Carrier RSSI	FALSE
- Frequency quality estimate	FALSE
- Non frequency related cell reporting quantities	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell Identity reporting indicator	TRUE
- COICE Mode	FDD
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting cell status	Not present
- Measurement validity	
- UE state	CELL_DCH
- Inter-frequency set update	Not Present
- CHOICE report criteria	Inter-frequency measurement reporting criteria
- Parameters required for each event	
- Inter-frequency event identity	2c
- Threshold used frequency	Not present
- W used frequency	Not present
- Hysteresis	1.0 dB
- Time to trigger	10 [ms]
- Reporting cell status	
- CHOICE reported cell	Report cells within monitored and/or virtual active set on non-used frequency
- Maximum number of reported cells per	1

reported non-used frequency - Parameters required for each non-used frequency - Threshold non used frequency - W non-used frequency DPCH compressed mode status info	-68dbm 0 Not present
--	----------------------------

## PHYSICAL CHANNEL RECONFIGURATION (Step 5)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type titled as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	
- Timing Indication	Maintain
- CFN-target SFN frame offset	Not Present
- Downlink DPCH power control information	
- CHOICE Mode	FDD
-DPC Mode	0 (Single)
- CHOICE Mode	FDD
- Power offset Pilot-DPCH	0
- DL rate matching restriction information	Not Present
- Spreading factor	Refer to the parameter set in TS 34.108
- Fixed or flexible position	Flexible
- TFCI existence	FALSE
- Number of bits for Pilot bits (SF=128, 256)	Not Present
- CHOICE mode	FDD
- DPCH compressed mode info	
- TGPSI	1
- TGPS Status Flag	activate
- TGCFN	(Current CFN+(256 – TTI/10msec)) mod256
- Transmission gap pattern sequence configuration parameters	
- TGMP	FDD Measurement
- TGPRC	Infinity
- TGSN	4
- TGL1	7
- TGL2	Not Present
- TGD	0
- TGPL1	3
- TGPL2	Not Present
- RPP	mode 0
- ITP	mode 0
- CHOICE UL/DL Mode	DL and UL
- Downlink compressed mode method	SF/2
- Downlink frame type	B
- DeltaSIR1	2.0
- DeltaSIRAfter1	1.0
- DeltaSIR2	Not Present
- DeltaSIRAfter2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	Not Present
- TX Diversity Mode	Not Present
- SSDT information	Not Present
- Default DPCH Offset Value	Not Present

## MEASUREMENT REPORT (Step 7)

The contents of MEASUREMENT REPORT message is the same as them found in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Measurement Identity	Check to see if set to 15
Measured Results	
- CHOICE Measurement	
- Inter frequency measured results list	Check to see if set to "Inter-frequency measured results list"
- Inter frequency measurement results	
- Frequency info	
- CHOICE	FDD
- UARFCN uplink (Nu)	Check to see if set to the UARFCN of the uplink

- UARFCN downlink (Nd)	frequency for cell 6 Check to see if set to the UARFCN of the downlink frequency for cell 6
- UTRA carrier RSSI	Not checked
- Inter frequency cell measurement results	
- Cell measured results	
- Cell Identity	Not checked
- SFN-SFN observed time difference	Not checked
- Cell synchronisation information	Not checked
- CHOICE Mode	FDD
- Primary CPICH Info	Not checked
- CPICH Ec/No	Not checked
- CPICH RSCP	Check to see if it is present
- Pathloss	Not checked
Measured Results on RACH	Not checked
Additional Measured results	Not checked
- Measured Result	
Event results	Not checked

### PHYSICAL CHANNEL RECONFIGURATION (Step 8)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type titled as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Downlink information common for all radio links	Not present
- DPCH compressed mode info	
- TGPSI	1
- TGPS Status Flag	deactivate
- TGCFN	Not present
- Transmission gap pattern sequence configuration parameters	Not present

#### 8.2.6.29.5 Test requirement

After step 3 the UE shall not send any MEASUREMENT REPORT messages on the uplink DCCH.

After step 5 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

After step 6 the UE shall transmit a MEASUREMENT REPORT message containing the IE "measured results" reporting cell 6's CPICH RSCP value, also report the triggering of event '2c' included in IE "Event results".

After step 8 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

After 11 the UE shall not transmit any MEASUREMENT REPORT messages on the uplink DCCH.

### 8.2.6.30 Physical channel reconfiguration for transition from CELL\_DCH to CELL\_DCH (Modify active set cell): Success

#### 8.2.6.30.1 Definition

#### 8.2.6.30.2 Conformance requirement

If the UE receives:

- a PHYSICAL CHANNEL RECONFIGURATION message:

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS25.214;
- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.
  - 1> enter a state according to TS25.331 subclause 8.6.3.3.

If the UE was in CELL\_DCH state upon reception of the reconfiguration message and remains in CELL\_DCH state, the UE shall:

- 1> if the IE "Uplink DPCH Info" is absent, not change its current UL Physical channel configuration;
- 1> if the IE "Downlink information for each radio link" is absent, not change its current DL Physical channel configuration.

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.
- 1> the procedure ends.

#### Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

#### 8.2.6.30.3 Test purpose

To confirm that the UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC on a dedicated physical channel of same frequency in another cell.

#### 8.2.6.30.4 Method of test

#### Initial Condition

System Simulator: 2 cells–Cells 1 is active and cell 6 is inactive.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending to the CN domain(s) supported by the UE.

#### Test Procedure

**Table 8.2.6.30**

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH Ec	dBm/3.84 MHz	-60	-60	Off	-60

Table 8.2.6.30 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 2.

The UE is in CELL\_DCH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.6.30. The SS switches its downlink transmission power settings to columns "T1" and transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE, which includes IE "Primary CPICH

info" set to Primary Scrambling Code assigned to P-CPICH of cell 2 and IE "Timing indicator" set to "initialise".. The UE shall reconfigure the physical channel parameters according to PHYSICAL CHANNEL RECONFIGURATION message and initiate to synchronise with new dedicated physical channel in cell 2. The UE shall then transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message in cell 2 on the uplink DCCH AM RLC after synchronization.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in CELL_DCH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.6.30.
2				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.6.30.
3		←	PHYSICAL CHANNEL RECONFIGURATION	Including IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 2 and IE "Timing indicator" which is set to 'initialise'.
4				The UE remains in CELL_DCH state after connecting to the SS on a dedicated physical channel in cell 2.
5		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	The UE transmits this message in cell 2.

#### Specific Message Contents

##### PHYSICAL CHANNEL RECONFIGURATION (Step 3)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type titled as "Speech in CS" or "Non speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS" as found in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Activation Time	Current CFN-[current CFN mod 8 + 8 ]
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	
- Timing Indicator	initialise
- Default DPCH Offset Value	0
Downlink information for each radio links	
- Primary CPICH info	
- Primary Scrambling Code	Set to same code as used for cell 2

##### 8.2.6.30.5 Test requirement

After step 4 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC in cell 2.

## 8.2.6.31 Physical channel reconfiguration transition from CELL\_FACH to URA\_PCH: Success

### 8.2.6.31.1 Definition

### 8.2.6.31.2 Conformance requirement

If the UE receives:

- a PHYSICAL CHANNEL RECONFIGURATION message;

it shall:

- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.
- 1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

If after state transition the UE enters URA\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304 on that frequency.
- 1> if the IE "Frequency info" is not included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304.
- 1> prohibit periodical status transmission in RLC;
- 1> remove any C-RNTI from MAC;
- 1> clear the variable C\_RNTI;
- 1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
  - 2> keep the configuration existing before the reception of the message and transmit a failure response message as specified in TS25.331 subclause 8.2.2.9
- 1> if the UE enters URA\_PCH state, and after cell selection the criteria for URA update caused by "URA reselection" according to TS25.331 subclause 8.3.1 is fulfilled:
  - 2> initiate a URA update procedure according to TS25.331 subclause 8.3.1 using the cause "URA reselection";
  - 2> when the URA update procedure is successfully completed:
    - 3> the procedure ends.

### Reference

3GPP TS 25.331 clause 8.2.2, 8.3, 8.5 and 8.6.

## 8.2.6.31.3 Test purpose

1. To confirm that the UE transmits the PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_FACH to URA\_PCH according to the PHYSICAL CHANNEL RECONFIGURATION message.

## 8.2.6.31.4 Method of test

## Initial Condition

System Simulator: 1 cell– Cell 1 is active.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in CELL\_FACH state of cell 1. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message. The UE shall enter URA\_PCH state according to this message after it transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC. Upon completion of the procedure, the SS calls for generic procedure C.5 to check that UE is in URA\_PCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in CELL_FACH state of cell 1.
2		←	PHYSICAL CHANNEL RECONFIGURATION	
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	The UE transmits this message on uplink DCCH using AM RLC.
4				The SS waits for 5 s.
5				If the test result of C.5 indicates that UE is in URA_PCH state, the test passes, otherwise it fails.

## Specific Message Contents

## PHYSICAL CHANNEL RECONFIGURATION (Step 2)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3

## 8.2.2.31.5 Test requirement

After step 2 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on uplink DCCH using AM RLC.

After step 4 the UE shall be in URA PCH state.

## 8.2.6.32 Physical channel reconfiguration for transition from CELL\_DCH to URA\_PCH (Frequency band modification): Success

### 8.2.6.32.1 Definition

### 8.2.6.32.2 Conformance requirement

If the UE receives:

-a PHYSICAL CHANNEL RECONFIGURATION message;

it shall:

1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

If after state transition the UE enters URA\_PCH state, the UE shall, after the state transition and transmission of the response message:

1> if the IE "Frequency info" is included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304 on that frequency.

1> if the IE "Frequency info" is not included in the received reconfiguration message:

2> select a suitable UTRA cell according to TS25.304.

1> prohibit periodical status transmission in RLC;

1> remove any C-RNTI from MAC;

1> clear the variable C\_RNTI;

1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;

1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS25.331 subclause 8.6.3.2.

1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:

2> keep the configuration existing before the reception of the message and transmit a failure response message as specified in TS25.331 subclause 8.2.2.9

1> if the UE enters URA\_PCH state, and after cell selection the criteria for URA update caused by "URA reselection" according to TS25.331 subclause 8.3.1 is fulfilled:

2> initiate a URA update procedure according to TS25.331 subclause 8.3.1 using the cause "URA reselection";

2> when the URA update procedure is successfully completed:

3> the procedure ends.

### Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

## 8.2.6.32.3 Test purpose

1. To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_DCH to URA\_PCH according to the PHYSICAL CHANNEL RECONFIGURATION message.
3. To confirm that the UE releases the dedicated physical channel and selects a common physical channel in a different frequency.

## 8.2.6.32.4 Method of test

## Initial Condition

System Simulator: 2 cells – Cell 1 is active and cell 6 is inactive

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

## Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

## System Information Block type 11

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	Same downlink UARFCN as used for cell 6
- UARFCN uplink(Nu)	
- UARFCN downlink(Nd)	0dB
- Cell info	
- Cell individual offset	Not present
- Reference time difference to cell	
- Read SFN indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH info	Set to same code as used for cell 6
- Primary scrambling code	
- Primary CPICH Tx power	Not present
- Cell Selection and Re-selection Info	0dB
- Qoffset1s,n	
- Qoffset2s,n	Not present
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	Not present
- CHOICE mode	FDD
- Qqualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

## Test Procedure

Table 8.2.6.32

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-72	Off	-55

Table 8.2.6.32 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in idle mode of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.6.32. SS requests operator to make an outgoing call. The SS and UE execute procedure P5. Next The SS and the UE execute procedure P9 and then execute procedure P13. The SS switches its downlink transmission power settings to columns "T1" and transmits a PHYSICAL CHANNEL RECONFIGURATION message including IE "Frequency info" set to frequency information of cell 6. The UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC and enter URA\_PCH state of cell 6. Upon completion of the procedure, the SS calls for generic procedure C.5 to check that UE is in URA\_PCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.6.32. SS requests operator to make an outgoing call.
2	←→		SS executes procedure P5 (clause 7.4.2.2.2) specified in TS 34.108.	
3	←→		SS executes procedure P9 (clause 7.4.2.4.2) specified in TS 34.108.	
4	←→		SS executes procedure P13 (clause 7.4.2.6.2) specified in TS 34.108.	
5				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.6.32.
6	←		PHYSICAL CHANNEL RECONFIGURATION	Not including IE "Frequency info"
7		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE transmit this message on the dedicated physical channel in cell 1
8				The SS waits for 5 s.
9	←→		CALL C.5	If the test result of C.5 indicates that UE is in URA_PCH state, the test passes, otherwise it fails.

#### Specific Message Contents

##### PHYSICAL CHANNEL RECONFIGURATION (Step 6)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_DCH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3
Frequency info	Not present

#### 8.2.6.32.5 Test requirement

After step 3 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC in cell 1.

After step 8 the UE shall be in URA\_PCH state in cell 6.

#### 8.2.6.33 Physical channel reconfiguration for transition from CELL\_FACH to CELL\_DCH (Frequency band modification): Success

##### 8.2.6.33.1 Definition

##### 8.2.6.33.2 Conformance requirement

If the UE receives:

- a PHYSICAL CHANNEL RECONFIGURATION message;

it shall:

- 1> perform the physical layer synchronisation procedure as specified in TS25.214;
- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.

The UE shall then:

- 1> enter a state according to TS25.331 subclause 8.6.3.3.

If after state transition the UE enters CELL\_DCH state, the UE shall, after the state transition:

- 1> remove any C-RNTI from MAC;
- 1> clear the C\_RNTI.

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC, using the new configuration after the state transition.
- 1> the procedure ends.

#### Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

##### 8.2.6.33.3 Test purpose

1. To confirm that the UE transits from CELL\_FACH to CELL\_DCH according to the PHYSICAL CHANNEL RECONFIGURATION message.
2. To confirm that the UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC on a dedicated physical channel in a different frequency.

## 8.2.6.33.4 Method of test

## Initial Condition

System Simulator: 2 cells–Cell 1 is active and cell 6 is inactive.

UE: PS\_DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

Table 8.2.6.33

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-72	Off	-55

Table 8.2.6.33 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in CELL\_FACH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.6.33. The SS switches its downlink transmission power settings to columns "T1" and transmits a PHYSICAL CHANNEL RECONFIGURATION message including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6. The UE shall select cell 6 and change its physical channel configuration after receiving this message and then enter CELL\_DCH state. Finally the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC. Upon completion of the procedure, the SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in CELL_FACH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.6.33.
2				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.6.33.
3		←	PHYSICAL CHANNEL RECONFIGURATION	Including IE "Frequency info" set to frequency information of cell 6 and IE "Primary CPICH info" set to Primary Scrambling Code assigned to P-CPICH of cell 6
4		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	The UE sends this message on a dedicated physical channel in cell 6.
5		↔		If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

## PHYSICAL CHANNEL RECONFIGURATION (Step 3)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical the message sub-type indicated by "Packet to CELL\_DCH from CELL\_FACH in PS" in [9] TS 34.108 clause 9, with the following exception:

Information Element	Value/remark
Frequency info - UARFCN uplink(Nu) - UARFCN downlink(Nd)	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
Downlink information for each radio links - Primary CPICH info - Primary Scrambling Code	Set to same code as used for cell 6

## 8.2.6.33.5 Test requirement

After step 3 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC in cell 6.

After step 4 the UE shall be in CELL\_DCH state in cell 6.

## 8.2.6.34 Physical channel reconfiguration from CELL\_FACH to CELL\_PCH (Frequency band modification): Success

## 8.2.6.34.1 Definition

## 8.2.6.34.2 Conformance requirement

If the UE receives:

- a PHYSICAL CHANNEL RECONFIGURATION message;

it shall:

- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.
- 1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

If after state transition the UE enters CELL\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304 on that frequency.
- 1> if the IE "Frequency info" is not included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304.
- 1> prohibit periodical status transmission in RLC;
- 1> remove any C-RNTI from MAC;

- 1> clear the variable C\_RNTI;
- 1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
  - 2> keep the configuration existing before the reception of the message and transmit a failure response message as specified in TS25.331 subclause 8.2.2.9
- 1> if the UE enters CELL\_PCH state from CELL\_FACH state, and the received reconfiguration message included the IE "Primary CPICH info", and the UE selected another cell than indicated by this IE:
  - 2> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "cell reselection";
  - 2> when the cell update procedure is successfully completed:
    - 3> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2.

### 8.2.6.34.3 Test purpose

1. To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_FACH to CELL\_PCH according to the PHYSICAL CHANNEL RECONFIGURATION message.
3. To confirm that the UE selects a common physical channel in a different frequency.

### 8.2.6.34.4 Method of test

#### Initial Condition

System Simulator: 2 cells – Cell 1 is active and cell 6 is inactive.

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS".

#### Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

System Information Block type 11

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	Same downlink UARFCN as used for cell 6
- UARFCN uplink(Nu)	
- UARFCN downlink(Nd)	0dB
- Cell info	
- Cell individual offset	Not present
- Reference time difference to cell	
- Read SFN indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH info	Set to same code as used for cell 6
- Primary scrambling code	
- Primary CPICH Tx power	Not present
- Cell Selection and Re-selection Info	0dB
- Qoffset1 <sub>s,n</sub>	
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	Not present
- CHOICE mode	FDD
- Qualmin	Reference to table 6.1.1
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

Test Procedure

Table 8.2.6.34

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/3.84 MHz	-55	-72	Off	-55

Table 8.2.6.34 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is idle mode of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.6.34. SS requests operator to make an outgoing call. The SS and UE execute procedure P6. Next The SS and the UE execute procedure P10 and then execute procedure P14. The SS switches its downlink transmission power settings to columns "T1" and. The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message not including IE "Frequency info" and IE "Primary CPICH info". The UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC and enter CELL\_PCH state in cell 6. Upon completion of the procedure, the SS calls for generic procedure C.4 to check that UE is in CELL\_PCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.6.34. SS requests operator to make an outgoing call.
2		←→	SS executes procedure P6 (clause 7.4.2.2.2) specified in TS 34.108.	
3		←→	SS executes procedure P10 (clause 7.4.2.4.2) specified in TS 34.108.	
4		←→	SS executes procedure P14 (clause 7.4.2.6.2) specified in TS 34.108.	
5				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.6.34.
6		←	RADIO BEARER RECONFIGURATION	Not including IE "Frequency info" and IE "Primary CPICH info"
7		→	RADIO BEARER RECONFIGURATION COMPLETE	The UE transmit this message on the common physical channel in cell 1.
8				The SS waits for 5 s.
9		←→	CALL C.4	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

Specific Message Contents

#### RADIO BEARER RECONFIGURATION (Step 6)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3
Frequency info	Not present
Downlink information for each radio link	Not present

#### 8.2.6.34.5 Test requirement

After step 6 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on uplink DCCH using AM RLC in cell 1.

After step 8 the UE shall be in CELL\_PCH state in cell 6.

#### 8.2.6.35 Physical channel reconfiguration for transition from CELL\_FACH to URA\_PCH (Frequency band modification): Success

##### 8.2.6.35.1 Definition

##### 8.2.6.35.2 Conformance requirement

If the UE receives:

-a PHYSICAL CHANNEL RECONFIGURATION message;

it shall:

- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.
- 1> enter a state according to TS25.331 subclause 8.6.3.3.

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE on the uplink DCCH using AM RLC, using the old configuration before the state transition.

If after state transition the UE enters URA\_PCH state, the UE shall, after the state transition and transmission of the response message:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304 on that frequency.
- 1> if the IE "Frequency info" is not included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304.
- 1> prohibit periodical status transmission in RLC;
- 1> remove any C-RNTI from MAC;
- 1> clear the variable C\_RNTI;
- 1> select Secondary CCPCH according to TS25.331 subclause 8.5.19;
- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging occasion and PICH Monitoring Occasion as specified in TS25.331 subclause 8.6.3.2.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
  - 2> keep the configuration existing before the reception of the message and transmit a failure response message as specified in TS25.331 subclause 8.2.2.9
- 1> if the UE enters URA\_PCH state, and after cell selection the criteria for URA update caused by "URA reselection" according to TS25.331 subclause 8.3.1 is fulfilled:
  - 2> initiate a URA update procedure according to TS25.331 subclause 8.3.1 using the cause "URA reselection";
  - 2> when the URA update procedure is successfully completed:
    - 3> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

### 8.2.6.35.3 Test purpose

1. To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.
2. To confirm that the UE transits from CELL\_FACH to URA\_PCH according to the PHYSICAL CHANNEL RECONFIGURATION message.
3. To confirm that the UE selects a common physical channel in a different frequency.

8.2.6.35.4 Method of test

Initial Condition

System Simulator: 2 cells–Cell 1 in active and cell 6 is inactive

UE: Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS".

Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

System Information Block type 11

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	0dB
- UARFCN uplink(Nu)	Not present
- UARFCN downlink(Nd)	FALSE
- Cell info	FDD
- Cell individual offset	Set to same code as used for cell 6
- Reference time difference to cell	
- Read SFN indicator	Not present
- CHOICE mode	0dB
- Primary CPICH info	Not Present
- Primary scrambling code	Reference to table 6.1.1
- Primary CPICH Tx power	Not present
- Cell Selection and Re-selection Info	Not present
- Qoffset1s,n	FDD
- Qoffset2s,n	Reference to table 6.1.1
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	Reference to table 6.1.1
- CHOICE mode	Not present
- Qqualmin	Not present
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	Not present

Test Procedure

Table 8.2.6.35

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/ 3.84 MHz	-55	-72	Off	-55

Table 8.2.6.35 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in idle mode of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.6.35. SS requests operator to make an outgoing call. The SS switches its downlink transmission power settings to columns "T1" and transmits a PHYSICAL CHANNEL RECONFIGURATION message not including IE "Frequency info" and IE "Primary CPICH info". The UE shall transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC and enter URA\_PCH state of cell 6. Upon completion of the procedure, the SS calls for generic procedure C.5 to check that UE is in URA\_PCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.6.35. SS requests operator to make an outgoing call.
2		←→	SS executes procedure P6 (clause 7.4.2.2.2) specified in TS 34.108.	
3		←→	SS executes procedure P10 (clause 7.4.2.4.2) specified in TS 34.108.	
4		←→	SS executes procedure P14 (clause 7.4.2.6.2) specified in TS 34.108.	
5				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.6.35.
6		←	PHYSICAL CHANNEL RECONFIGURATION	Not including IE "Frequency info" and IE "Primary CPICH info"
7		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	The UE transmit this message on the common physical channel in cell 1.
8				The SS waits for 5 s.
9		←→	CALL C.4	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

#### Specific Message Contents

##### PHYSICAL CHANNEL RECONFIGURATION (Step 3)

Use the same message sub-type titled "Packet to CELL\_FACH from CELL\_FACH in PS" in [9] TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3
Frequency info	Not present
Downlink information for each radio link	Not present

##### 8.2.6.35.5 Test requirement

After step 3 the UE shall transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC in cell 1.

After step 8 the UE shall be in URA\_PCH state in cell 6.

### 8.2.6.36 Physical channel reconfiguration for transition from CELL\_FACH to CELL\_FACH (Frequency band modification): Success

#### 8.2.6.36.1 Definition

#### 8.2.6.36.2 Conformance requirement

If the UE receives:

-a PHYSICAL CHANNEL RECONFIGURATION message;

it shall:

- 1> act upon all received information elements as specified in TS25.331 subclause 8.6, unless specified in the following and perform the actions below.
- 1> enter a state according to TS25.331 subclause 8.6.3.3.

If the UE was in CELL\_FACH state upon reception of the reconfiguration message and remains in CELL\_FACH state, the UE shall:

- 1> if the IE "Frequency info" is included in the received reconfiguration message:
  - 2> select a suitable UTRA cell according to TS25.304 on that frequency;
  - 2> if the received reconfiguration message included the IE "Primary CPICH info", and the UE selected another cell than indicated by this IE or the received reconfiguration message did not include the IE "Primary CPICH info":
    - 3> initiate a cell update procedure according to TS25.331 subclause 8.3.1 using the cause "cell reselection";
    - 3> when the cell update procedure completed successfully:
  - 4> proceed as below.

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

#### Reference

3GPP TS 25.331 clause 8.2.2, 8.5 and 8.6.

#### 8.2.6.36.3 Test purpose

1. To confirm that the UE transits from CELL\_FACH to CELL\_FACH according to the PHYSICAL CHANNEL RECONFIGURATION message.
2. To confirm that the UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC on a common physical channel in a different frequency.

#### 8.2.6.36.4 Method of test

#### Initial Condition

System Simulator: 2 cells – Cell 1 is active and cell 6 is inactive.

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS".

## Specific Message Content

For system information block 11 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

## System Information Block type 11 (Step 1)

Use same message sub-clause 6.1 of TS34.108, with following exception:

Information Element	Value/remark
- SIB12 indicator	FALSE
- Intra-frequency measurement system information	This IE don't include information of cell 6
- Intra-frequency cell info list	
- Inter-frequency measurement system information	1
- Inter-frequency cell info list	
- New inter-frequency cell id	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
- Inter frequency cell id	
- Frequency info	0dB
- UARFCN uplink(Nu)	
- UARFCN downlink(Nd)	Not present
- Cell info	
- Cell individual offset	FALSE
- Reference time difference to cell	
- Read SFN indicator	FDD
- CHOICE mode	
- Primary CPICH info	Set to same code as used for cell 6
- Primary scrambling code	
- Primary CPICH Tx power	Not present
- Cell Selection and Re-selection Info	
- Qoffset1 <sub>s,n</sub>	0dB
- Qoffset2 <sub>s,n</sub>	
- Maximum allowed UL TX power	Reference to table 6.1.1
- HCS neighbouring cell information	
- CHOICE mode	Not present
- Qqualmin	
- Qrxlevmin	Reference to table 6.1.1
- Cell for measurement	
	Reference to table 6.1.1
	Not present

## Test Procedure

Table 8.2.6.36

Parameter	Unit	Cell 1		Cell 6	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/ 3.84 MHz	-55	-72	Off	-55

Table 8.2.6.36 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. SS switches the power settings from columns "T0" to "T1", whenever the description in multi-cell condition specifies the transmission power settings for cell 1 and cell 6.

The UE is in CELL\_FACH state of cell 1 and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.6.36. The SS modifies the contents of System formation block 11 in cell 1, so that include IE "Inter frequency measurement system information" about cell 6. The SS and UE execute procedure P6. Next The SS and the UE execute procedure P10 and then execute procedure P14. The SS switches its downlink transmission power settings to columns "T1" and transmits a PHYSICAL CHANNEL RECONFIGURATION message including IE "Frequency info" set to frequency information of cell 6 and no IE "Primary CPICH info". The UE selects cell 6 and initiates CELL UPDATE procedure with IE "Cell update cause" set to "cell reselection". The UE transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message using AM RLC after complete configuration

according to receiving PHYSICAL CHANNEL RECONFIGURATION message. Upon completion of the procedure, the SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	System Information Block type 11	The UE is in idle mode and camped onto cell 1. The System Information Block type 11 messages to be transmitted are different from the default settings and the SS has configured its downlink transmission power setting according to columns "T0" in table 8.2.6.36.
2	←→		SS executes procedure P6 (clause 7.4.2.2.2) specified in TS 34.108.	
3	←→		SS executes procedure P10 (clause 7.4.2.4.2) specified in TS 34.108.	
4	←→		SS executes procedure P14 (clause 7.4.2.6.2) specified in TS 34.108.	
5				The SS switches its downlink transmission power settings to columns "T1" in table 8.2.6.36.
6		←	PHYSICAL CHANNEL RECONFIGURATION	Including IE "Frequency info" set to frequency information of cell 6 and no IE "Primary CPICH info" set to Primary Scrambling Code
7		→	CELL UPDATE	The IE "Cell update cause" is set to "cell reselection".
8		←	CELL UPDATE CONFIRM	Including the IE "New C-RNTI"
9		→	UTRAN MOBILITY INFORMATION CONFIRM	
10		→	PHYSICAL CHANNEL RECONFIGURATION	The UE sends this message on a common physical channel in cell 6.
11		←→	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

### Specific Message Contents

#### PHYSICAL CHANNEL RECONFIGURATION (Step 6)

The contents PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical the message sub-type indicated by "Packet to CELL\_FACH from CELL\_FACH in PS" in Annex A, with the following exception:

Information Element	Value/remark
Frequency info - UARFCN uplink(Nu) - UARFCN downlink(Nd)	Same uplink UARFCN as used for cell 6 Same downlink UARFCN as used for cell 6
Downlink information for each radio links	Not present

#### CELL UPDATE (Step 7)

The contents of CELL UPDATE message are identical as "Contents of CELL UPDATE message" as found in [9] TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"cell reselection"

## CELL UPDATE CONFIRM (Step 8)

The contents of CELL UPDATE CONFIRM message are identical as "CELL UPDATE CONFIRM message" as found in [9] TS 34.108 clause 9. with the following exceptions:

Information Element	Value/remark
New C-RNTI	0000 0000 0000 0001B

## UTRAN MOBILITY UPDATE CONFIRM (Step 9)

The contents of UTRAN MOBILITY UPDATE CONFIRM message is identical as "UTRAN MOBILITY UPDATE CONFIRM message" as found in [9] TS 34.108 clause 9.

## 8.2.6.36.5 Test requirement

After step 6 the UE shall transmit a CELL UPDATE message on the CCCH in cell 6.

After step 8 the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the DCCH using AM RLC in cell 6.

After step 9 the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the DCCH using AM RLC in cell 6.

After step 10 the UE shall be in CELL\_FACH state in cell 6.

## 8.2.6.37 Physical channel reconfiguration for transition from CELL\_DCH to CELL\_DCH (Hard handover to another frequency with timing re-initialised)

## 8.2.6.37.1 Definition

## 8.2.6.37.2 Conformance requirement

In case the reconfiguration procedure is used to remove all existing RL(s) in the active set while new RL(s) are established the UE shall:

- 1> apply the hard handover procedure as specified (below);
- 1> be able to perform this procedure even if no prior UE measurements have been performed on the target cell and/or frequency.

...

In case the procedure was triggered by reception of a PHYSICAL CHANNEL RECONFIGURATION message, the UE shall:

- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message on the uplink DCCH using AM RLC.

...

When performing hard handover with change of frequency, the UE shall:

- 1> stop all intra-frequency and inter-frequency measurements on the cells listed in the variable CELL\_INFO\_LIST until a MEASUREMENT CONTROL message is received from UTRAN.

...

When the UE is in CELL\_DCH state and receives any of the messages causing the UE to perform a hard handover, the UE shall check the IE "Timing indication" in that message and:

- 1> if IE "Timing indication" has the value "initialise" (i.e. timing re-initialised hard handover):

- 2> read SFN on target cell identified by the first radio link listed in the IE "Downlink information per radio link list" included in that message;
- 2> set the CFN according to the following formula:
- 3> for FDD:

$$\text{CFN} = (\text{SFN} - (\text{DOFF} \text{ div } 38400)) \text{ mod } 256$$

where the formula gives the CFN of the downlink DPCH frame which starts at the same time as or which starts during the PCCPCH frame with the given SFN.

...

If the IE "DPCH compressed mode info" is included, and if the IE group "transmission gap pattern sequence configuration parameters" is not included, the UE shall:

- 1> if pattern sequence corresponding to IE "TGPSI" is already active (according to "Current TGPS Status Flag" in the variable TGPS\_IDENTITY):
- 2> if the "TGPS Status Flag" in this message is set to "deactivate" for the corresponding pattern sequence:
  - 3> deactivate this pattern sequence at the beginning of the frame, indicated by IE "Activation time" received in this message, when the new configuration received in this message is taken into use;

...

If the IE "Downlink DPCH info common for all RL" is included in a message used to perform a Timing re-initialised hard handover or the IE "Downlink DPCH info common for all RL" is included in a message other than RB SETUP used to transfer the UE from a state different from Cell\_DCH to Cell\_DCH, and ciphering is active for any radio bearer using RLC-TM, the UE shall, after having activated the dedicated physical channels indicated by that IE:

- 1> set the 20 MSB of the HFN component of COUNT-C for TM-RLC to the value of the latest transmitted IE "START" or "START List" for this CN domain, while not incrementing the value of the HFN component of COUNT-C at each CFN cycle; and
- 1> set the remaining LSBs of the HFN component of COUNT-C to zero;
- 1> start to perform ciphering on the radio bearer in lower layers while not incrementing the HFN;
- 1> include the IE "COUNT-C activation time" in the response message and specify a CFN value other than the default, "Now" for this IE;
- 1> calculate the START value according to subclause 8.5.9;
- 1> include the calculated START values for each CN domain in the IE "START list" in the IE "Uplink counter synchronisation info" in the response message;
- 1> at the CFN value as indicated in the response message in the IE "COUNT-C activation time":
  - 2> set the 20 MSB of the HFN component of the COUNT-C variable to the START value as indicated in the IE "START list" of the response message for the relevant CN domain; and
  - 2> set the remaining LSBs of the HFN component of COUNT-C to zero;
  - 2> increment the HFN component of the COUNT-C variable by one;
  - 2> set the CFN component of the COUNT-C to the value of the IE "COUNT-C activation time" of the response message. The HFN component and the CFN component completely initialise the COUNT-C variable;
  - 2> step the COUNT-C variable, as normal, at each CFN value, i.e. the HFN component is no longer fixed in value but incremented at each CFN cycle.

## Reference

3GPP TS 25.331 clauses 8.2.2.3, 8.3.5, 8.5.15.2, 8.6.6.15, 8.6.6.28

### 8.2.6.37.3 Test Purpose

To confirm that the UE is able to perform a hard-handover with change of frequency, with and without prior measurements on the target frequency.

To confirm that the UE answers with a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message when the procedure has been initiated with the PHYSICAL CHANNEL RECONFIGURATION message.

To confirm that the UE stops intra-frequency measurements after the inter-frequency handover has been performed, until a MEASUREMENT CONTROL message is received from the SS.

To confirm that the UE computes as it shall the CFN to be used after the handover.

To confirm that the UE deactivates compressed mode when it has been ordered to do so in the PHYSICAL CHANNEL RECONFIGURATION message.

To confirm that the UE includes the IE "COUNT-C activation time" and the IE "START list" (in the IE "Uplink counter synchronisation info") in the response message if ciphering is active for any radio bearer using RLC-TM.

### 8.2.6.37.4 Method of test

#### Initial Condition

System Simulator: 5 cells – Cell 1 and cell 2 on frequency  $f_1$ , cell 3 and cell 4 on frequency  $f_2$ , and cell 5 on frequency  $f_3$ . Cells 2 and 4 shall have the same primary scrambling code.

UE: "CS-DCCH+DTCH\_DCH" (state 6-9) or "PS-DCCH+DTCH\_DCH" (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the test case shall be run twice, once starting from state 6-9, once starting from state 6-10. Ciphering shall be activated.

#### Test Procedure

Table 8.2.6.37-1 illustrates the downlink power to be applied for the 4 cells, as well as the frequency and scrambling code for each cell.

**Table 8.2.6.37-1**

Parameter	Unit	Cell 1			Cell 2			Cell 3			Cell 4			Cell 5		
		T0	T1	T2	T0	T1	T2	T0	T1	T2	T0	T1	T2	T0	T1	T2
Frequency		$f_1$			$f_1$			$f_2$			$f_2$			$f_3$		
Scrambling code		Scrambling code 1			Scrambling code 2			Scrambling code 3			Scrambling code 2			Scrambling code 4		
CPICH $E_c$	dBm/3.84 MHz	-60	-60	-75	-95	-60	75	-60	-60	60	-60	-60	62	-50	-50	-50

The UE is initially in CELL\_DCH, and has only cell 1 in its active set.

At instant T1, the downlink power is changed according to what is shown in table 8.2.6.37 -1. Cell 2 should then trigger event 1a as has been configured through the default System Information Block Type 11. The UE shall thus send a MEASUREMENT REPORT to the SS, triggered by cell 2.

The SS adds then cell 2 to the active set of the Ue, by sending an ACTIVE SET UPDATE message to the UE. The UE shall answer with an ACTIVE SET UPDATE COMPLETE message.

The SS configures then compressed mode, to prepare the UE for inter-frequency measurements, by sending a PHYSICAL CHANNEL RECONFIGURATION message on DCCH using AM-RLC. The UE shall answer with a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message.

The SS then sets up inter-frequency measurements (event 2b), by sending a MEASUREMENT CONTROL message to the UE. Compressed mode is started at the same time in that message.

At instant T2, the downlink power is changed according to what is shown in table 8.2.6.37-1. Frequency  $f_2$  shall then trigger event 2b, and the UE shall transmit a MEASUREMENT REPORT message to the SS.

SS then transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE on DCCH using AM-RLC, to order it to perform timing reinitialised inter-frequency handover to cell 3 on frequency  $f_2$ . The UE is also ordered to stop compressed mode after the handover.

The UE shall then transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to the SS when the inter-frequency handover has succeeded. In case the initial condition was CS-DCCH+DTCH\_DCH, that message shall contain the IEs "COUNT-C activation time" and the IE "START list" (in the IE "Uplink counter synchronisation info"), indicating to the SS when and from which value to start incrementing the HFN part of the COUNT-C variable used for ciphering. The SS shall restart incrementing the HFN part of the COUNT-C variable from the value specified in the IE START from the CFN indicated in the IE COUNT-C activation time.

The SS then waits for 20 seconds, and checks that no MEASUREMENT REPORT is received from the UE.

The SS sends then a MEASUREMENT CONTROL message to the UE, to modify the intra-frequency cell info list of the UE. About 640 ms after, a MEASUREMENT REPORT message shall be received from the UE, triggered by cell 4. Subsequent MEASUREMENT REPORT messages shall be received at 4 seconds interval.

The SS sends then a MEASUREMENT CONTROL message to the UE that sets up inter-frequency measurements, but does not activate compressed mode in that message. It waits then for 20 seconds, and checks that no MEASUREMENT REPORT message triggered by cell 5 is received.

The SS then sends a PHYSICAL CHANNEL RECONFIGURATION message to the UE on DCCH using AM-RLC, to order it to perform timing reinitialised inter-frequency handover to cell 5 on frequency  $f_3$ .

The UE shall then transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to the SS when the inter-frequency handover has succeeded. In case the initial condition was CS-DCCH+DTCH\_DCH, that message shall contain the IEs "COUNT-C activation time" and the IE "START list" (in the IE "Uplink counter synchronisation info"), indicating to the SS when and from which value to start incrementing the HFN part of the COUNT-C variable used for ciphering.

#### Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The SS changes the power of the cells according to column T1 in table 8.2.6.37-1
2		→	MEASUREMENT REPORT	Event 1a is triggered by cell 2 in the UE, which sends a MEASUREMENT REPORT message to the SS
3		←	ACTIVE SET UPDATE	The SS adds cell 2 to the active set of the UE.
4		→	ACTIVE SET UPDATE COMPLETE	The UE answers with an ACTIVE SET UPDATE COMPLETE message to the SS
5		←	PHYSICAL CHANNEL RECONFIGURATION	The SS downloads the compressed mode parameters in the UE.
6		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	The UE acknowledges the downloading of the compressed mode parameters.
7		←	MEASUREMENT CONTROL	The SS configures inter-frequency measurements in the UE, and activates compressed mode.
8				The SS changes the power of the cells according to column T2 in table 8.2.6.37-1.

9	→	MEASUREMENT REPORT	Frequency $f_2$ triggers event 2b in the UE, which sends a MEASUREMENT REPORT message to the SS.
10	←	PHYSICAL CHANNEL RECONFIGURATION	The SS orders the UE to perform timing re-initialised inter-frequency handover to cell 3 on frequency $f_2$ .
11	→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	After the UE has succeeded in performing the inter-frequency handover, it shall send a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to the SS using the new configuration.
12			The SS waits for 20 seconds and monitors that no MEASUREMENT REPORT message is received from the UE.
13	←	MEASUREMENT CONTROL	The SS updates the list of intra-frequency cells in the UE.
14	→	MEASUREMENT REPORT	Cell 4 triggers event 1a in the UE, which sends a MEASUREMENT REPORT message to the SS. Subsequent MEASUREMENT REPORT messages shall be received from the UE at 4 seconds interval.
15	←	MEASUREMENT CONTROL	The SS sets up an inter-frequency measurement in the UE, but does not activate compressed mode.
16			The SS waits for 20 seconds and monitors that no MEASUREMENT REPORT message is received from the UE.
17	←	PHYSICAL CHANNEL RECONFIGURATION	The SS orders the UE to perform timing re-initialised inter-frequency handover to cell 5 on frequency $f_3$ .
18	→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	After the UE has succeeded in performing the inter-frequency handover, it shall send a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to the SS using the new configuration.

Specific Message Content

FFS

### 8.2.6.37.5 Test Requirement

After step 1, the UE shall send a MEASUREMENT REPORT message triggered by event 1a for cell 2.

After step 3, the UE shall send an ACTIVE SET UPDATE COMPLETE message to acknowledge that it has added cell 2 to its active set.

After step 5, the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to the SS to acknowledge the downloading of the compressed mode parameters that were sent in the PHYSICAL CHANNEL RECONFIGURATION message of step 4.

After step 8, the UE shall transmit a MEASUREMENT REPORT message triggered by frequency  $f_2$ . In that message, cell 3 shall be the only cell included in the IE event results.

After step 10, the UE shall send a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to the SS in cell 3 to acknowledge the successful timing re-initialised inter-frequency handover, and in case the UE was in state 6-9 as defined in clause 7.4 of 34.108 as initial condition to the test, the IEs "COUNT-C activation time" and "START list" (in the IE "Uplink counter synchronisation info") shall be included in that message. The UE shall also start incrementing the HFN part of the COUNT-C variable from the value specified in the IE START from the CFN indicated in the IE COUNT-C activation time.

After step 11, the UE shall not send any MEASUREMENT REPORT message triggered by event 1a for cell 4.

After step 13, the UE send a MEASUREMENT REPORT message triggered by event 1a for cell 4.

After step 15, the UE shall not send any MEASUREMENT REPORT message triggered by event 2c for frequency 1.

After step 17, the UE shall send a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to the SS in cell 3 to acknowledge the successful timing re-initialised inter-frequency handover, and in case the UE was in state 6-9 as defined in clause 7.4 of 34.108 as initial condition to the test, the IEs "COUNT-C activation time" and "START list" (in the IE "Uplink counter synchronisation info") shall be included in that message.

## 8.2.7 Physical Shared Channel Allocation [TDD only]

[Editor's note: This message is not included in Release99 so this is FFS.]

## 8.2.8 PUSCH capacity request [TDD only]

[Editor's note: This message is not included in Release99 so this is FFS.]

## 8.2.9 Void

# 8.3 RRC connection mobility procedure

## 8.3.1 Cell Update

### 8.3.1.1 Cell Update: cell reselection in CELL\_FACH

#### 8.3.1.1.1 Definition

#### 8.3.1.1.2 Conformance requirement

A UE shall initiate the cell update procedure in the following cases:

1> Uplink data transmission:

...

1> Paging response:

- ...
- 1> Radio link failure:
  - ...
- 1> Re-entering service area:
  - ...
- 1> RLC unrecoverable error:
  - ...
- 1> Cell reselection:
  - 2> if none of the criteria for performing cell update with the causes specified above in the current subclause is met:
    - 3> if the UE is in CELL\_FACH or CELL\_PCH state and the UE performs cell re-selection; or
    - 3> if the UE is in CELL\_FACH state and the variable C\_RNTI is empty:
      - 4> perform cell update using the cause "cell reselection".
- ...

When initiating cell update procedure, the UE shall:

- 1> stop timer T305;
- 1> if the UE is in CELL\_DCH state:
  - ...
- ...
- 1> move to CELL\_FACH state, if not already in that state;
- 1> if the UE performs cell re-selection:
  - 2> clear the variable C\_RNTI; and
  - 2> stop using that C\_RNTI just cleared from the variable C\_RNTI in MAC.
- 1> set CFN in relation to SFN of current cell according to TS 25.331 subclause 8.5.15;
- 1> in case of a cell update procedure:
  - 2> set the contents of the CELL UPDATE message according to TS 25.331 subclause 8.3.1.3;
  - 2> submit the CELL UPDATE message for transmission on the uplink CCCH.
- ...
- 1> set counter V302 to 1;
- 1> start timer T302 when the MAC layer indicates success or failure in transmitting the message.
- ...

In case of cell update procedure the UE shall transmit a CELL UPDATE message.

The UE shall set the IEs in the CELL UPDATE message as follows:

- 1> set the IE "Cell update cause" corresponding to the cause specified in TS 25.331 subclause 8.3.1.2 that is valid when the CELL UPDATE message is submitted to lower layers for transmission;

NOTE: During the time period starting from when a cell update procedure is initiated by the UE until when the procedure ends, additional CELL UPDATE messages may be transmitted by the UE with different causes.

1> set the IE "U-RNTI" to the value of the variable U\_RNTI;

1> if the value of the variable PROTOCOL\_ERROR\_INDICATOR is TRUE:

...

1> if the value of the variable FAILURE\_INDICATOR is TRUE:

...

...

When the UE receives a CELL UPDATE CONFIRM message; and

- if the message is received on the CCCH, and IE "U-RNTI" is present and has the same value as the variable U\_RNTI; or

- if the message is received on DCCH:

the UE shall:

1> stop timer T302;

1> in case of a cell update procedure and the CELL UPDATE CONFIRM message:

2> includes "RB information elements"; and/or

2> includes "Transport channel information elements"; and/or

2> includes "Physical channel information elements"; and

2> if the variable ORDERED\_RECONFIGURATION is set to FALSE:

3> set the variable ORDERED\_RECONFIGURATION to TRUE.

1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified otherwise in the following:

...

2> perform the physical layer synchronisation procedure as specified in TS 25.214;

...

...

1> enter a state according to subclause 8.6.3.3 applied on the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message.

...

If the UE after state transition remains in CELL\_FACH state, it shall

1> start the timer T305 using its initial value if timer T305 is not running and periodical cell update has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity";

1> select PRACH according to TS 25.331 subclause 8.5.17;

1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;

1> not prohibit periodical status transmission in RLC;

1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

2> ignore that IE and stop using DRX.

If the UE after the state transition remains in CELL\_FACH state; and

- a C-RNTI is stored in the variable C\_RNTI;

...

the UE shall:

...

1> in case of a cell update procedure:

2> set the IE "RRC transaction identifier" in any response message transmitted below to the value of "RRC transaction identifier" in the entry for the CELL UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS; and

2> clear that entry.

...

1> transmit a response message as specified in TS 25.331 subclause 8.3.1.7;

...

If the CELL UPDATE CONFIRM message:

- includes the IE "RB information to release list":

the UE shall:

1> transmit a RADIO BEARER RELEASE COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message:

- does not include the IE "RB information to release list"; and
- includes the IE "RB information to reconfigure list"; or
- includes the IE "RB information to be affected list":

the UE shall:

1> transmit a RADIO BEARER RECONFIGURATION COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- includes "Transport channel information elements":

the UE shall:

1> transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- includes "Physical channel information elements":

the UE shall:

1> transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE as response message using AM RLC.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- includes "CN information elements"; or
- includes the IE "Ciphering mode info"; or
- includes the IE "Integrity protection mode info"; or
- includes the IE "New C-RNTI"; or
- includes the IE "New U-RNTI":

the UE shall:

- 1> transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- does not include "CN information elements"; and
- does not include the IE "Ciphering mode info"; and
- does not include the IE "Integrity protection mode info"; and
- does not include the IE "New C-RNTI"; and
- does not include the IE "New U-RNTI":

the UE shall:

- 1> transmit no response message.

If the new state is CELL\_FACH, the response message shall be transmitted using the new configuration after the state transition., and the UE shall:

...

- 1> if the variable PDCP\_SN\_INFO is empty:

...

- 2> if the CELL UPDATE CONFIRM or URA UPDATE CONFIRM message did not contain the IE "Ciphering mode info":

- 3> when RLC has been requested to transmit the response message,

- 4> continue with the remainder of the procedure.

...

If any or several of the following conditions are true:

...;

- reselection to another UTRA cell (including the previously serving cell) before completion of the cell update or URA update procedure;

the UE shall:

- 1> stop T302 if it is running;
- ...
- 1> check whether it is still in "in service area";
- ...
- 1> in case of a cell update procedure:
  - 2> clear any entry for the CELL UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS.

If the UE detects "in service area" if it has not entered idle mode, and:

- 1> if V302 is equal to or smaller than N302, the UE shall:
  - 2> if the UE performed cell re-selection:
    - 3> delete its C-RNTI.
  - 2> in case of a cell update procedure:
    - 3> set the contents of the CELL UPDATE message according to TS 25.331 subclause 8.3.1.3;
    - 3> submit the CELL UPDATE message for transmission on the uplink CCCH.
  - 2> increment counter V302;
  - 2> restart timer T302 when the MAC layer indicates success or failure to transmit the message.
- 1> if V302 is greater than N302, the UE shall:
  - ...

## Reference

3GPP TS 25.331 clause 8.3.1

### 8.3.1.1.3 Test purpose

1. To confirm that the UE executes a cell update procedure after the successful reselection of another UTRA cell.
2. To confirm that the UE sends the correct uplink response message when executing cell update procedure due to cell reselection.

### 8.3.1.1.4 Method of test

#### Initial Condition

System Simulator: 2 cells - Cell 1 and 2 are active.

UE: PS-DCCH+DTCH\_FACH (state 6-11) in cell 1 as specified in clause 7.4 of TS 34.108.

## Test Procedure

Table 8.3.1.1

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH Ec (FDD)	dBm/3.84MHz	-60	-75	-75	-60
P-CCPCH RSCP (TDD)	dBm	-60	-75	-75	-60

Table 8.3.1.1 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. Columns marked "T0" denote the initial conditions. SS switches the power settings repeatedly between columns "T1" and "T0", whenever the description below specifies that the transmission power settings for cell 1 and cell 2 be reversed.

The UE is in the CELL\_FACH state, camping onto cell 1. SS configures its downlink transmission power settings according to columns "T1" in table 8.3.1.1. The UE shall find cell 2 to be more suitable for service and hence perform a cell reselection. After the completion of cell reselection, the UE shall transmit a CELL UPDATE message to the SS on the uplink CCCH of cell 2 and set IE "Cell update cause" to "Cell Reselection". After the SS receives this message, it transmits a CELL UPDATE CONFIRM message, which includes the IE "RRC State Indicator" set to "CELL\_FACH", to the UE on the downlink DCCH. UE shall verify that IE "New C-RNTI" is not included in the downlink message and shall send a CELL UPDATE message to SS again. SS shall then send a CELL UPDATE CONFIRM message which includes a valid IE "New C-RNTI". SS verifies that the UE send UTRAN MOBILITY INFORMATION CONFIRM message.. UE shall stay in CELL\_FACH state. SS configures its downlink transmission power settings according to columns "T0" in table 8.3.1.1. The UE shall send a CELL UPDATE message on the uplink CCCH of cell 1. SS replies with CELL UPDATE CONFIRM message and allocates new C-RNTI and U-RNTI identities to the UE. The IE "RRC State Indicator" is set to "CELL\_FACH" in this message. The UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message. Following this, SS configures its downlink transmission power settings according to columns "T1" in table 8.3.1.1. The UE shall initiate a cell update procedure by transmitting a CELL UPDATE message and stating the cause as 'cell re-selection'. SS replies with a CELL UPDATE CONFIRM message which contains IE "Physical channel information elements". The UE shall send PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to acknowledge the change in physical resources. Then, SS configures its downlink transmission power settings according to columns "T0" in table 8.3.1.1. The UE shall send a CELL UPDATE message on the uplink CCCH of cell 1. SS replies with a CELL UPDATE CONFIRM message which contains IE "Transport channel information elements". The UE shall send TRANSPORT CHANNEL RECONFIGURATION COMPLETE message. Following this, SS configures its downlink transmission power settings according to columns "T1" in table 8.3.1.1. The UE shall send a CELL UPDATE message on the uplink CCCH of cell 2. SS replies with a CELL UPDATE CONFIRM message which contains IE "RB information to be affected list". The UE shall send RADIO BEARER RECONFIGURATION COMPLETE message. Then, SS configures its downlink transmission power settings according to columns "T0" in table 8.3.1.1. The UE shall send a CELL UPDATE message on the uplink CCCH of cell 1. SS replies with a CELL UPDATE CONFIRM message which contains IE "RB information to release list". The UE shall send RADIO BEARER RELEASE COMPLETE message. Finally, SS configures its downlink transmission power settings according to columns "T1" in table 8.3.1.1. The UE shall send a CELL UPDATE message on the uplink CCCH of cell 2. SS shall not respond to this message but SS configures its downlink transmission power settings according to columns "T0" in table 8.3.1.1. UE shall send a CELL UPDATE message on the uplink CCCH of cell 1. SS shall then send CELL UPDATE CONFIRM message to UE. UE shall reply with UTRAN MOBILITY INFORMATION CONFIRM message. SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_FACH state in cell 1
2			Void	SS applies the downlink transmission power settings, according to the values in columns "T1" of table 8.3.1.1. The UE shall find that the cell 2 is better for service and perform a reselection. SS waits for the maximum duration required for the UE to camp to cell 2.
3		→	CELL UPDATE	Value "cell reselection" shall be indicated in IE "Cell update cause"
4		←	CELL UPDATE CONFIRM	IE "RRC State Indicator" is set to "CELL_FACH". SS set k=0.
4a		→	CELL UPDATE	Value "cell reselection" shall be indicated in IE "Cell update cause"
4b		←	CELL UPDATE CONFIRM	See message content. SS set k=0.
5		→	UTRAN MOBILITY INFORMATION CONFIRM	
6				SS reverses the transmission power level of cell 1 and cell 2.
7		→	CELL UPDATE	

8	←	CELL UPDATE CONFIRM	IE "RRC State Indicator" is set to "CELL_FACH". If $k \geq 0$ , new C-RNTI and U-RNTI identities are assigned to the UE. If $k > 0$ , IE "Physical channel information elements" is included in this message. If $k > 1$ , IE "Transport channel information elements" is included in this message. If $k > 2$ , IE "RB information to be affected list" is included in this message. If $k > 3$ , IE "RB information to release list" is included in this message. Increment k by 1.
9	→	UTRAN MOBILITY INFORMATION CONFIRM	If $k=1$ when SS received this message, go to step 6. Else test fails. If this message is not received, proceed to next step.
10	→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	If $k=2$ when SS received this message, go to step 6. Else test fails. If this message is not received, proceed to next step.
11	→	TRANSPORT CHANNEL RECONFIGURATION COMPLETE	If $k=3$ when SS received this message, go to step 6. Else test fails. If this message is not received, proceed to next step.
12	→	RADIO BEARER RECONFIGURATION COMPLETE	If $k=4$ when SS received this message, go to step 6. Else test fails. If this message is not received, proceed to next step.
13	→	RADIO BEARER RELEASE COMPLETE	If $k=5$ when SS received this message, proceed to next step. Else test fails. If this message is not received, test fails.
14			SS reverses the transmission power level of cell 1 and cell 2.
15	→	CELL UPDATE	
16			SS reverses the transmission power level of cell 1 and cell 2.
17	→	CELL UPDATE	
18	←	CELL UPDATE CONFIRM	
19	→	UTRAN MOBILITY INFORMATION CONFIRM	
20	↔	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

### Specific Message Contents

#### CELL UPDATE (Step 3, 7, 15 and 17)

The same message found in TS 34.108, clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI	Check to see if set to '0000 0000 0001' In step 3, check to see if set to '0000 0000 0000 0000 0001'. In step 7 and when $k < 1$ , check to see if set to '0000 0000 0000 0000 0001'. In step 7 and when $k > 0$ , check to see if set to same string in IE "S-RNTI" in IE "New U-RNTI" of CELL UPDATE CONFIRM message in previous step 8. In step 15 and 17, check to see if set to same string in IE "S-RNTI" in IE "New U-RNTI" of CELL UPDATE CONFIRM message in previous step 8.
Cell Update Cause	Check to see if set to 'Cell Re-selection'

## CELL UPDATE CONFIRM (Step 4)

Use the same message sub-type found in TS 34.108, clause 9.

## CELL UPDATE CONFIRM (Step 4b and 18)

Use the same message sub-type found in TS 34.108, clause 9, with the following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_FACH
New C-RNTI	'1010 1010 1010 1010'

CELL UPDATE CONFIRM (Step 8 and  $k = 0$ )

Use the same message sub-type found in TS 34.108, clause 9, with the following exceptions:

Information Element	Value/remark
New U-RNTI - SRNC Identity - S-RNTI	'0000 0000 0001' An arbitrary 20-bits string which is different from original S-RNTI
New C-RNTI	An arbitrary 16-bits string which is different from original C-RNTI assigned in RRC connection establishment procedure.

CELL UPDATE CONFIRM (Step 8 and  $k=1$ )

Use the same message sub-type found in step 8 and  $k=0$ , with the following exceptions:

Information Element	Value/remark
Maximum allowed uplink TX power	3 dB below the following value: Minimum of {33 dBm for FDD and 30 dBm for TDD, maximum uplink power allowed under the UE power class}

CELL UPDATE CONFIRM (Step 8 and  $k=2$ )

Use the same message sub-type found in step 8 and  $k=1$ , with the following exceptions:

Information Element	Value/remark
Added or Reconfigured uplink TrCH information	Same as the system information block type 5
Added or Reconfigured downlink TrCH information	Same as the system information block type 5

## CELL UPDATE CONFIRM (Step 8 and k=3)

Use the same message sub-type found in step 8 and k=2, with the following exceptions:

Information Element	Value/remark
RB information to be reconfigure	
- RB identity	20
- PDCP info	Not Present
- PDCP SN info	Not Present
- RLC info	Not Present
- RB mapping info	Not Present
- RB stop/continue	Stop

## CELL UPDATE CONFIRM (Step 8 and k=4)

Use the same message sub-type found in step 8 and k=3, with the following exceptions:

Information Element	Value/remark
RB information to release	
-RB identity	4

## 8.3.1.1.5 Test requirement

After step 2 the UE shall reselect to cell 2 and then it shall transmit a CELL UPDATE message which, sets the value "cell reselection" in IE "Cell update cause".

After step 3 the UE shall transmit CELL UPDATE message which sets the value "cell reselection" in IE "Cell update cause".

After step 4a, the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message to acknowledge that it has started to use the new RNTI identities allocated.

After step 6 the UE shall sent a CELL UPDATE message to the cell with stronger transmitting power, in order to indicate that a cell reselection has taken place.

After step 8, if k=1, the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message to acknowledge that it has started to use the new RNTI identities allocated.

If k=2, the UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the new physical channel assigned.

If k=3, the UE shall transmit a TRANSPORT CHANNEL RECONFIGURATION COMPLETE message to acknowledge that it has reconfigured the transport channels.

If k=4, the UE shall transmit a RADIO BEARER RECONFIGURATION COMPLETE message to acknowledge that it has reconfigured the radio bearers.

If k=5, the UE shall transmit a RADIO BEARER RELEASE COMPLETE message to acknowledge that it has release its radio bearers.

After step 14 the UE shall transmit a CELL UPDATE message to the cell with stronger transmitting power, in order to indicate that a cell reselection has taken place.

After step 16 the UE shall transmit a CELL UPDATE message to the cell with stronger transmitting power, in order to indicate that a cell reselection has taken place.

After step 18, the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message to acknowledge that it has started to use the new RNTI identities allocated.

### 8.3.1.2 Cell Update: cell reselection in CELL\_PCH

#### 8.3.1.2.1 Definition

#### 8.3.1.2.2 Conformance requirement

A UE shall initiate the cell update procedure in the following cases:

1> Uplink data transmission:

...

1> Paging response:

...

1> Radio link failure:

...

1> Re-entering service area:

...

1> RLC unrecoverable error:

...

1> Cell reselection:

2> if none of the criteria for performing cell update with the causes specified above in the current subclause is met:

3> if the UE is in CELL\_FACH or CELL\_PCH state and the UE performs cell re-selection; or

3> if the UE is in CELL\_FACH state and the variable C\_RNTI is empty:

4> perform cell update using the cause "cell reselection".

When initiating cell update procedure, the UE shall:

1> stop timer T305;

1> if the UE is in CELL\_DCH state:

...

...

1> move to CELL\_FACH state, if not already in that state;

1> if the UE performs cell re-selection:

2> clear the variable C\_RNTI; and

2> stop using that C\_RNTI just cleared from the variable C\_RNTI in MAC.

1> set CFN in relation to SFN of current cell according to TS 25.331 subclause 8.5.15;

1> in case of a cell update procedure:

2> set the contents of the CELL UPDATE message according to TS 25.331 subclause 8.3.1.3;

2> submit the CELL UPDATE message for transmission on the uplink CCCH.

...

1> set counter V302 to 1;

1> start timer T302 when the MAC layer indicates success or failure in transmitting the message.

...

In case of cell update procedure the UE shall transmit a CELL UPDATE message.

The UE shall set the IEs in the CELL UPDATE message as follows:

1> set the IE "Cell update cause" corresponding to the cause specified in TS 25.331 subclause 8.3.1.2 that is valid when the CELL UPDATE message is submitted to lower layers for transmission;

NOTE: During the time period starting from when a cell update procedure is initiated by the UE until when the procedure ends, additional CELL UPDATE messages may be transmitted by the UE with different causes.

1> set the IE "U-RNTI" to the value of the variable U\_RNTI;

1> if the value of the variable PROTOCOL\_ERROR\_INDICATOR is TRUE:

...

1> if the value of the variable FAILURE\_INDICATOR is TRUE:

...

...

When the UE receives a CELL UPDATE CONFIRM message; and

- if the message is received on the CCCH, and IE "U-RNTI" is present and has the same value as the variable U\_RNTI; or
- if the message is received on DCCH:

the UE shall:

1> stop timer T302;

1> in case of a cell update procedure and the CELL UPDATE CONFIRM message:

...

1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified otherwise in the following:

...

2> perform the physical layer synchronisation procedure as specified in TS 25.214;

...

...

1> enter a state according to subclause 8.6.3.3 applied on the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message.

...

If the UE after state transition enters CELL\_PCH state, it shall:

...

1> start the timer T305 using its initial value if timer T305 is not running and periodical update has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity";

1> select Secondary CCPCH according to subclause 8.5.19;

- 1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:
  - 2> use the value in the IE "UTRAN DRX Cycle length coefficient" for calculating Paging Occasion and PICH Monitoring Occasion as specified in TS 25.331 subclause 8.6.3.2 in CELL\_PCH state.
- 1> if the IE "UTRAN DRX cycle length coefficient" is not included in the same message:
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- does not include "CN information elements"; and
- does not include the IE "Ciphering mode info"; and
- does not include the IE "Integrity protection mode info"; and
- does not include the IE "New C-RNTI"; and
- does not include the IE "New U-RNTI":

the UE shall:

- 1> transmit no response message.

## Reference

3GPP TS 25.331 clause 8.3.1.

### 8.3.1.2.3 Test purpose

1. To confirm that the UE, in CELL\_PCH state, executes a cell update procedure after the successful reselection of another UTRA cell.

### 8.3.1.2.4 Method of test

## Initial Condition

System Simulator: 2 cells – Cell 1 and 2 are active.

UE: CELL\_PCH (state 6-12) in cell 1 as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is brought to CELL\_PCH state and is camped onto cell 1. SS configures its downlink transmission power settings according to columns "T1" in table 8.3.1.1. When the UE detects the presence of cell 2, it moves to CELL\_FACH state and transmits a CELL UPDATE message on the uplink CCCH. The value "cell reselection" shall be set in IE "Cell update cause" in CELL UPDATE message. Upon reception of CELL\_UPDATE message, SS replies with a CELL UPDATE CONFIRM message with the IE "RRC State Indicator" set to "CELL\_PCH". After receiving this message, the UE returns to CELL\_PCH state without transmitting any uplink message. SS calls for generic procedure C.4 to check that UE is in CELL\_PCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_PCH state in cell 1
2				SS applies the downlink transmission power settings, according to the values in columns "T1" of table 8.3.1.1. The UE shall find that the cell 2 is better and attempt to perform a cell reselection.
3		→	CELL UPDATE	The UE moves to CELL_FACH state and transmits this message with the IE "Cell update cause" set to "cell reselection"
4		←	CELL UPDATE CONFIRM	IE "RRC State Indicator" is set to "CELL_PCH".
5				The UE is in CELL_PCH state.
6		↔	CALL C.4	If the test result of C.4 indicates that UE is in CELL_PCH state, the test passes, otherwise it fails.

Specific Message Contents

#### CELL UPDATE (Steps 3)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI	Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001'
Cell Update Cause	Check to see if set to 'Cell Re-selection'

#### CELL UPDATE CONFIRM (Step 4)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
RRC State Indicator UTRAN DRX cycle length coefficient	CELL_PCH 3

#### 8.3.1.2.5 Test requirement

After step 2 the UE shall reselect to cell 2 and transmit a CELL UPDATE message, containing the IE "Cell update cause" set to "cell reselection".

After step 4, the UE shall enter CELL\_PCH state.

### 8.3.1.3 Cell Update: periodical cell update in CELL\_FACH

#### 8.3.1.3.1 Definition

#### 8.3.1.3.2 Conformance requirement

UE shall initiate the cell update procedure in the following cases:

1> Uplink data transmission:

...

1> Paging response:

...

1> Radio link failure:

...

1> Re-entering service area:

...

1> RLC unrecoverable error:

...

1> Cell reselection:

...

1> Periodical cell update:

2> if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and

2> if the UE is in CELL\_FACH or CELL\_PCH state; and

2> if the timer T305 expires; and

2> if the criteria for "in service area" as specified in TS 25.331 subclause 8.5.5.2 is fulfilled; and

2> if periodic updating has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity":

3> perform cell update using the cause "periodical cell update".

When initiating the cell update procedure, the UE shall:

1> stop timer T305;

...

1> move to CELL\_FACH state, if not already in that state;

...

1> set CFN in relation to SFN of current cell according to TS 25.331 subclause 8.5.15;

1> in case of a cell update procedure:

2> set the contents of the CELL UPDATE message according to TS 25.331 subclause 8.3.1.3;

2> submit the CELL UPDATE message for transmission on the uplink CCCH.

1> set counter V302 to 1;

1> start timer T302 when the MAC layer indicates success or failure in transmitting the message.

...

In case of cell update procedure the UE shall transmit a CELL UPDATE message.

The UE shall set the IEs in the CELL UPDATE message as follows:

1> set the IE "Cell update cause" corresponding to the cause specified in TS 25.331 subclause 8.3.1.2 that is valid when the CELL UPDATE message is submitted to lower layers for transmission;

NOTE: During the time period starting from when a cell update procedure is initiated by the UE until when the procedure ends, additional CELL UPDATE messages may be transmitted by the UE with different causes.

1> set the IE "U-RNTI" to the value of the variable U\_RNTI;

...

When the UE receives a CELL UPDATE CONFIRM message; and

- if the message is received on the CCCH, and IE "U-RNTI" is present and has the same value as the variable U\_RNTI; or
- if the message is received on DCCH:

the UE shall:

1> stop timer T302;

...

1> act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified otherwise in the following:

2> perform the physical layer synchronisation procedure as specified in TS 25.214;

1> enter a state according to TS 25.331 subclause 8.6.3.3 applied on the CELL UPDATE CONFIRM / URA UPDATE CONFIRM message.

If the UE after state transition remains in CELL\_FACH state, it shall

1> start the timer T305 using its initial value if timer T305 is not running and periodical cell update has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity";

1> select PRACH according to TS 25.331 subclause 8.5.17;

1> select Secondary CCPCH according to TS 25.331 subclause 8.5.19;

1> not prohibit periodical status transmission in RLC;

1> if the IE "UTRAN DRX cycle length coefficient" is included in the same message:

2> ignore that IE and stop using DRX.

If the UE after the state transition remains in CELL\_FACH state; and

- a C-RNTI is stored in the variable C\_RNTI;

or

- the UE after the state transition moves to another state than the CELL\_FACH state:

the UE shall:

1> in case of a cell update procedure:

2> set the IE "RRC transaction identifier" in any response message transmitted below to the value of "RRC transaction identifier" in the entry for the CELL UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS; and

2> clear that entry.

1> transmit a response message as specified in TS 25.331 subclause 8.3.1.7;

1> in case of a cell update procedure:

2> clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS.

1> set the variable CELL\_UPDATE\_STARTED to FALSE;

1> clear the variable SECURITY\_MODIFICATION.

...

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- includes "CN information elements"; or
- includes the IE "Ciphering mode info"; or
- includes the IE "Integrity protection mode info"; or
- includes the IE "New C-RNTI"; or
- includes the IE "New U-RNTI":

the UE shall:

1> transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

If the CELL UPDATE CONFIRM message:

- does not include "RB information elements"; and
- does not include "Transport channel information elements"; and
- does not include "Physical channel information elements"; and
- does not include "CN information elements"; and
- does not include the IE "Ciphering mode info"; and
- does not include the IE "Integrity protection mode info"; and
- does not include the IE "New C-RNTI"; and
- does not include the IE "New U-RNTI":

the UE shall:

1> transmit no response message.

...

When the UE receives a UTRAN MOBILITY INFORMATION message, it shall:

- 1> act on received information elements as specified in TS 25.331 subclause 8.6;
- 1> if the IE "UE Timers and constants in connected mode" is present:
- 2> store the values of the IE "UE Timers and constants in connected mode" in the variable TIMERS\_AND\_CONSTANTS, replacing any previously stored value for each timer and constant; and
- 2> for each updated timer value:
- 3> start using the new value next time the timer is started;
- 2> for each updated constant value:
- 3> start using the new value directly;
- 1> set the IE "RRC transaction identifier" in the UTRAN MOBILITY INFORMATION CONFIRM message to the value of "RRC transaction identifier" in the entry for the UTRAN MOBILITY INFORMATION message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;
- 1> transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC;
- ...

#### Reference

3GPP TS 25.331 clause 8.3.1, 8.3.3.3.

#### 8.3.1.3.3 Test purpose

1. To confirm that the UE executes a periodical cell update procedure following the expiry of timer T305.

#### 8.3.1.3.4 Method of test

#### Initial Condition

System Simulator: 2 cells – Cell 1 and 2 are active.

UE: PS-DCCH+DTCH\_FACH (state 6-11) in cell 1 as specified in clause 7.4 of TS 34.108.

#### Test Procedure

**Table 8.3.1.3**

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH Ec (FDD)	dBm/3.84 MHz	-60	-75	-75	-60
P-CCPCH RSCP (TDD)	dBm	-60	-75	-75	-60

Table 8.3.1.3 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution.

The UE is in CELL\_FACH state. When the UE detects the expiry of timer T305 according to the settings in system information, the UE transmits a CELL UPDATE message to the SS on the uplink CCCH with a cause indicating periodical cell updating. SS replies with a CELL UPDATE CONFIRM message, and IE "RRC State Indicator" is set to "CELL\_FACH". SS verifies that the UE does not transmit any uplink message. SS then waits for T305 to expire again. The UE shall send another CELL UPDATE message to report periodic cell updating. After the SS receives this

message, it transmits a CELL UPDATE CONFIRM message which includes the IEs "new C-RNTI", "new U-RNTI" to the UE on the downlink DCCH. Then the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH to acknowledge the receipt of the new UE identities. Next, SS transmits UTRAN MOBILITY INFORMATION message, which includes IE "T305" set to "infinity", to UE. UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message. SS configures its downlink transmission power settings according to columns "T1" in table 8.3.1.3, causing the UE to enter CELL\_FACH state in cell 2 and transmit a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection". Then SS shall transmit CELL UPDATE CONFIRM. Then the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH to acknowledge the receipt of the new UE identities. SS then monitors the uplink CCCH for a period of 60 minutes (ideally the SS should monitor this up to the maximum possible value for timer T305 (720 minutes), but for practical reasons 60 minutes (twice default timer of 30 minutes) is regarded as being sufficient) and verifies that no CELL\_UPDATE message is received. After this, the SS transmits UTRAN MOBILITY INFORMATION message, which includes IE "T305" set to '5', to UE. UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message. SS configures its downlink transmission power settings according to columns "T0" in table 8.3.1.3, causing the UE to enter CELL\_FACH state in cell 1 and transmit a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection". Then SS shall transmit CELL UPDATE CONFIRM. Then the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH to acknowledge the receipt of the new UE identities. UE shall resume periodic cell updating procedure and transmit CELL\_UPDATE message after T305 (5 minutes) expires.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_FACH state. SS waits until T305 has expired.
2		→	CELL UPDATE	IE "Cell update cause" shall be set to "periodical cell updating"
3		←	CELL UPDATE CONFIRM	No RNTI identities are given. No information on PRACH and S-CCPCH are provided.
4				SS verifies that no uplink message is received from UE. SS waits for another period to allow T305 to expire.
5		→	CELL UPDATE	Set to "periodical cell update" in IE "Cell update cause" upon the expiry of timer T305.
6		←	CELL UPDATE CONFIRM	Including IEs "new C-RNTI", "new U-RNTI" and IE "RRC State Indicator" is set to "CELL_FACH"
7		→	UTRAN MOBILITY INFORMATION CONFIRM	

8	←	UTRAN MOBILITY INFORMATION	IE "T305" is set to 'infintiy'.
9	→	UTRAN MOBILITY INFORMATION CONFIRM	
10			SS applies the downlink transmission power settings, according to the values in columns "T1" of table 8.3.1.3
11	→	CELL UPDATE	IE "Cell update cause" shall be set to "cell reselection".
12	←	CELL UPDATE CONFIRM	
12a	→	UTRAN MOBILITY INFORMATION CONFIRM	
13			SS waits for 60 minutes and checks that no CELL UPDATE message is transmitted on uplink PRACH channel.
14	←	UTRAN MOBILITY INFORMATION	IE "T305" is set to '5.
15	→	UTRAN MOBILITY INFORMATION CONFIRM	
16			SS applies the downlink transmission power settings, according to the values in columns "T0" of table 8.3.1.3
17	→	CELL UPDATE	IE "Cell update cause" shall be set to "cell reselection".
18	←	CELL UPDATE CONFIRM	
18a	→	UTRAN MOBILITY INFORMATION CONFIRM	
19	→	CELL UPDATE	UE shall transmit this message with "cell update cause" set to "periodical cell updating" after T305 expires.
20	←	CELL UPDATE CONFIRM	

### Specific Message Contents

#### CELL UPDATE (Step 2 and 5)

The same message found in TS 34.108, clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
Cell Update Cause	Check to see if set to 'periodical cell updating'

#### CELL UPDATE (Step 11 and 17)

The same message found in TS 34.108, clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI  Cell Update Cause	Check to see if set to '0000 0000 0001' Check to see if set to same bit string as in IE "S-RNTI" in IE "U-RNTI" of the CELL UPDATE CONFIRM message sent in step 6. Check to see if set to "cell reselection"

## CELL UPDATE CONFIRM (Step 3, 12, 18 and 20)

Use the same message sub-type found in TS 34.108, clause 9.

## CELL UPDATE CONFIRM (Step 6, 12 and 18)

Use the same message sub-type found in TS 34.108, clause 9, with the following exceptions:

Information Element	Value/remark
New U-RNTI - SRNC Identity - S-RNTI  New C-RNTI	Set to '0000 0000 0001' Set to an arbitrary string different from '0000 0000 0000 0000 0001' '1010 1010 1010 1010'

## CELL UPDATE (Step 19)

The same message found in TS 34.108, clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI  Cell Update Cause	Check to see if set to '0000 0000 0001' Check to see if set to same bit string as in IE "S-RNTI" in IE "U-RNTI" of the CELL UPDATE CONFIRM message sent in step 6. Check to see if set to 'periodical cell updating'

## UTRAN MOBILITY INFORMATION (Step 8)

Use the same message sub-type found in TS 34.108, clause 9, with the following exceptions:

Information Element	Value/remark
New U-RNTI	Not Present
New C-RNTI	Not Present
UE Timers and constants in connected mode - T305	infinity

## UTRAN MOBILITY INFORMATION (Step 14)

Use the same message sub-type found in TS 34.108, clause 9, with the following exceptions:

Information Element	Value/remark
New U-RNTI	Not Present
New C-RNTI	Not Present
UE Timers and constants in connected mode - T305	5

### 8.3.1.3.5 Test requirement

After step 1 the UE shall detect the expiry of timer T305 and then transmits a CELL UPDATE message setting value "periodical cell update" into IE "Cell update cause".

After step 3 the UE shall not send any uplink message as a response to CELL UPDATE CONFIRM message sent in step 3.

After step 4 the UE shall send a CELL UPDATE message, specifying the cell updating cause to be "periodical cell update".

After step 6 the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH.

After step 8, the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 10, the UE shall transmit a CELL UPDATE message with IE "cell update cause" set to "cell reselection" on the uplink CCCH.

After step 12, the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

Between step 12a and 14, the UE shall not transmit any CELL UPDATE message.

After step 14, the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 16, the UE shall transmit a CELL UPDATE message with IE "cell update cause" set to "cell reselection" on the uplink CCCH.

After step 18, the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 18a, the UE shall transmit a CELL UPDATE message with IE "cell update cause" set to "periodical cell update" on the uplink CCCH.

### 8.3.1.4 Cell Update: periodical cell update in CELL\_PCH

#### 8.3.1.4.1 Definition

#### 8.3.1.4.2 Conformance requirement

UE shall initiate the cell update procedure in the following cases:

1> Uplink data transmission:

...

1> Paging response:

...

1> Radio link failure:

...

1> Re-entering service area:

...

1> RLC unrecoverable error:

...

1> Cell reselection:

...

1> Periodical cell update:

- 2> if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and
- 2> if the UE is in CELL\_FACH or CELL\_PCH state; and
- 2> if the timer T305 expires; and
- 2> if the criteria for "in service area" as specified in TS 25.331 subclause 8.5.5.2 is fulfilled; and
- 2> if periodic updating has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity":
  - 3> perform cell update using the cause "periodical cell update".

When the UE receives a UTRAN MOBILITY INFORMATION message, it shall:

1> act on received information elements as specified in TS 25.331 subclause 8.6;

1> if the IE "UE Timers and constants in connected mode" is present:

2> store the values of the IE "UE Timers and constants in connected mode" in the variable TIMERS\_AND\_CONSTANTS, replacing any previously stored value for each timer and constant; and

2> for each updated timer value:

3> start using the new value next time the timer is started;

2> for each updated constant value:

3> start using the new value directly;

1> set the IE "RRC transaction identifier" in the UTRAN MOBILITY INFORMATION CONFIRM message to the value of "RRC transaction identifier" in the entry for the UTRAN MOBILITY INFORMATION message in the table "Accepted transactions" in the variable TRANSACTIONS; and

1> clear that entry;

1> transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC;

...

## Reference

3GPP TS 25.331 clause 8.3.1, 8.3.3.3.

### 8.3.1.4.3 Test purpose

1. To confirm that the UE, in CELL\_PCH state, executes a cell update procedure after the expiry of timer T305.

### 8.3.1.4.4 Method of test

## Initial Condition

System Simulator: 2 cells – Cell 1 and 2 are active.

UE: CELL\_PCH (state 6-12) in cell 1 as specified in clause 7.4 of TS 34.108.

## Test Procedure

Table 8.3.1.4

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH Ec (FDD)	dBm/3.84 MHz	-60	-75	-75	-60
P-CCPCH RSCP (TDD)	dBm	-60	-75	-75	-60

Table 8.3.1.4 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution.

The UE starts from CELL\_PCH state. When the UE detects the expiry of periodic cell updating timer T305 according to the system information, the UE moves to CELL\_FACH state. It shall transmit a CELL UPDATE message on the uplink CCCH and set the value "periodical cell update" into IE "Cell update cause". SS answers with a CELL UPDATE CONFIRM message. Then the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH to acknowledge the receipt of the new UE identities. SS transmits UTRAN MOBILITY INFORMATION message, which includes IE "T305" set to "infinity", to UE. UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message. SS configures its downlink transmission power settings according to columns "T1" in table 8.3.1.4, causing the UE to enter CELL\_FACH state in cell 2 and transmit a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection". Then SS shall transmit CELL UPDATE CONFIRM with IE "RRC state indicator" set to "CELL\_PCH". Then UE shall enter CELL\_PCH state. SS then monitors the uplink CCCH for a period of 60 minutes (ideally the SS should monitor this up to the maximum possible value for timer T305 (720 minutes), but for practical reasons 60 minutes (twice default timer of 30 minutes) is regarded as being sufficient) and verifies that no CELL\_UPDATE message is received. SS then configures its downlink transmission power settings according to columns "T0" in table 8.3.1.4, causing the UE to enter CELL\_FACH state in cell 1 and transmit a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection". Then SS shall transmit CELL UPDATE CONFIRM. Then the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH to acknowledge the receipt of the new UE identities. Next, SS transmits UTRAN MOBILITY INFORMATION message, which includes IE "T305" set to "5", to UE. UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message. SS configures its downlink transmission power settings according to columns "T1" in table 8.3.1.4, causing the UE to enter CELL\_FACH state in cell 2 and transmit a CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "cell reselection". Then SS shall transmit CELL UPDATE CONFIRM with IE "RRC state indicator" set to "CELL\_PCH". Then UE shall enter CELL\_PCH state. After T305 expires, UE shall transmit CELL UPDATE message with IE "cell update cause" set to "periodical cell update". SS shall transmit CELL UPDATE CONFIRM message to end the procedure.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_PCH state. SS waits until T305 has expired. Wait for CELL UPDATE message and then verify that the time of arrival of this message is in the range of T305 value +/- 10 % after it entered CELL_PCH state
2		→	CELL UPDATE	The UE shall move to CELL_FACH state and transmits this message with the IE "Cell update cause" set to "periodical cell update".
3		←	CELL UPDATE CONFIRM	
3a		→	UTRAN MOBILITY INFORMATION CONFIRM	
4		←	UTRAN MOBILITY INFORMATION	IE "T305" is set to 'infintiy'.
5		→	UTRAN MOBILITY INFORMATION CONFIRM	
6				SS applies the downlink transmission power settings, according to the values in columns "T1" of table 8.3.1.4.
7		→	CELL UPDATE	The UE shall move to CELL_FACH state and transmits this message with the IE "Cell update cause" set to "cell reselection".
8		←	CELL UPDATE CONFIRM	UE enters CELL_PCH state after receiving this message.
9				SS waits for 60 minutes and checks that no CELL UPDATE message is transmitted on uplink PRACH channel.

Step	Direction		Message	Comment
	UE	SS		
10				SS applies the downlink transmission power settings, according to the values in columns "T0" of table 8.3.1.4.
11		→	CELL UPDATE	The UE shall move to CELL_FACH state and transmits this message with the IE "Cell update cause" set to "cell reselection".
12		←	CELL UPDATE CONFIRM	
12a		→	UTRAN MOBILITY INFORMATION CONFIRM	
13		←	UTRAN MOBILITY INFORMATION	IE "T305" is set to '5'.
14		→	UTRAN MOBILITY INFORMATION CONFIRM	
15				SS applies the downlink transmission power settings, according to the values in columns "T1" of table 8.3.1.4.
16		→	CELL UPDATE	The UE shall move to CELL_FACH state and transmits this message with the IE "Cell update cause" set to "cell reselection".
17		←	CELL UPDATE CONFIRM	UE enters CELL_PCH state after receiving this message.
18				SS wait for T305 timer to expire
19		→	CELL UPDATE	IE "Cell update cause" shall be set to "periodical cell update".
20		←	CELL UPDATE CONFIRM	

### Specific Message Contents

#### CELL UPDATE (Step 2 and 19)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
Cell Update Cause	Check to see if set to 'periodical cell updating'

#### CELL UPDATE (Step 7, 11 and 16)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
Cell Update Cause	Check to see if set to "cell reselection"

#### CELL UPDATE CONFIRM (Step 3 and 12)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
New C-RNTI	'1010 1010 1010 1010'

### CELL UPDATE CONFIRM (Step 8, 17 and 20)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
RRC state indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3

### UTRAN MOBILITY INFORMATION (Step 4 and 13)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
New U-RNTI	Not Present
New C-RNTI	Not Present
UE Timers and constants in connected mode	
- T305	Set to 'infinity' in step 4 and '5' in step 13

#### 8.3.1.4.5 Test requirement

After step 1 the UE shall detect the expiry of timer T305, it shall then move to CELL\_FACH state and transmits a CELL UPDATE message with the IE "Cell update cause" set to "periodical cell update".

After step 3, the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 4, the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 6, the UE shall transmit a CELL UPDATE message with IE "cell update cause" set to "cell reselection" on the uplink CCCH.

After step 8 and before step 10, the UE shall not transmit any CELL UPDATE messages.

After step 10, the UE shall transmit a CELL UPDATE message with IE "cell update cause" set to "cell reselection" on the uplink CCCH.

After step 12, the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 13, the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 15, the UE shall transmit a CELL UPDATE message with IE "cell update cause" set to "cell reselection" on the uplink CCCH.

After step 18 the UE shall transmit a CELL UPDATE message stating the cell update cause to be periodic updating.

#### 8.3.1.5 Cell Update: UL data transmission in URA\_PCH

##### 8.3.1.5.1 Definition

##### 8.3.1.5.2 Conformance requirement

A UE shall initiate the cell update procedure in the following cases:

- 1> Uplink data transmission:

- 2> if the UE is in URA\_PCH or CELL\_PCH state; and
- 2> if the UE has uplink RLC data PDU or uplink RLC control PDU on RB1 or upwards to transmit:
  - 3> perform cell update using the cause "uplink data transmission".

...

## Reference

3GPP TS 25.331 clause 8.3.1

### 8.3.1.5.3 Test purpose

1. To confirm that the UE executes a cell update procedure when the UE transmits uplink data if the UE is in URA\_PCH state.

### 8.3.1.5.4 Method of test

## Initial Condition

System Simulator: 1cell

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

SS sends a MEASUREMENT CONTROL message to trigger UE to measure the traffic volume on RACH or CPCH in a traffic volume measurement with measurement validity set to "all-states" and to report periodically by the MEASUREMENT REPORT message using UM RLC. UE shall send MEASUREMENT REPORT message to SS using UM RLC on DCCH. SS then transmit a PHYSICAL CHANNEL RECONFIGURATION message with IE "RRC State Indicator" is set to "URA\_PCH". The UE shall reply with PHYSICAL CHANNEL RECONFIGURATION message and move to URA\_PCH state. UE shall detect that the periodical timer for measurement reporting has elapsed and attempt to transmit a MEASUREMENT REPORT message. The UE then moves to CELL\_FACH state and transmits a CELL UPDATE message to the SS on the uplink CCCH, with the IE "Cell update cause" set to value "uplink data transmission". After receiving such a message, SS transmits CELL UPDATE CONFIRM message. Then the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH to acknowledge the receipt of the new UE identities. The UE shall stay in CELL\_FACH state and transmit MEASUREMENT REPORT message using UM RLC on DCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_FACH state.
2		←	MEASUREMENT CONTROL	
3		→	MEASUREMENT REPORT	
4		←	PHYSICAL CHANNEL RECONFIGURATION	IE "RRC State Indicator" set to "URA_PCH"
5		→	PHYSICAL CHANNEL RECONFIGURATION	UE moves to URA_PCH state.
6		→	CELL UPDATE	The UE shall move to CELL_FACH state with the message set to "uplink data transmission" in IE "Cell update cause".
7		←	CELL UPDATE CONFIRM	See message content.
7a		→	UTRAN MOBILITY INFORMATION CONFIRM	
8		→	MEASUREMENT REPORT	

Specific Message Contents

#### MEASUREMENT CONTROL (Step 2)

Use the same message sub-type found in TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
Measurement Reporting Mode	Unacknowledged mode RLC
- Measurement Report Transfer Mode	Periodical
- Measurement Reporting/Event Trigger Reporting Mode	
CHOICE Measurement Type	Traffic volume measurement
- Traffic volume measurement objects	1
- Uplink transport channel type	RACHorCPCH
- Traffic volume measurement quantity	
- Measurement quality	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	FALSE
- Variance of RLC Buffer Payload for each RB	FALSE
- Measurement validity	All states
- CHOICE reporting criteria	Periodical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	64000

#### PHYSICAL CHANNEL RECONFIGURATION (Step 4)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3

## CELL UPDATE (Step 6)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI	Check to see if set to '0000 0000 0001'
- SRNC Identity	Check to see if set to '0000 0000 0000 0000 0001'
- S-RNTI	Check to see if set to 'uplink data transmission'
Cell Update Cause	Check to see if set to 'uplink data transmission'

## CELL UPDATE CONFIRM (Step 7)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
New C-RNTI	'1010 1010 1010 1010'

## MEASUREMENT REPORT (Step 3 and 8)

Only the message type IE in this message will be checked.

## RADIO BEARER RELEASE COMPLETE (Step 5)

Only the message type IE in this message will be checked.

## 8.3.1.5.5 Test requirement

After step 2, UE shall transmit a MEASUREMENT REPORT message to SS using UM RLC on DCCH when 64 seconds has elapsed since the acknowledgement of MEASUREMENT CONTROL message.

After step 4, UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message and move to URA\_PCH state.

After step 5, the UE shall move to CELL\_FACH state to initiate a cell update procedure and transmits a CELL UPDATE message which is set to "uplink data transmission" in IE "Cell update cause".

After step 7, the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 7a, UE shall transmit MEASUREMENT REPORT message to SS using AM RLC on DCCH.

## 8.3.1.6 Cell Update: UL data transmission in CELL\_PCH

## 8.3.1.6.1 Definition

## 8.3.1.6.2 Conformance requirement

A UE shall initiate the cell update procedure in the following cases:

- 1> Uplink data transmission:
  - 2> if the UE is in URA\_PCH or CELL\_PCH state; and
  - 2> if the UE has uplink RLC data PDU or uplink RLC control PDU on RB1 or upwards to transmit:
    - 3> perform cell update using the cause "uplink data transmission".

...

## Reference

3GPP TS 25.331 clause 8.3.1

## 8.3.1.6.3 Test purpose

1. To confirm that the UE executes a cell update procedure when the UE transmits uplink data if the UE is in CELL\_PCH state.

## 8.3.1.6.4 Method of test

## Initial Condition

System Simulator: 1 cell

UE: PS-DCCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in the CELL\_FACH state. SS sends a MEASUREMENT CONTROL message to trigger UE to measure the traffic volume on RACH or CPCH in a traffic volume measurement with measurement validity set to "all-states" and to report periodically by the MEASUREMENT REPORT message using UM RLC. UE shall send a MEASUREMENT REPORT message to SS using UM RLC on DCCH. SS then transmits a PHYSICAL CHANNEL RECONFIGURATION message with IE "RRC State Indicator" is set to "CELL\_PCH". The UE shall reply with PHYSICAL CHANNEL RECONFIGURATION COMPLETE message and move to CELL\_PCH state. UE shall detect that the periodical timer for measurement reporting has elapsed and attempt to transmit a MEASUREMENT REPORT message. The UE then moves to CELL\_FACH state and transmits a CELL UPDATE message to the SS on the uplink CCCH, with the IE "Cell update cause" set to value "uplink data transmission". After receiving such a message, SS transmits a CELL UPDATE CONFIRM message. Then the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH to acknowledge the receipt of the new UE identities. The UE shall stay in CELL\_FACH state and transmit a MEASUREMENT REPORT message using UM RLC on DCCH.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_FACH state.
2		←	MEASUREMENT CONTROL	
3		→	MEASUREMENT REPORT	
4		←	PHYSICAL CHANNEL RECONFIGURATION	IE "RRC State Indicator" set to "CELL_PCH"
5		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE moves to CELL_PCH state.
6		→	CELL UPDATE	The UE moves to CELL_FACH state and transmit this message which is set to "uplink data transmission" in IE "Cell update cause".
7		←	CELL UPDATE CONFIRM	See message content .
7a		→	UTRAN MOBILITY INFORMATION CONFIRM	
8		→	MEASUREMENT REPORT	

## Specific Message Contents

## MEASUREMENT CONTROL (Step 2)

Use the same message sub-type found in TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
Measurement Reporting Mode	Unacknowledged mode RLC
- Measurement Report Transfer Mode	Periodical
- Measurement Reporting/Event Trigger Reporting Mode	
CHOICE Measurement Type	Traffic volume measurement
- Traffic volume measurement objects	1
- Uplink transport channel type	RACHorCPCH
- Traffic volume measurement quantity	
- Measurement quality	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	FALSE
- Variance of RLC Buffer Payload for each RB	FALSE
- Measurement validity	All states
- CHOICE reporting criteria	Periodical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	64000

#### PHYSICAL CHANNEL RECONFIGURATION (Step 4)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3

#### CELL UPDATE (Step 6)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
Cell Update Cause	Check to see if set to 'uplink data transmission'

#### CELL UPDATE CONFIRM (Step 7)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
New C-RNTI	'1010 1010 1010 1010'

#### MEASUREMENT REPORT (Step 3 and 8)

Only the message type IE in this message will be checked.

#### RADIO BEARER RELEASE COMPLETE (Step 5)

Only the message type IE in this message will be checked.

#### 8.3.1.6.5 Test requirement

After step 2, UE shall transmit a MEASUREMENT REPORT message to SS using UM RLC on DCCH when 64 seconds has elapsed since the acknowledgement of MEASUREMENT CONTROL message.

After step 4, UE shall transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message and move to CELL\_PCH state.

After step 5, the UE shall move to CELL\_FACH state to initiate a cell update procedure and transmits a CELL UPDATE message which is set to "uplink data transmission" in IE "Cell update cause".

After step 7, the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 7a, UE shall transmit a MEASUREMENT REPORT message to SS using UM RLC on DCCH.

8.3.1.7 Void

8.3.1.8 Void

8.3.1.9 Cell Update: re-entering of service area after T305 expiry and being out of service area

8.3.1.9.1 Definition

8.3.1.9.2 Conformance requirement

A UE shall initiate the cell update procedure in the following cases:

1> Uplink data transmission:

...

1> Paging response:

...

1> Radio link failure:

...

1> Re-entering service area:

2> if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and

2> if the UE is in CELL\_FACH or CELL\_PCH state; and

2> if the UE has been out of service area and re-enters service area before T307 or T317 expires:

3> perform cell update using the cause "re-entering service area".

...

When the T305 expires and the UE detects that it is "out of service area" as specified in TS 25.331 subclause 8.5.5.1, the UE shall

1> start timer T307;

...

If the UE detects "in service area" according to TS 25.331 subclause 8.5.5.2 and timer T307 or T317 is running, the UE shall:

1> check the value of V302; and

1> if V302 is equal to or smaller than N302:

- 2> in case of a cell update procedure:
  - 3> set the contents of the CELL UPDATE message according to TS 25.331 subclause 8.3.1.3;
  - 3> submit the CELL UPDATE message for transmission on the uplink CCCH.
- 2> increment counter V302;
- 2> restart timer T302 when the MAC layer indicates success or failure to transmit the message.
- 1> if V302 is greater than N302:
  - ...

## Reference

3GPP TS 25.331 clause 8.3.1

### 8.3.1.9.3 Test purpose

1. To confirm that the UE performs a cell search after experiencing an "out of service area" condition following the expiry of timer T305.
2. To confirm that the UE initiates cell updating procedure if it manages to re-enter the service area.

### 8.3.1.9.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

**Table 8.3.1.9**

Parameter	Unit	Cell 1	
		T0	T1
UTRA RF Channel Number		Ch. 1	
CPICH Ec (FDD)	dBm/3.84MHz	-60	-80
P-CCPCH RSCP (TDD)	dBm	-60	-80

Table 8.3.1.9 illustrates the downlink power to be applied at various time instants of the test execution. Columns marked "T0" denote the initial conditions.

The UE is in the CELL\_FACH state. The content of the SYSTEM INFORMATION BLOCK TYPE 3 and 4 is modified. SS configures its downlink transmission power settings according to columns "T1" in table 8.3.1.9 so that  $S < 0$ . Following the expiry of periodic cell updating timer T305 according to the system information, the UE shall detect that it is out of service area. Within the time interval equivalent to T307 timer value, SS configures its downlink transmission power settings according to columns "T0" in table 8.3.1.9 so that  $S > 0$ . The UE shall find that it is back in service area, and transmit a CELL UPDATE message to the SS on the uplink CCCH. In this message, the IE "Cell update cause" shall be set to "re-entered service area". After the SS receives this message, it transmits a CELL UPDATE CONFIRM message with the IE "RRC State Indicator" set "CELL\_PCH" on the downlink DCCH. The UE shall enter CELL\_PCH state. SS configures its downlink transmission power settings according to columns "T1" in table 8.3.1.9 so that  $S < 0$ . Following the expiry of periodic cell updating timer T305 according to the system information, the UE shall detect that it is out of service area. Within the time interval equivalent to T307 timer value, SS configures its downlink transmission power settings according to columns "T0" in table 8.3.1.9 so that  $S > 0$ . The UE shall find that it is back in service area, move to CELL\_FACH and transmits a CELL UPDATE message to the SS on

the uplink CCCH. In this message, the IE "Cell update cause" shall be set to "re-entered service area". After the SS receives this message, it transmits a CELL UPDATE CONFIRM message on the downlink DCCH.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_FACH state of cell 1.
1a		←	MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 3 and 4	SS changes the contents of MASTER INFORMATION BLOCK and SYSTEM INFORMATION BLOCK (see specific message contents).
1b		←	SYSTEM INFORMATION CHANGE INDICATION	
2				SS configures its downlink transmission power settings according to columns "T1" in table 8.3.1.9 so that its S value falls below 0.
3				The UE shall detect a "out of service" condition upon expiry of timer T305 and it shall search for other cells to camp on. (T307 timer starts)
4				SS configures its downlink transmission power settings according to columns "T0" in table 8.3.1.9.
5		→	CELL UPDATE	The value "re-entered service area" shall be found in IE "Cell update cause" in this message
6		←	CELL UPDATE CONFIRM	"RRC State Indicator" is set to "CELL_PCH"
7				SS configures its downlink transmission power settings according to columns "T1" in table 8.3.1.9 so that its S value falls below 0 and waits until T305 has expired.
8				SS configures its downlink transmission power settings according to columns "T0" in table 8.3.1.9.
9		→	CELL UPDATE	UE shall move to CELL_FACH. It shall transmit this message with cell update cause set to "re-entered service area"
10		←	CELL UPDATE CONFIRM	

#### Specific Message Contents

##### MASTER INFORMATION BLOCK (Step 1a)

Use the same message sub-type found in clause 6.1 of TS 34.108, with the following exception.

Information Element	Value/remark
MIB Tag	2

## SYSTEM INFORMATION BLOCK TYPE 3 and 4 (Step 1a)

Use the same message sub-type found in clause 6.1 of TS 34.108, with the following exception.

Information Element	Value/remark
Qrxlevmin	-70

## SYSTEM INFORMATION CHANGE INDICATION (Step 1b)

Information Element	Value/remark
Message Type BCCH modification info MIB Value tag	2

## CELL UPDATE (Step 5 and 9)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 're-entered service area'

## CELL UPDATE CONFIRM (Step 6 and 10)

Use the same message sub-type found in TS 34.108 clause 9, with the following exception.

Information Element	Value/remark
RRC State Indicator UTRAN DRX cycle length coefficient	CELL_PCH 3

## 8.3.1.9.5 Test requirement

After step 4 the UE shall transmit a CELL UPDATE message in which the IE "Cell update cause" is set to the value "re-entered service area".

After step 8 the UE shall move to CELL\_FACH and then transmit a CELL UPDATE message, with the IE "Cell Update Cause" set to "re-entered service area".

## 8.3.1.10 Cell Update: expiry of T307 after T305 expiry and being out of service area

## 8.3.1.10.1 Definition

## 8.3.1.10.2 Conformance requirement

When the T307 expires, the UE shall:

- 1> move to idle mode;
- 1> release all dedicated resources;
- 1> perform other actions when entering idle mode from connected mode as specified in TS 25.331 subclause 8.5.2;
- 1> and the procedure ends.

## Reference

3GPP TS 25.331 clause 8.3.1

## 8.3.1.10.3 Test purpose

- 1 To confirm that the UE moves to idle mode after the expiry of T307, indicating that it is out of service area when attempting to perform a periodic cell updating procedure.

## 8.3.1.10.4 Method of test

## Initial Condition

System Simulator: 1 cell

UE: PS-DCCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

**Table 8.3.1.10**

Parameter	Unit	Cell 1	
		T0	T1
UTRA RF Channel Number		Ch. 1	
CPICH Ec (FDD)	dBm/3.84MHz	-60	-80
P-CCPCH RSCP (TDD)	dBm	-60	-80

Table 8.3.1.10 illustrates the downlink power to be applied at various time instants of the test execution. Columns marked "T0" denote the initial conditions.

The UE is in CELL\_FACH state at the start of the test. Before the expiry of periodic cell updating timer T305, the content of the SYSTEM INFORMATION BLOCK TYPE 3 and 4 is modified. After T305 expires, UE shall transmit CELL UPDATE message with IE "cell update cause" set to "periodical cell update". SS shall transmit CELL UPDATE CONFIRM message. Now the UE and SS are synchronized. Immediately after the cell update procedure is finalized, SS configures its downlink transmission power settings according to columns "T1" in table 8.3.1.10 so that  $S < 0$  and this results in a "out of service area" condition. The SS continues to listen to the uplink channel to detect possible attempts to perform a cell updating procedure. The UE shall not send any CELL UPDATE message on the uplink CCCH, instead it triggers timer T307 and T305. After the expiry of timer  $T305 + T307 + 10\%$  margin, SS configures its downlink transmission power settings according to columns "T0" in table 8.3.1.10 so that  $S > 0$ , the UE shall enter idle state. SS waits for 5s and then calls for generic procedure C.1 to check that UE is in idle mode state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to CELL_FACH state.
1a		←	MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 3 and 4	SS changes the contents of MASTER INFORMATION BLOCK and SYSTEM INFORMATION BLOCK (see specific message contents).
1b		←	SYSTEM INFORMATION CHANGE INDICATION	
1c		→	CELL UPDATE	IE "Cell update cause" shall be set to "periodical cell update".
1d		←	CELL UPDATE CONFIRM	
2a				SS configures its downlink transmission power settings according to columns "T1" in table 8.3.1.10 so that the cell is no longer suitable for camping. The UE shall detect that it is out of service area and refrains from transmitting CELL UPDATE message due to periodic cell updating.
2b				SS waits (T305+T307) +10% for UE to enter idle mode.
3				The UE detects the expiry of timer T305 and it searches for other cells to camp on. After the expiry of timer T307, the UE shall enter idle mode. SS configures its downlink transmission power settings according to columns "T0" in table 8.3.1.10 so that the cell is suitable for camping. SS waits for 5s.
4		↔	CALL C.1	If the test result of C.1 indicates that UE is in idle mode state, the test passes, otherwise it fails.

## Specific Message Contents

## MASTER INFORMATION BLOCK (Step 1a)

Use the same message sub-type found in clause 6.1 of TS 34.108, with the following exception.

Information Element	Value/remark
MIB Tag	2

## SYSTEM INFORMATION BLOCK TYPE 3 and 4 (Step 1a)

Use the same message sub-type found in clause 6.1 of TS 34.108, with the following exception.

Information Element	Value/remark
Qrxlevmin	-70

## SYSTEM INFORMATION CHANGE INDICATION (Step 1b)

Information Element	Value/remark
Message Type BCCH modification info MIB Value tag	2

## CELL UPDATE (Step 1c)

The same message found in Annex A shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'periodical cell updating'

## PAGING TYPE 1 (Step 4)

Use the same message type found in TS 34.108 clause 9, with the following exception.

Information Element	Value/remark
Paging record list Paging record CHOICE Used paging identity - Paging cause - CN domain identity - CHOICE UE Identity - IMSI	Only 1 entry  CN identity Terminating Call with one of the supported services Supported Domain (PS Domain or CS Domain) IMSI Set to the same IMSI value stored in the TEST USIM card.

## 8.3.1.10.5 Test requirement

After step 3 the UE shall move to idle mode.

## 8.3.1.11 Cell Update: Success after T302 time-out

## 8.3.1.11.1 Definition

## 8.3.1.11.2 Conformance requirement

If any or several of the following conditions are true:

- expiry of timer T302;

...

the UE shall:

- 1> check whether it is still in "in service area";
- 1> in case of a cell update procedure:
  - 2> clear any entry for the CELL UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS.

If the UE detects "in service area" if it has not entered idle mode, and:

- 1> if V302 is equal to or smaller than N302, the UE shall:

- 2> in case of a cell update procedure:
  - 3> set the contents of the CELL UPDATE message according to TS 25.331 subclause 8.3.1.3;
  - 3> submit the CELL UPDATE message for transmission on the uplink CCCH.
- 2> increment counter V302;
- 2> restart timer T302 when the MAC layer indicates success or failure to transmit the message.
- 1> if V302 is greater than N302, the UE shall:
  - ...

## Reference

3GPP TS 25.331 clause 8.3.1

### 8.3.1.11.3 Test purpose

1. To confirm that the UE repeats the transmission of CELL UPDATE message after failing to receive any response from the SS before T302 timer expires.

### 8.3.1.11.4 Method of test

## Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

At the start of the test, the UE is brought to CELL\_FACH state. When the UE detects the expiry of periodic cell updating timer T305 according to the system information, the UE transmits a CELL UPDATE message to the SS on the uplink CCCH. The IE "Cell update cause" in this message shall be set to "periodical cell update". SS ignores this message, and the UE shall then re-transmit a CELL UPDATE message after the expiry of timer T302. When the SS has received (N302+1) such messages, it transmits a CELL UPDATE CONFIRM message with new values for "C-RNTI" to the UE. Finally, the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH. SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE starts from CELL_FACH state. SS initializes its internal counter K to 0 and waits until the expiry of T305 timer.
2		→	CELL UPDATE	The value "periodical cell update" shall be set in IE "Cell update cause".
3				If K is equal to N302 then proceeds to step 5.
4				SS increments counter K, transmits no response to the UE and waits for an additional period equal to the value of timer T302. The next step is step 2.
5		←	CELL UPDATE CONFIRM	The message includes IEs "new C-RNTI". The IE "RRC State Indicator" is set to "CELL_FACH".
6		→	UTRAN MOBILITY INFORMATION CONFIRM	
7		↔	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

Specific Message Contents

#### CELL UPDATE (Step 2)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
Cell Update Cause	Check to see if set to 'Periodic cell updating'

#### CELL UPDATE CONFIRM (Step 5)

Use the same message sub-type found in TS 34.108 clause 9, with the following exception:

Information Element	Value/remark
New C-RNTI	Set to an arbitrary string different from '0000 0000 0000 0001'

#### 8.3.1.11.5 Test requirement

After step 1 the UE shall detect the expiry of timer T305 then transmit a CELL UPDATE message on the uplink CCCH, setting "periodical cell update" into IE "Cell update cause".

After step 2 the UE shall re-transmits a CELL UPDATE message after the expiry of timer T302. A total of (N302+1) transmissions of CELL UPDATE message shall be detected in SS.

After step 5 the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH and stay at CELL\_FACH state.

### 8.3.1.12 Cell Update: Failure (After Maximum Re-transmissions)

#### 8.3.1.12.1 Definition

#### 8.3.1.12.2 Conformance requirement

If any or several of the following conditions are true:

- expiry of timer T302;

the UE shall:

- 1> stop T302 if it is running;
- 1> check whether it is still in "in service area";
- 1> in case of a cell update procedure:
  - 2> clear any entry for the CELL UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS.

If the UE detects "in service area" if it has not entered idle mode, and:

- 1> if V302 is equal to or smaller than N302, the UE shall:

...

- 1> if V302 is greater than N302, the UE shall:

- 2> in case of a cell update procedure:
  - 3> clear the entry for the CELL UPDATE CONFIRM message in the table "Rejected transactions" in the variable TRANSACTIONS.
- 2> release all its radio resources;
- 2> enter idle mode;
- 2> other actions the UE shall perform when entering idle mode from connected mode are specified in TS 25.331 subclause 8.5.2;
- 2> and the procedure ends.

#### Reference

3GPP TS 25.331 clause 8.3.1

#### 8.3.1.12.3 Test purpose

1. To confirm that the UE repeats the cell update procedure upon the expiry of timer T302 and moves to idle state when its internal counter V302 is greater than N302.

#### 8.3.1.12.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is initially in CELL\_FACH state. When the UE detects the expiry of periodic cell updating timer T305, the UE transmits a CELL UPDATE message to the SS on the uplink CCCH to perform a periodic cell updating procedure. The SS ignores this message, and the UE shall attempt to re-transmit a CELL UPDATE message up to a maximum of (N302) times after the expiry of timer T302. After (N302) attempts of retransmission, the UE shall return to idle state. SS waits for 5s and then calls for generic procedure C.1 to check that UE is in idle mode state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_FACH state. SS sets its internal counter K=0 and waits for a period equals to timer value T305.
2		→	CELL UPDATE	The value "periodical cell update" shall be set in IE "Cell update cause".
3				SS transmits no response to the UE and increments counter K.
4				SS waits for an additional period equal to T302 timer and if K is not greater than N302, then next step is step 2. Else the next step is step 5.
5				The UE shall enter idle mode state.
6		←→	CALL C.1	If the test result of C.1 indicates that UE is in idle mode state, the test passes, otherwise it fails.

## Specific Message Contents

### CELL UPDATE (Step 2)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
Cell Update Cause	Check to see if set to 'Periodic cell updating'

### 8.3.1.12.5 Test requirement

After step 1 the UE shall transmit a CELL UPDATE message on the uplink CCCH and set value "periodical cell update" into IE "Cell update cause".

After step 3 and if K is not greater than N302, the UE shall retry to transmit a CELL UPDATE message.

After step 3 and if K is greater than N302, the UE shall stop transmitting CELL UPDATE message and then enters idle state.

### 8.3.1.13 Cell Update: Reception of Invalid CELL UPDATE CONFIRM Message

#### 8.3.1.13.1 Definition

#### 8.3.1.13.2 Conformance Requirement

If the UE receives an CELL UPDATE CONFIRM message, which contains a protocol error causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows:

- 1> If V302 is equal to or smaller than N302, the UE shall:
  - 2> set the variable PROTOCOL\_ERROR\_INDICATOR to TRUE;
  - 2> in case of a cell update procedure:
    - 3> set the contents of the CELL UPDATE message according to TS 25.331 subclause 8.3.1.3;
    - 3> submit the CELL UPDATE message for transmission on the uplink CCCH.
  - ...
  - 2> increment counter V302;
  - 2> restart timer T302 when the MAC layer indicates success or failure to transmit the message.
- 1> if V302 is greater than N302, the UE shall:
  - ...
  - 2> release all its radio resources;
  - 2> enter idle mode;
  - 2> Other actions the UE shall perform when entering idle mode from connected mode are specified in TS 25.331 subclause 8.5.2;
  - 2> the procedure ends.

#### Reference

3GPP TS 25.331 clause 8.3.1.11.

#### 8.3.1.13.3 Test Purpose

1. To confirm that the UE retransmits a CELL UPDATE message when it receives an invalid CELL UPDATE CONFIRM message, before the number of retransmissions has reached the maximum allowed value.

#### 8.3.1.13.4 Method of Test

#### Initial Condition

System Simulator: 1 cell

UE: CELL\_PCH (state 6-12) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is brought to CELL\_PCH state at the beginning of the test. SS pages the UE by sending a PAGING TYPE 1 message using the U-RNTI identity assigned during RRC connection establishment procedure. The UE shall transmit a CELL UPDATE message on the uplink CCCH. Upon receiving such a message, the SS replies with an invalid CELL UPDATE CONFIRM message on downlink DCCH using UM RLC. The UE shall detect the protocol error and re-transmit a CELL UPDATE message up to a maximum of N302 times. SS then transmit a valid CELL UPDATE

CONFIRM message. Then the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH to acknowledge the receipt of the new UE identities.

#### Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PAGING TYPE 1	The UE is in the CELL_PCH state. SS pages for the UE using the allocated connected mode identity (U-RNTI).
2		→	CELL UPDATE	Check that the value "paging response" is set in IE "Cell update cause".
3		←	CELL UPDATE CONFIRM	See specific message content.
4		→	CELL UPDATE	Check that the value "paging response" is set in IE "Cell update cause", the value "protocol error" is set in IE "failure cause" and the value "Message extension not comprehended" is set in IE "Protocol error information".
5		←	CELL UPDATE CONFIRM	See message content.
6		→	UTRAN MOBILITY INFORMATION CONFIRM	

#### Specific Message Content

##### CELL UPDATE (Step 2)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'Paging Response'

##### CELL UPDATE CONFIRM (Step 3)

Use the CELL UPDATE CONFIRM message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Critical extensions	'01'H

##### CELL UPDATE (Step 4)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause Failure cause -Protocol error information	Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'Paging Response' Check to see if it is set to 'protocol error' Check to see if it is set to "Message extension not comprehended"

## PAGING TYPE 1 (Step 1)

Use the same message sub-type titled "TM (Packet in PS)" in default message content of TS 34.108 with following exceptions:

Information Element	Value/remark
Page record list - Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	UTRAN identity  '0000 0000 0001' '0000 0000 0000 0000 0001'

## CELL UPDATE CONFIRM (Step 5)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
New C-RNTI	'1010 1010 1010 1010'

## 8.3.1.13.5 Test Requirement

After step 1 the UE shall transmit a CELL UPDATE message on the uplink CCCH, setting "paging response" into IE "Cell update cause".

After step 3 the UE shall transmit a CELL UPDATE message on the uplink CCCH, setting "paging response" into IE "Cell update cause", "protocol error" into IE "failure cause" and "Message extension not comprehended" into IE "Protocol error information".

After step 5, the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

## 8.3.1.14 Cell Update: Incompatible simultaneous reconfiguration

## 8.3.1.14.1 Definition

## 8.3.1.14.2 Conformance Requirement

In case of a cell update procedure and if the received CELL UPDATE CONFIRM message

- includes "RB information elements"; and/or
- includes "Transport channel information elements"; and/or
- includes "Physical channel information elements"; and
- the variable ORDERED\_RECONFIGURATION is set to TRUE because of an ongoing Reconfiguration procedure;

and/or

- if the variable INCOMPATIBLE\_SECURITY\_RECONFIGURATION becomes set to TRUE of the received CELL UPDATE CONFIRM message:

the UE shall:

- 1> if V302 is equal to or smaller than N302:
- 2> if, caused by the received CELL UPDATE CONFIRM message

...

- 3> if the variable ORDERED\_RECONFIGURATION is set to TRUE caused by the received CELL UPDATE CONFIRM message in case of a cell update procedure:
    - 4> set the variable ORDERED\_RECONFIGURATION to FALSE.
  - 2> set the variable FAILURE\_INDICATOR to TRUE;
  - 2> set the variable FAILURE\_CAUSE to "Incompatible simultaneous reconfiguration";
  - 2> set the content of the CELL UPDATE message according to TS 25.331 subclause 8.3.1.3;
  - 2> submit the CELL UPDATE message for transmission on the uplink CCCH;
  - 2> increment counter V302;
  - 2> restart timer T302 when the MAC layer indicates success or failure to transmit the message.
- 1> if V302 is greater than N302:
- ...

## Reference

3GPP TS 25.331 clause 8.3.1.9a

### 8.3.1.14.3 Test Purpose

1. To confirm that the UE retransmits a CELL UPDATE message when it receives a CELL UPDATE CONFIRM message that includes "Physical channel information elements" and UE's variable ORDERED\_RECONFIGURATION is set to TRUE because of an ongoing Reconfiguration procedure, before the number of retransmissions has reached the maximum allowed value.

### 8.3.1.14.4 Method of Test

#### Initial Condition

System Simulator: 1 cell

UE: CELL\_PCH (state 6-12) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is brought to CELL\_PCH state at the beginning of the test. SS pages the UE by sending a PAGING TYPE 1 message using the U-RNTI identity assigned during RRC connection establishment procedure. The UE shall transmit a CELL UPDATE message on the uplink CCCH. Upon receiving such a message, the SS replies with a CELL UPDATE CONFIRM message contains IE "Physical channel information elements". Following that, SS immediately transmits another CELL UPDATE CONFIRM message contains IE "Physical channel information elements" before the "activation time" indicated in the previous CELL UPDATE CONFIRM message expires. The UE shall re-transmit a CELL UPDATE message with the same cause as the previous CELL UPDATE message and failure cause as "Incompatible simultaneous reconfiguration". SS then transmits a CELL UPDATE CONFIRM message to end the procedure.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PAGING TYPE 1	
2		→	CELL UPDATE	
3		←	CELL UPDATE CONFIRM	SS transmits this message including IE "Physical channel information elements".
4		←	CELL UPDATE CONFIRM	Sent before the activation time specified in the message in step 3 has elapsed.
5		→	CELL UPDATE	
6		←	CELL UPDATE CONFIRM	

## Specific Message Content

## CELL UPDATE (Step 2)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'Paging Response'

## CELL UPDATE (Step 5)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause Failure cause	Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'Paging Response' Check to see if set to 'Incompatible simultaneous reconfiguration'

## CELL UPDATE CONFIRM (Step 3)

Use the same message sub-type found in TS 34.108 clause 9, with the following exception:

Information Element	Value/remark
Activation Time Info Maximum allowed UL TX power	Current CFN-[current CFN mod 8 + 8 ] 30dBm

## CELL UPDATE CONFIRM (Step 4)

Use the same message sub-type found in TS 34.108 clause 9, with the following exception:

Information Element	Value/remark
Activation Time Info Maximum allowed UL TX power	Current CFN-[current CFN mod 8 + 8 ] 25dBm

## PAGING TYPE 1 (Step 1)

Use the same message sub-type titled "TM (Packet in PS)" in default message content of TS 34.108 with following exceptions:

Information Element	Value/remark
Page record list - Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	UTRAN identity  '0000 0000 0001' '0000 0000 0000 0000 0001'

## 8.3.1.14.5 Test Requirement

After step 1, UE shall transmit a CELL UPDATE message.

After step 4 the UE shall re-transmit a CELL UPDATE message with failure cause set to "Incompatible simultaneous reconfiguration".

## 8.3.1.15 Cell Update: Unrecoverable error in Acknowledged Mode RLC SRB

## 8.3.1.15.1 Definition

## 8.3.1.15.2 Conformance Requirement

A UE shall initiate the cell update procedure in the following cases:

...

1> RLC unrecoverable error:

...

2> if the UE detects RLC unrecoverable error in an AM RLC entity:

3> perform cell update using the cause "RLC unrecoverable error".

In case of cell update procedure the UE shall transmit a CELL UPDATE message.

The UE shall set the IEs in the CELL UPDATE message as follows:

...

1> if an unrecoverable error in any of the AM RLC entities for the signalling radio bearers RB2, RB3 or RB4 is detected:

2> set the IE "AM\_RLC error indication (RB2, RB3 or RB4)" to TRUE.

1> otherwise:

2> set the IE "AM\_RLC error indication (RB2, RB3 or RB4)" to FALSE.

...

When the UTRAN receives a CELL UPDATE/URA UPDATE message, the UTRAN should:

...

1> initiate an RRC connection release procedure by transmitting an RRC CONNECTION RELEASE message on the downlink CCCH. In particular UTRAN should:

2> if the CELL UPDATE message was sent because of an unrecoverable error in RB2, RB3 or RB4:

- 3> initiate an RRC connection release procedure by transmitting an RRC CONNECTION RELEASE message on the downlink CCCH.

#### Reference

3GPP TS 25.331 clause 8.3.1

#### 8.3.1.15.3 Test Purpose

- To confirm that the UE reports the occurrence of an unrecoverable error in a C-plane AM RLC entity by initiating cell update procedure.
- To confirm that UE enters idle mode state after receiving RRC CONNECTION RELEASE message on the downlink CCCH.

#### 8.3.1.15.4 Method of Test

#### Initial Condition

System Simulator: 1 cell

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE

## Test Procedure

The UE is initially in CELL\_DCH state. SS sends a UE CAPABILITY ENQUIRY message on the DCCH using AM mode. The UE shall reply with a UE CAPABILITY INFORMATION message, sent using AM RLC on the DCCH. SS does not acknowledge the AM PDUs carrying this message. The UE shall continue to re-transmit the AM PDU carrying UE CAPABILITY INFORMATION message until the maximum re-transmission count is reached. Thereafter, the UE shall start sending RESET PDUs to request that the AM RLC entity for RRC signalling be re-initialized. SS ignores the requests and wait for a duration equivalent to (MAX\_RST-1) times expiry of Timer\_RST. At this point, the UE shall initiate a cell update procedure by transmitting a CELL UPDATE message on the uplink CCCH. The CELL UPDATE message shall specify the value "TRUE" in IE "AM\_RLC error indicator (RB2, RB3 or RB4)" and "RLC unrecoverable error" as the cell update cause. SS sends RRC CONNECTION RELEASE message on the downlink CCCH to UE. SS waits for 5 s and then calls for generic procedure C.1 to check that UE is in idle mode state.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is initially in CELL_DCH state.
2		←	UE CAPABILITY ENQUIRY	
3		→	UE CAPABILITY INFORMATION	SS does not acknowledge this AM PDU. The UE shall re-transmit this AM PDU until the maximum number has been reached.
4				UE shall start to transmit a RESET PDU. SS does not respond to any RESET PDU frames originated from the UE, and it waits for a period equivalent to (MAX_RST+1) times expiry of Timer_RST.
5		→	CELL UPDATE	UE shall send this message on CCCH. IE "AM_RLC Error Indication (RB2, RB3 or RB4)" shall be set to 'TRUE'
6		←	RRC CONNECTION RELEASE	Sends this message on the downlink CCCH and includes UE's UTRAN identity. After SS sent this message, SS waits for 5s.
7		↔	CALL C.1	If the test result of C.1 indicates that UE is in idle mode state, the test passes, otherwise it fails.

## Specific Message Contents

### UE CAPABILITY ENQUIRY (Step 2)

Use the same message found in TS 34.108 clause 9.

### UE CAPABILITY INFORMATION (Step 3)

Only the message type IE is checked for this message.

### CELL UPDATE (Step 5)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI AM_RLC error indicator (RB2, RB3 or RB4) Cell update cause	Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'TRUE' RLC unrecoverable error

### RRC CONNECTION RELEASE (Step 6)

Use the same message found in TS 34.108 clause 9.

#### 8.3.1.15.5 Test Requirement

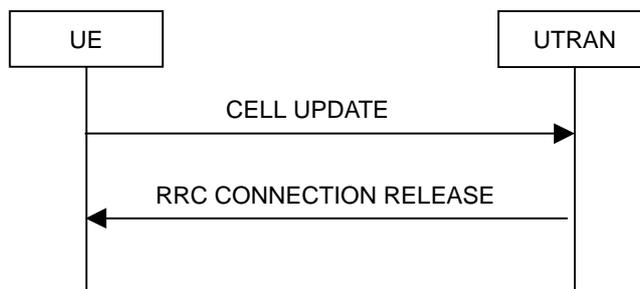
After step 4 the UE shall transmit a CELL UPDATE message on the uplink CCCH to report the occurrence of an unrecoverable error in AM RLC entity for RB2, RB3 or RB4 data as well as cell update cause set to "RLC unrecoverable error".

#### 8.3.1.16 Void

#### 8.3.1.17 Cell Update: Failure (UTRAN initiate an RRC connection release procedure on CCCH)

##### 8.3.1.17.1 Definition

##### 8.3.1.17.2 Conformance requirement



**Figure 8.3.1-7: Cell update procedure, failure case**

When the UTRAN receives a CELL UPDATE/URA UPDATE message, the UTRAN should:

- 1> ... or
- 1> initiate an RRC connection release procedure (see subclause 8.1.4) by transmitting an RRC CONNECTION RELEASE message on the downlink CCCH.

The UE shall receive and act on an RRC CONNECTION RELEASE message in states CELL\_DCH and CELL\_FACH. Furthermore this procedure can interrupt any ongoing procedures with the UE in the above listed states.

When the UE receives the first RRC CONNECTION RELEASE message; and

- 1> if the message is received on the CCCH, and IE "U-RNTI" is present and has the same value as the variable U\_RNTI; or
- 1> if the message is received on DCCH:

the UE shall:

- 1> in state CELL\_FACH:
- 2> if the RRC CONNECTION RELEASE message was received on the CCCH:

3> ...

3> enter idle mode;

## Reference

3GPP TS 25.331 clause 8.3.1

### 8.3.1.17.3 Test purpose

To confirm that the UE moves to idle state upon the reception of RRC CONNECTION RELEASE message on CCCH.

### 8.3.1.17.4 Method of test

## Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH\_FACH (state 6-11)

## Test Procedure

The UE is initially in CELL\_FACH state. When the UE detects the expiry of periodic cell updating timer T305, the UE transmits a CELL\_UPDATE message to the SS on the uplink CCCH to perform a periodical cell updating procedure. The SS transmits a RRC CONNECTION RELEASE message on downlink CCCH. The UE shall return to idle mode after release of all current signalling flows and radio access bearers. SS verifies that UE is in idle mode state by paging the UE with CN identity, in which case the UE shall attempt to establish a RRC connection.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		→	CELL_UPDATE	The value "periodical cell update" shall be set in IE "Cell update cause" and this message shall be sent upon expiry of timer T305.
2		←	RRC CONNECTION RELEASE	SS transmits a RRC CONNECTION RELEASE message to the UE.
3			Void	
4			Void	
5		←	PAGING TYPE 1	Page using TMSI for CS domain or P-TMSI for PS domain depending on CN domain supported by the UE.
6		→	RRC CONNECTION REQUEST	

## Specific Message Contents

### CELL\_UPDATE (Step 1)

The same message found in Annex A shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'Periodic cell updating'

### RRC CONNECTION RELEASE (Step 2)

Use the same message sub-type found in Annex A.

### PAGING TYPE 1 (Step 5)

Use the same message type found in Annex A, with the following exception.


Information Element	Value/remark
Paging record list Paging record CHOICE Used paging identity - Paging cause - CN domain identity - CHOICE UE Identity - IMSI	Only 1 entry CN identity Terminating Call with one of the supported services Supported Domain (PS Domain or CS Domain) IMSI Set to the IMSI value stored in the TEST USIM card.

#### 8.3.1.17.5 Test requirement

In step 1 the UE shall transmit a CELL UPDATE message on the uplink CCCH and set value "periodical cell update" into IE "Cell update cause".

After step 5 the UE transmit a RRC CONNECTION REQUEST message.

#### 8.3.1.18 Cell Update: Radio Link Failure (T314>0, T315=0)

##### 8.3.1.18.1 Definition

##### 8.3.1.18.2 Conformance requirement

A UE shall initiate the cell update procedure in the following cases:

1> Uplink data transmission:

...

1> Paging response:

...

1> Radio link failure:

2> if none of the criteria for performing cell update with the causes specified above in the current subclause is met; and

2> if the UE is in CELL\_DCH state; and

2> if the criteria for radio link failure is met as specified in TS 25.331 subclause 8.5.6:

3> perform cell update using the cause "radio link failure".

...

When initiating the cell update procedure, the UE shall:

1> stop timer T305;

1> if the UE is in CELL\_DCH state:

2> in the variable RB\_TIMER\_INDICATOR, set the IE "T314 expired" and the IE "T315 expired" to FALSE;

2> if the stored values of the timer T314 and timer T315 are both equal to zero; or

2> if the stored value of the timer T314 is equal to zero and there are no radio bearers associated with any radio access bearers for which in the variable ESTABLISHED\_RABS the value of the IE "Re-establishment timer" is set to "useT315":

...

2> if the stored value of the timer T314 is equal to zero:

...

2> if the stored value of the timer T315 is equal to zero:

3> release all radio bearers associated with any radio access bearers for which in the variable ESTABLISHED\_RABS the value of the IE "Re-establishment timer" is set to "useT315";

3> in the variable RB\_TIMER\_INDICATOR set the IE "T315 expired" to TRUE.

2> if the stored value of the timer T314 is greater than zero:

3> if there are radio bearers associated with any radio access bearers for which in the variable ESTABLISHED\_RABS the value of the IE "Re-establishment timer" is set to "useT314":

4> start timer T314.

3> if there are no radio bearers associated with any radio access bearers for which in the variable ESTABLISHED\_RABS the value of the IE "Re-establishment timer" is set to "useT314" or "useT315":

4> start timer T314.

2> if the stored value of the timer T315 is greater than zero:

...

2> for the released radio bearer(s):

3> delete the information about the radio bearer from the variable ESTABLISHED\_RABS;

3> when all radio bearers belonging to the same radio access bearer have been released:

4> indicate local end release of the radio access bearer to upper layers using the CN domain identity together with the RAB identity stored in the variable ESTABLISHED\_RABS;

4> delete all information about the radio access bearer from the variable ESTABLISHED\_RABS.

2> select a suitable UTRA cell according to TS 25.304;

2> set the variable ORDERED\_RECONFIGURATION to FALSE.

1> set the variables PROTOCOL\_ERROR\_INDICATOR, FAILURE\_INDICATOR, UNSUPPORTED\_CONFIGURATION and INVALID\_CONFIGURATION to FALSE;

1> set the variable CELL\_UPDATE\_STARTED to TRUE;

1> move to CELL\_FACH state, if not already in that state;

1> if the UE performs cell re-selection:

- 2> clear the variable C\_RNTI; and
- 2> stop using that C\_RNTI just cleared from the variable C\_RNTI in MAC.
- 1> set CFN in relation to SFN of current cell according to TS 25.331 subclause 8.5.15;
- 1> in case of a cell update procedure:
  - 2> set the contents of the CELL UPDATE message according to TS 25.331 subclause 8.3.1.3;
  - 2> submit the CELL UPDATE message for transmission on the uplink CCCH.
- 1> set counter V302 to 1;
- 1> start timer T302 when the MAC layer indicates success or failure in transmitting the message.

...

If the received CELL UPDATE CONFIRM message would cause the UE to transit to CELL\_DCH state; and

- 1> in case of a received CELL UPDATE CONFIRM message:
  - 2> if the UE failed to establish the physical channel(s) indicated in the received CELL UPDATE CONFIRM message

...

the UE shall:

- 1> if the variable ORDERED\_RECONFIGURATION is set to TRUE caused by the received CELL UPDATE CONFIRM message in case of a cell update procedure:
  - 2> set the variable ORDERED\_RECONFIGURATION to FALSE.
- 1> if V302 is equal to or smaller than N302:
  - 2> select a suitable UTRA cell according to TS 25.304;
  - 2> set the contents of the CELL UPDATE message according to TS 25.331 subclause 8.3.1.3, except for the IE "Cell update cause" which shall be set to "Radio link failure";
  - 2> submit the CELL UPDATE message for transmission on the uplink CCCH;
  - 2> increment counter V302;
  - 2> restart timer T302 when the MAC layer indicates success or failure to transmit the message.
- 1> if V302 is greater than N302:

...

## Reference

3GPP TS 25.331 clause 8.3.1

### 8.3.1.18.3 Test purpose

1. To confirm that the UE shall indicate to the non-access stratum the release of radio access bearer which is associated with T315 and try to find a new cell after detecting that a radio link failure has occurred.
2. To confirm that the UE performs a cell selection procedure when it fails to configure the physical channel(s) indicated in the CELL UPDATE CONFIRM message.

## 8.3.1.18.4 Method of test

## Initial Condition

System Simulator: 2 cells (Cell 1 is active, Cell 2 is inactive).

UE: CS\_DCCH+DTCH\_DCH (state 6-9) or PS\_DCCH+DTCH\_DCH (state 6-10) in cell 1, depending on the CN domain(s) supported by the UE.

## Test Procedure

Table 8.3.1.18

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH Ec (FDD)	dBm/3.84MHz	-60	OFF	-75	-60
P-CCPCH RSCP (TDD)	dBm	-60	OFF	-75	-60

Table 8.3.1.18 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. Columns marked "T0" denote the initial conditions.

The UE is brought to CELL\_DCH state in a cell 1 after making a successful outgoing call attempt. After the call has been established, SS transmits UTRAN MOBILITY INFORMATION message to UE to change to value of T315 timer. UE shall respond with a UTRAN MOBILITY INFORMATION CONFIRM message. SS configures its downlink transmission power settings according to columns "T1" in table 8.3.1.18. The UE shall detect a radio link failure in cell 1 and indicate to the non-access stratum the release of the radio bearer which is associated with T315. Then it shall attempt to re-select to cell 2. After that, it shall then enter CELL\_FACH state and transmit CELL UPDATE on the uplink CCCH to SS. The SS transmits CELL UPDATE CONFIRM message which includes dedicated physical channel parameters. SS shall not configure according to this message. Instead, SS configures its downlink transmission power settings according to columns "T0" in table 8.3.1.18. UE shall fail to establish the dedicated channel in cell 2. UE shall re-select to cell 1 and transmit a CELL UPDATE message with IE "Cell update cause" set to "Radio link failure". Then SS responds with a CELL UPDATE CONFIRM message to end the procedure. Then the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH to acknowledge the receipt of the new UE identities.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0				In the initial set up procedure, the SS shall request UE to associate timer T315 with the new RAB.
1		←	UTRAN MOBILITY INFORMATION	T315=0
2		→	UTRAN MOBILITY INFORMATION CONFIRM	
3			Void	
4				SS configures cell 1 and 2 according to column "T1" in table 8.3.1.18. SS starts to listen to the uplink CCCH of cell 2.
5			Void	
6				The UE detects the radio link failure which is associated with T315. The UE indicates to the non-access stratum the release of the radio bearer.
7		→	CELL UPDATE	The UE shall find a new cell 2 and the value "radio link failure" shall be set in IE "Cell update cause".
8		←	CELL UPDATE CONFIRM	Including dedicated physical channel parameters.
9				SS does not configure according to the message in step 8. SS configures cell 1 and 2 according to column "T0" in table 8.3.1.18.
10		→	CELL UPDATE	UE shall select cell 1 and enter CELL_FACH state to transmit this message
11		←	CELL UPDATE CONFIRM	See message content.
12		→	UTRAN MOBILITY INFORMATION CONFIRM	

Specific Message Contents

UTRAN MOBILITY INFORMATION (Step 1)

The contents of UTRAN MOBILITY INFORMATION message in this test case is identical to those in TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
New U-RNTI	Not Present
New C-RNTI	Not Present
UE Timers and constants in connected mode - T315	0

CELL UPDATE (Step 7)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI -SRNC Identity - S-RNTI Cell Update Cause RB timer indicator - T314 expired - T315 expired	Check to see if set to value assigned in cell 1. Check to see if set to value assigned in cell 1. Check to see if set to 'radio link failure'  FALSE TRUE

## CELL UPDATE CONFIRM (Step 8)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
RRC State indicator	CELL_DCH
CHOICE channel requirement	Same as the set defined in the RADIO BEARER SETUP message in initial condition.

## CELL UPDATE (Step 10)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI -SRNC Identity - S-RNTI Cell Update Cause	Check to see if set to value assigned in cell 1. Check to see if set to value assigned in cell 1. Check to see if set to 'radio link failure'

## CELL UPDATE CONFIRM (Step 11)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
New C-RNTI	'1010 1010 1010 1010'

## 8.3.1.18.5 Test requirement

After step 1, the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message.

After step 6, the UE shall detect the presence of cell 2, perform cell re-selection and transmit a CELL UPDATE message.

After step 9, the UE shall transmit a CELL UPDATE message with IE "Cell update cause" set to "Radio link failure".

After step 11, the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

8.3.1.19 Void

8.3.1.20 Cell Update: Reception of CELL UPDATE CONFIRM Message that causes invalid configuration

8.3.1.20.1 Definition

8.3.1.20.2 Conformance Requirement

If the variable INVALID\_CONFIGURATION is set to TRUE, the UE shall:

- 1> if V302 is equal to or smaller than N302:
  - 2> if, caused by the received CELL UPDATE CONFIRM message
    - 3> if the variable ORDERED\_RECONFIGURATION is set to TRUE caused by the received CELL UPDATE CONFIRM message in case of a cell update procedure:
      - 4> set the variable ORDERED\_RECONFIGURATION to FALSE.
    - 2> in case of a cell update procedure:
      - 3> set the variable FAILURE\_INDICATOR to TRUE;
      - 3> set the variable FAILURE\_CAUSE to "Invalid configuration";
      - 3> set the contents of the CELL UPDATE message according to TS 25.331 subclause 8.3.1.3;
      - 3> submit the CELL UPDATE message for transmission on the uplink CCCH.
    - 2> increment counter V302;
    - 2> restart timer T302 when the MAC layer indicates success or failure to transmit the message.
  - 1> if V302 is greater than N302:

...

#### Reference

3GPP TS 25.331 clause 8.3.1

8.3.1.20.3 Test Purpose

1. To confirm that the UE retransmits a CELL UPDATE message when it receives a CELL UPDATE CONFIRM message that will trigger an invalid configuration in the UE, if the number of retransmissions has not reached the maximum allowed value.

8.3.1.20.4 Method of Test

#### Initial Condition

System Simulator: 1 cell

UE: CELL\_PCH (state 6-12) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is brought to CELL\_PCH state at the beginning of the test. SS pages the UE by sending a PAGING TYPE 1 message using the U-RNTI identity assigned during RRC connection establishment procedure. The UE shall transmit a CELL UPDATE message on the uplink CCCH. Upon receiving such a message, the SS replies with a CELL UPDATE CONFIRM message which is set to give an invalid configuration. The UE shall re-transmit CELL UPDATE message. SS responds with a valid CELL UPDATE CONFIRM message to end the procedure. Then the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH to acknowledge the receipt of the new UE identities.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	PAGING TYPE 1	The UE is in the CELL_PCH state. SS pages for the UE using the allocated connected mode identity (U-RNTI).
2		→	CELL UPDATE	If CELL UPDATE message is received, check that the value "paging response" is set in IE "Cell update cause".
3		←	CELL UPDATE CONFIRM	SS transmits an invalid message.
4		→	CELL UPDATE	IE "failure cause" is set to "invalid configuration"
5		←	CELL UPDATE CONFIRM	
6		→	UTRAN MOBILITY INFORMATION CONFIRM	

## Specific Message Content

### CELL UPDATE (Step 2)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'Paging Response'

### CELL UPDATE CONFIRM (Step 3)

Use the same message sub-type found in TS 34.108 clause 9, with the following exception:

Information Element	Value/remark
RRC State Indicator	CELL_DCH
Uplink DPCH info	Not Present

### CELL UPDATE (Step 4)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause Failure cause	Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'Paging Response' Check to see if it is set to 'invalid configuration'

### PAGING TYPE 1 (Step 1)

Use the same message sub-type titled "TM (Packet in PS)" in default message content of TS 34.108 with following exceptions:

Information Element	Value/remark
Page record list - Paging record - CHOICE Used paging identity - U-RNTI - SRNC Identity - S-RNTI	UTRAN identity  '0000 0000 0001' '0000 0000 0000 0000 0001'

### CELL UPDATE CONFIRM (Step 5)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
New C-RNTI	'1010 1010 1010 1010'

#### 8.3.1.20.5 Test Requirement

After step 1 the UE shall transmit a CELL UPDATE message with IE "cell update cause" set to "paging response".

After step 3 the UE shall transmit a CELL UPDATE message with IE "cell update cause" set to "paging response" and IE "failure cause" set to "invalid configuration".

After step 5, the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

#### 8.3.1.21 Cell Update: Cell reselection to cell of another PLMN belonging to the equivalent PLMN list

##### 8.3.1.21.1 Definition

##### 8.3.1.21.2 Conformance requirement

A UE shall initiate the cell update procedure in the following cases:

###### 1.- Cell reselection:

- if none of the criteria for performing cell update with the causes specified above in the current clause is met; and
- if the UE is in CELL\_FACH or CELL\_PCH state; and
- if the UE performs cell re-selection or the variable C\_RNTI is empty:
  - perform cell update using the cause "cell reselection".

2. A "suitable cell" is a cell on which the UE may camp on to obtain normal service. Such a cell shall fulfil all the following requirements.

- The cell is part of the selected PLMN or, of a PLMN considered as equivalent by the UE according to the information provided by the NAS.
  - The cell is not barred.
  - The cell is not part of the list of "forbidden LAs for roaming"
  - The cell selection criteria are fulfilled.
3. The Mobile Equipment shall store a list of "equivalent PLMNs". This list is replaced or deleted at the end of each location update procedure, routing area update procedure and GPRS attach procedure. The stored list consists of a list of equivalent PLMNs as downloaded by the network plus the PLMN code of the network that downloaded the list. The stored list shall not be deleted when the MS is switched off. The stored list shall be deleted if the SIM is removed. The maximum number of possible entries in the stored list is six.

## Reference

3GPP TS 25.331 clause 8.3.1.2.

3GPP TS 25.304 clause 4.3.

3GPP TS 24.008 clause 4.4.1.

### 8.3.1.21.3 Test purpose

- 1 To confirm that the UE executes a cell update procedure after a successful reselection to another UTRA cell with a PLMN identity different from the original cell but with a PLMN identity that is part of the equivalent PLMN list in the UE.
2. To confirm that the UE sends the correct uplink response message when executing cell update procedure due to cell reselection.

NOTE: Verifies conformance requirement 1, 2 and 3.

3. To confirm that the UE refrains from executing a cell update procedure to a better UTRA cell with another PLMN identity when that PLMN identity is not part of the equivalent PLMN list in the UE.

NOTE: Verifies conformance requirement 1, 2 and 3.

NOTE: Test case in 8.3.1.1 is a test where the UE reselects to a cell with the same PLMN identity as the registered PLMN.

### 8.3.1.21.4 Method of test

#### Initial Condition

System Simulator: 3 cells - Cell 1 is active, with the downlink transmission power shown in column marked "T0" in table 8.3.1.21, while cell 2 and cell 3 is inactive.

UE: CS-CELL\_FACH\_Initial (state 6-2) or PS-CELL\_FACH\_Initial (state 6-4) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

UE: Shall have stored equivalent PLMN list containing PLMN-1 and PLMN-2. The equivalent PLMN list stored in the UE shall not contain PLMN-3.

#### Test Procedure

The SS activates Cell 1-3 according table 8.3.1.21.

Table 8.3.1.21

Parameter	Unit	Cell 1			Cell 2			Cell 3		
		T0	T1	T2	T0	T1	T2	T0	T1	T2
UTRA RF Channel Number		Ch. 1			Ch. 1			Ch. 1		
PLMN identity		PLMN-1			PLMN-2			PLMN-3		
CPICH Ec (FDD)	dBm	-73	-79	-79	Cell 2 is switched off	-73	-79	Cell 3 is switched off	Cell 3 is switched off	-73
P-CCPCH RSCP (TDD)	dBm	-62	-68	-62	Cell 2 is switched off	-62	-68	Cell 3 is switched off	Cell 3 is switched off	-62

Table 8.3.1.21-1 illustrates the downlink power to be applied for the 3 cells at various time instants of the test execution. Columns marked "T0" denote the initial conditions, while columns marked "T1" and "T2" are to be applied subsequently.

- a) At T0, the SS activates Cell 1.
- b) At T1, the SS activates Cell 2, and monitors Cell 2 for received messages from UE.
- c) UE re-selects to Cell 2, and sends a CELL UPDATE
- d) At T2, the SS activates Cell 3, and monitors Cell 3 for received messages from UE.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				At T0: UE is camped on Cell 1 and registered to PLMN1
2		→	CELL UPDATE	At T1: Sent in Cell 2 The value "cell reselection" set in IE "Cell update cause".
3		←	CELL UPDATE CONFIRM	
4		→	UTRAN MOBILITY INFORMATION CONFIRM	
5				At T2: No message sent by UE

#### Specific Message Contents

##### CELL UPDATE CONFIRM (Step 4)

Use the same message sub-type titled "CELL UPDATE CONFIRM message" in TS 34.108 clause 9 with following exceptions:

Information Element	Value/remark
- New C-RNTI	Present
- URA identity	Not present

##### 8.3.1.21.5 Test requirement

The UE shall send a CELL UPDATE at T1 but refrain from sending a cell update (or any other message) after T2.

### 8.3.1.22 Cell update: Restricted cell reselection to a cell belonging to forbidden LA list (Cell\_FACH)

#### 8.3.1.22.1 Definition

#### 8.3.1.22.2 Conformance requirement

##### 1. - Cell reselection:

- if none of the criteria for performing cell update with the causes specified above in the current clause is met; and
- if the UE is in CELL\_FACH or CELL\_PCH state; and
- if the UE performs cell re-selection or the variable C\_RNTI is empty:
  - perform cell update using the cause "cell reselection".

##### 2. A "suitable cell" is a cell on which the UE may camp on to obtain normal service. Such a cell shall fulfil all the following requirements.

- The cell is part of the selected PLMN or, of a PLMN considered as equivalent by the UE according to the information provided by the NAS.
- The cell is not barred.
- The cell is not part of the list of "forbidden LAs for roaming"
- The cell selection criteria are fulfilled.

##### 3. The Mobile Equipment shall contain a list of "forbidden location areas for roaming", as well as a list of "forbidden location areas for regional provision of service". These lists shall be erased when the MS is switched off or when the SIM is removed, and periodically (with period in the range 12 to 24 hours). The location area identification received on the BCCH that triggered the location updating request shall be added to the suitable list whenever a location update reject message is received with the cause "Roaming not allowed in this location area" or with the cause "Location Area not allowed". The lists shall accommodate each 10 or more location area identifications. When the list is full and a new entry has to be inserted, the oldest entry shall be deleted.

#### Reference

3GPP TS 25.331 clause 8.3.1.2.

3GPP TS 25.304 clause 4.3.

3GPP TS 24.008 clause 4.4.1.

#### 8.3.1.22.3 Test purpose

1. To confirm that the UE executes a cell update procedure after a successful reselection of another UTRA cell with a LA identity that is not part of the list of LAs stored in the UE as "forbidden location areas for roaming".
2. To confirm that if the UE get a release message and is moved to idle mode, performs a location registration where the LA list is updated and the UE again enters connected mode, that the UE refrains from selecting that same UTRA cell if that is part of the forbidden LA list.

NOTE: Test case in 8.3.1.1 is a test where the UE reselects to a cell with the same LA identity as the LA identity in the original cell.

NOTE: Test case in 8.1.3.2 is a test where normal RRC connection release on DCCH in CELL\_FACH state is tested.

NOTE: Test case in 8.1.9 is a test where normal RRC connection request and location registration is tested.

## 8.3.1.22.4 Method of test

## Initial Condition

System Simulator: 2 cells - Cell 1 is active, with the downlink transmission power shown in column marked "T0" in table 8.3.1.22, while cell 2 is inactive.

UE: CS-CELL\_FACH\_Initial (state 6-2) or PS-CELL\_FACH\_Initial (state 6-4) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

UE: Shall have an empty list of LAs stored that are "forbidden location areas for roaming". The UE shall be registered to CS through cell 1 with LA-ID 1.

## Test Procedure

Table 8.3.1.22

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
LA identity		LA-ID 1		LA-ID 2	
CPICH Ec (FDD)	dBm	-73	-79	Cell 2 is switched off	-73
P-CCPCH RSCP (TDD)	dBm	-62	-68	Cell 2 is switched off	-68

Table 8.3.1.22-1 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. Columns marked "T0" denote the initial conditions, while columns marked "T1" is to be applied subsequently.

- a) At T1, verify that the UE reselects to cell 2 and sends a cell update.
- b) SS sends a RRC connection release message to the UE from cell2.
- c) The UE performs a location registration to cell 2 (RRC Connection request, setup, initial direct transfer, DL direct transfer (with LA forbidden for roaming), RRC connection release.)
- d) The UE reselects cell 1 again although this is not the best cell.
- e) The UE performs a location registration to cell 1 (RRC Connection request, setup, initial direct transfer, DL direct transfer (without LA forbidden for roaming)).
- f) Keep the UE in RRC Connected mode in CELL\_FACH state.
- g) Make sure the UE refrains from reselecting cell2 and sends a cell update (or any other message) in cell2.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		→	CELL UPDATE	At T1: Sent in Cell 2 The value "cell reselection" set in IE "Cell update cause".
2		←	RRC CONNECTION RELEASE	The value "Normal event" is set in IE "Release cause"
3		→	RRC CONNECTION RELEASE COMPLETE	
4		→	RRC CONNECTION REQUEST	The value "Registration" is set in IE "Establishment cause"
5		←	RRC CONNECTION SETUP	
6		→	RRC CONNECTION SETUP COMPLETE	
7		→	INITIAL DIRECT TRANSFER	Includes MM message LOCATION UPDATING REQUEST
8		←	DOWNLINK DIRECT TRANSFER	Includes MM message LOCATION UPDATING REJECT with reject cause "Roaming not allowed in this location area"
9		←	RRC CONNECTION RELEASAE	The value "Normal event" is set in IE "Release cause"
10		→	RRC CONNECTION RELEASE COMPLETE	The value "Normal event" is set in IE "Release cause"
11		→	RRC CONNECTION REQUEST	Sent in Cell 1. The value "Registration" is set in IE "Establishment cause"
12		←	RRC CONNECTION SETUP	
13		→	RRC CONNECTION SETUP COMPLETE	
14		→	INITIAL DIRECT TRANSFER	Includes MM message LOCATION UPDATING REQUEST
15		←	DOWNLINK DIRECT TRANSFER	Includes MM message LOCATION UPDATING ACCEPT

### Specific Message Contents

#### CELL UPDATE (Step 1)

The same message found in Annex A shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
Cell Update Cause	Check to see if set to 'cell reselection'

#### RRC CONNECTION RELEASE (Step 2, 9)

Use the same message sub-type found in TS34.108 clause 9.

#### RRC CONNECTION RELEASE COMPLETE (Step 3, 10)

Use the same message sub-type found in TS34.108 clause 9. Only the message type IE in this message will be checked.

#### RRC CONNECTION REQUEST (Step 4, 11)

Use the same message sub-type found in TS34.108 clause 9.

**RRC CONNECTION SETUP (Step 5, 12)**

Use the same message sub-type found in TS34.108 clause 9.

**RRC CONNECTION SETUP COMPLETE (Step 6, 13)**

Use the same message sub-type found in TS34.108 clause 9.

**INITIAL DIRECT TRANSFER (Step 7, 14)**

Use the same message sub-type found in TS34.108 clause 9.

**DOWNLINK DIRECT TRANSFER (Step 8, 15)**

Use the same message sub-type found in TS34.108 clause 9.

**8.3.1.22.5 Test requirement**

The UE shall send a CELL UPDATE in Cell 2 at T1, attempt Location registration in Cell 2, but, since the location registration is rejected in Cell 2, not send any more messages in Cell 2

**8.3.1.23 Cell Update: HCS cell reselection in CELL\_FACH****8.3.1.23.1 Definition****8.3.1.23.2 Conformance requirement**

The UE shall perform ranking of all cells that fulfil the S criterion among

- all cells that have the highest HCS\_PRIO among those cells that fulfil the criterion  $H \geq 0$ . Note that this rule is not valid when UE high-mobility is detected.
- all cells, not considering HCS priority levels, if no cell fulfil the criterion  $H \geq 0$ . This case is also valid when it is indicated in system information that HCS is not used, that is when serving cell does not belong to a hierarchical cell structure.

The cells shall be ranked according to the R criteria.

The best ranked cell is the cell with the highest R value.

If an FDD cell is ranked as the best cell and the quality measure for cell selection and re-selection is set to CPICH RSCP, the UE shall perform cell re-selection to that FDD cell.

In all cases, the UE shall reselect the new cell, only if the following conditions are met:

- the new cell is better ranked than the serving cell during a time interval T<sub>reselction</sub>.
- more than 1 second has elapsed since the UE camped on the current serving cell.

...

A UE shall initiate the cell update procedure in the following cases:

1> Uplink data transmission:

...

1> Paging response:

...

1> Radio link failure:

- ...
- 1> Re-entering service area:
- ...
- 1> RLC unrecoverable error:
- ...
- 1> Cell reselection:
- 2> if none of the criteria for performing cell update with the causes specified above in the current subclause is met:
    - 3> if the UE is in CELL\_FACH or CELL\_PCH state and the UE performs cell re-selection; or
    - 3> if the UE is in CELL\_FACH state and the variable C\_RNTI is empty:
      - 4> perform cell update using the cause "cell reselection".

## Reference

3GPP TS 25.331 clause 8.3.1.

3GPP TS 25.304 clause 5.2.6.1.4.

3GPP TS 25.304 clause 5.4.3.

### 8.3.1.23.3 Test purpose

1. To confirm that the UE can read HCS related SIB information and act upon all HCS parameters.
2. To confirm that the UE executes a cell update procedure after the successful reselection of another UTRA cell.
3. To confirm that the UE sends the correct uplink response message when executing cell update procedure due to cell reselection.

### 8.3.1.23.4 Method of test

#### Initial Condition

System Simulator: 3 cells – Cell 1 is active with downlink transmission power shown in Column To in Table 8.3.1.21-1. Cell 2 and 3 are switched off.

UE: CS-CELL\_FACH\_Initial (state 6-2) or PS-CELL\_FACH\_Initial (state 6-4) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE

#### Specific Message Content

For system information blocks 3, 4, 11 & 12 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

## Contents of System Information Block type 3 (FDD)

Information Element	Value/remark
- SIB4 indicator	TRUE
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping info	Not Present
- Cell selection_and_reselection_quality_- measure	CPICH RSCP
- CHOICE mode	FDD
- Sintrasearch	16 dB
- Sintersearch	0 dB
- SsearchHCS	35 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- Slimit,SearchRAT	Not Present
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Qhyst2s	0 dB
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	6
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 3 (3.84 Mcps TDD and 1.28 Mcps TDD)

Information Element	Value/remark
- SIB4 indicator	TRUE
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping info	Not Present
- Cell selection_and_reselection_quality_- measure	(no data)
- CHOICE mode	TDD
- Sintrasearch	10 dB
- Sintersearch	10 dB
- SsearchHCS	47 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- Slimit,SearchRAT	Not Present
- Qrxlevmin	-103 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	6
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 4 (FDD)

Information Element	Value/remark
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping Info	Not present
- Cell_selection_and_reselection_quality_measure	CPICH RSCP
- CHOICE mode	FDD
- Sintrasearch	16 dB
- Sintersearch	0 dB
- SsearchHCS	35 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- S <sub>limit,SearchRAT</sub>	Not Present
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Qhyst2s	0 dB
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	6
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 4 (3.84 Mcps TDD and 1.28 Mcps TDD)

Information Element	Value/remark
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping Info	Not present
- Cell_selection_and_reselection_quality_measure	(no data)
- CHOICE mode	TDD
- Sintrasearch	10 dB
- Sintersearch	10 dB
- SsearchHCS	47 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- S <sub>limit,SearchRAT</sub>	Not Present
- Qqualmin	-20 dB
- Qrxlevmin	-103 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	6
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 11 (FDD) (Cell 1)

Information Element	Value/remark
- Measurement control system information	used
- Use of HCS	CPICH RSCP
- Cell_selection_and_reselection_quality_measure	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.3 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm

## Contents of System Information Block type 11 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 1)

Information Element	Value/remark
- Measurement control system information	
- Use of HCS	used
- Cell_selection_and_reselection_quality_measure	(no data)
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20 dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm

## Contents of System Information Block type 12 in connected mode (FDD) (Cell 1)

Information Element	Value/remark
- Measurement control system information	
- Use of HCS	used
- Cell_selection_and_reselection_quality_measure	CPICH RSCP
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells

- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.3 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm

## Contents of System Information Block type 12 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 1)

Information Element	Value/remark
- Measurement control system information	used
- Use of HCS	(no data)
- Cell_selection_and_reselection_quality_measure	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20 dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm

## Test Procedure

Table 8.3.1.23-1

Parameter	Unit	Cell 1			Cell 2			Cell 3		
		T0	T1	T2	T0	T1	T2	T0	T1	T2
UTRA RF Channel Number		Ch. 1			Ch. 1			Ch. 1		
HCS Priority		6			7			7		
CPICH Ec (FDD)	dBm	-60	-60	-60	-80	-80	-70	-80	-70	-75
H* (After PenaltyTime)		16	16	16	-4	-4	6	-4	6	1
P-CCPCH RSCP (TDD)	dBm	-61	-61	-61	-80	-80	-67	-80	-73	-73
H* (After PenaltyTime)		15	15	15	-4	-4	9	-4	3	3
R* (After PenaltyTime)		-41	-41	-41	-60	-60	-47	-60	-53	-53

\* this parameter is calculated internally in the UE and is only shown for clarification of the test procedure.

The UE is in the CELL\_FACH state, camping onto cell 1. SS configures Cell 2 and 3 with power levels given in column "T0" and starts to broadcast BCCH on the primary CCPCH in cell 2 & 3. UE shall remain camped on the Cell 1 even after expiry of penalty time i.e. 40 seconds. SS sets downlink transmission power settings according to columns "T1" in table 8.3.1.21-1. The UE shall find cell 3 to be more suitable for service and hence perform a cell reselection to cell 3 after at-least 40 Seconds (Penalty Time) after the power levels have been changed. After the completion of cell reselection, the UE shall transmit a CELL UPDATE message to the SS on the uplink CCCH of cell 3 and set IE "Cell update cause" to "Cell Reselection". After the SS receives this message, it transmits a CELL UPDATE CONFIRM message, which includes the IE "RRC State Indicator" set to "CELL\_FACH", to the UE on the downlink DCCH. Then the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH to acknowledge the receipt of the new UE identities. UE shall stay in CELL\_FACH state. SS then sets downlink transmission power settings according to columns "T2" in table 8.3.1.21-1. The UE shall find cell 2 to be more suitable for service and hence perform a cell reselection to cell 2 after at-least 40 Seconds (Penalty Time) after the power levels have been changed. After the completion of cell reselection, the UE shall transmit a CELL UPDATE message to the SS on the uplink CCCH of cell 2 and set IE "Cell update cause" to "Cell Reselection". After the SS receives this message, it transmits a CELL UPDATE CONFIRM message, which includes the IE "RRC State Indicator" set to "CELL\_FACH", to the UE on the downlink DCCH. Then the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH to acknowledge the receipt of the new UE identities. UE shall stay in CELL\_FACH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_FACH state in cell 1
2		←	BCCH	SS applies the downlink transmission power settings, according to the values in columns "T0" of table 8.3.1.1-1. The SS starts to broadcast BCCH on the primary CCPCH in cell 2 and Cell 3. The UE shall find still find Cell 1 best for service even after penalty time of 40 seconds, and shall remain in Cell 1 in CELL_FACH State
3				SS changes the power levels as per column 'T1' in the table 8.3.1.21-1. For the time equal to Penalty time 40 Seconds, after the change in power levels, the UE shall still find Cell 1 as best for service and remain in cell 1. After Penalty time of 40 Seconds, UE shall find Cell 3 better for service and perform a reselection. SS waits for the maximum duration required for the UE to camp to cell 3.
4		→	CELL UPDATE	Value "cell reselection" shall be indicated in IE "Cell update cause" Received in Cell 3
5		←	CELL UPDATE CONFIRM	IE "RRC State Indicator" is set to "CELL_FACH".
6		→	UTRAN MOBILITY INFORMATION CONFIRM	
7				SS changes the power levels as per column 'T2' in the table 8.3.1.21-1. For the time equal to Penalty time 40 Seconds, after the change in power levels, the UE shall still find Cell 3 as best for service and remain in cell 3. After Penalty time of 40 Seconds, UE shall find Cell 2 better for service and perform a reselection. SS waits for the maximum duration required for the UE to camp to cell 2.
8		→	CELL UPDATE	Received in Cell 2
9		←	CELL UPDATE CONFIRM	IE "RRC State Indicator" is set to "CELL_FACH".
10		→	UTRAN MOBILITY INFORMATION CONFIRM	

## Specific Message Contents

## Contents of System Information Block type 3 (FDD) (Cell 2 and 3)

Information Element	Value/remark
- SIB4 indicator	TRUE
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping info	Not Present
- Cell selection_and_reselection_quality_measure	CPICH RSCP
- CHOICE mode	FDD
- Sintrasearch	16 dB
- Sintersearch	0 dB
- SsearchHCS	35 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- Slimit,SearchRAT	Not Present
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Qhyst2s	0 dB
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	7
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 3 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 2 and 3)

Information Element	Value/remark
- SIB4 indicator	TRUE
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping info	Not Present
- Cell selection_and_reselection_quality_measure	(no data)
- CHOICE mode	TDD
- Sintrasearch	10 dB
- Sintersearch	10 dB
- SsearchHCS	47 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- Slimit,SearchRAT	Not Present
- Qrxlevmin	-103 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	7
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 4 (FDD) (Cell 2 and 3)

Information Element	Value/remark
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping Info	Not present
- Cell_selection_and_reselection_quality_measure	CPICH RSCP
- CHOICE mode	FDD
- Sintrasearch	16 dB
- Sintersearch	0 dB
- SsearchHCS	35 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- S <sub>limit,SearchRAT</sub>	Not Present
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Qhyst2s	0 dB
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	7
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 4 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 2 and 3)

Information Element	Value/remark
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping Info	Not present
- Cell_selection_and_reselection_quality_measure	(no data)
- CHOICE mode	TDD
- Sintrasearch	10 dB
- Sintersearch	10 dB
- SsearchHCS	47 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- S <sub>limit,SearchRAT</sub>	Not Present
- Qqualmin	-20 dB
- Qrxlevmin	-103 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	7
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 11 (FDD) (Cell 2)

Information Element	Value/remark
- Measurement control system information	used
- Use of HCS	CPICH RSCP
- Cell_selection_and_reselection_quality_measure	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.3 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	-20dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm

## Contents of System Information Block type 11 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 2)

Information Element	Value/remark
- Measurement control system information	
- Use of HCS	used
- Cell_selection_and_reselection_quality_measure	(no data)
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20 dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20dB
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm

## Contents of System Information Block type 12 in connected mode (FDD) (Cell 2)

Information Element	Value/remark
- Measurement control system information	
- Use of HCS	used
- Cell_selection_and_reselection_quality_measure	CPICH RSCP
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells

- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.3 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm

## Contents of System Information Block type 12 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 2)

Information Element	Value/remark
- Measurement control system information	used
- Use of HCS	(no data)
- Cell_selection_and_reselection_quality_measure	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20 dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20dB
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm

## Contents of System Information Block type 11 (FDD) (Cell 3)

Information Element	Value/remark
- Measurement control system information	used
- Use of HCS	CPICH RSCP
- Cell_selection_and_reselection_quality_measure	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm

## Contents of System Information Block type 11 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 3)

Information Element	Value/remark
- Measurement control system information	
- Use of HCS	used
- Cell_selection_and_reselection_quality_measure	(no data)
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20 dB
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm

## Contents of System Information Block type 12 in connected mode (FDD) (Cell 3)

Information Element	Value/remark
- Measurement control system information	
- Use of HCS	used
- Cell_selection_and_reselection_quality_measure	CPICH RSCP
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells

- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm

## Contents of System Information Block type 12 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 3)

Information Element	Value/remark
- Measurement control system information	used
- Use of HCS	(no data)
- Cell_selection_and_reselection_quality_measure	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20 dB
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm

## CELL UPDATE

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	In step 4 and 8
Cell Update Cause	Check to see if set to 'Cell Re-selection'

## CELL UPDATE CONFIRM (Step 5 and 9)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
RRC State Indicator New C-RNTI	CELL_FACH '1010 1010 1010 1010'

## 8.3.1.23.5 Test requirement

After step 3 the UE shall reselect to cell 3 and then it shall transmit a CELL UPDATE message which, sets the value "cell reselection" in IE "Cell update cause".

After step 5 the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

After step 7 the UE shall reselect to cell 2 and then it shall transmit a CELL UPDATE message which, sets the value "cell reselection" in IE "Cell update cause".

After step 9 the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

## 8.3.1.24 Cell Update: HCS cell reselection in CELL\_PCH

## 8.3.1.24.1 Definition

## 8.3.1.24.2 Conformance requirement

The UE shall perform ranking of all cells that fulfil the S criterion among

- all cells that have the highest HCS\_PRIO among those cells that fulfil the criterion  $H \geq 0$ . Note that this rule is not valid when UE high-mobility is detected.
- all cells, not considering HCS priority levels, if no cell fulfil the criterion  $H \geq 0$ . This case is also valid when it is indicated in system information that HCS is not used, that is when serving cell does not belong to a hierarchical cell structure.

The cells shall be ranked according to the R criteria.

The best ranked cell is the cell with the highest R value.

If an FDD cell is ranked as the best cell and the quality measure for cell selection and re-selection is set to CPICH RSCP, the UE shall perform cell re-selection to that FDD cell.

In all cases, the UE shall reselect the new cell, only if the following conditions are met:

- the new cell is better ranked than the serving cell during a time interval  $T_{reselection}$ .
- more than 1 second has elapsed since the UE camped on the current serving cell.

...

A UE shall initiate the cell update procedure in the following cases:

1> Uplink data transmission:

...

1> Paging response:

...

1> Radio link failure:

...

1> Re-entering service area:

...

1> RLC unrecoverable error:

...

1> Cell reselection:

2> if none of the criteria for performing cell update with the causes specified above in the current subclause is met:

3> if the UE is in CELL\_FACH or CELL\_PCH state and the UE performs cell re-selection; or

3> if the UE is in CELL\_FACH state and the variable C\_RNTI is empty:

4> perform cell update using the cause "cell reselection".

## Reference

3GPP TS 25.331 clause 8.3.1.

3GPP TS 25.304 clause 5.2.6.1.4.

3GPP TS 25.304 clause 5.4.3.

### 8.3.1.24.3 Test purpose

1. To confirm that the UE can read HCS related SIB information and act upon all HCS parameters.
2. To confirm that the UE executes a cell update procedure after the successful reselection of another UTRA cell.
3. To confirm that the UE sends the correct uplink response message when executing cell update procedure due to cell reselection.

### 8.3.1.24.4 Method of test

#### Initial Condition

System Simulator: 3 cells – Cell 1 is active with downlink transmission power shown in Column To in table 8.3.1.21-1. Cell 2 and 3 are switched off.

UE: CELL\_PCH (state 6-12) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Specific Message Content

For system information blocks 3, 4, 11 & 12 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

## Contents of System Information Block type 3 (FDD)

Information Element	Value/remark
- SIB4 indicator	TRUE
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping info	Not Present
- Cell selection_and_reselection_quality_- measure	CPICH RSCP
- CHOICE mode	FDD
- Sintrasearch	16 dB
- Sintersearch	0 dB
- SsearchHCS	35 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- Slimit,SearchRAT	Not Present
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Qhyst2s	0 dB
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	6
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 3 (3.84 Mcps TDD and 1.28 Mcps TDD)

Information Element	Value/remark
- SIB4 indicator	TRUE
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping info	Not Present
- Cell selection_and_reselection_quality_- measure	(no data)
- CHOICE mode	TDD
- Sintrasearch	10 dB
- Sintersearch	10 dB
- SsearchHCS	47 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- Slimit,SearchRAT	Not Present
- Qrxlevmin	-103 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	6
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 4 (FDD)

Information Element	Value/remark
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping Info	Not present
- Cell_selection_and_reselection_quality_measure	CPICH RSCP
- CHOICE mode	FDD
- Sintrasearch	16 dB
- Sintersearch	0 dB
- SsearchHCS	35 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- Slimit,SearchRAT	Not Present
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Qhyst2s	0 dB
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	6
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 4 (3.84 Mcps TDD and 1.28 Mcps TDD)

Information Element	Value/remark
- SIB4 indicator	TRUE
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping info	Not Present
- Cell_selection_and_reselection_quality_measure	(no data)
- CHOICE mode	TDD
- Sintrasearch	10 dB
- Sintersearch	10 dB
- SsearchHCS	47 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- Slimit,SearchRAT	Not Present
- Qrxlevmin	-103 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	6
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 11 (FDD) (Cell 1)

Information Element	Value/remark
- Measurement control system information	used
- Use of HCS	CPICH RSCP
- Cell_selection_and_reselection_quality_measure	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.3 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm

## Contents of System Information Block type 11 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 1)

Information Element	Value/remark
- Measurement control system information	
- Use of HCS	used
- Cell_selection_and_reselection_quality_measure	(no data)
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20 dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm

## Contents of System Information Block type 12 in connected mode (FDD) (Cell 1)

Information Element	Value/remark
- Measurement control system information	
- Use of HCS	used
- Cell_selection_and_reselection_quality_measure	CPICH RSCP
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells

- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.3 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm

## Contents of System Information Block type 12 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 1)

Information Element	Value/remark
- Measurement control system information	used
- Use of HCS	(no data)
- Cell_selection_and_reselection_quality_measure	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20 dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm

## Test Procedure

Table 8.3.1.24-1

Parameter	Unit	Cell 1			Cell 2			Cell 3		
		T0	T1	T2	T0	T1	T2	T0	T1	T2
UTRA RF Channel Number		Ch. 1			Ch. 1			Ch. 1		
HCS Priority		6			7			7		
CPICH Ec (FDD)	dBm	-60	-60	-60	-80	-80	-70	-80	-70	-75
H* (After Penalty Time)		16	16	16	-4	-4	6	-4	6	1
R* (After Penalty Time)		-41	-41	-41	-60	-60	-47	-60	-53	-53
P-CCPCH RSCP (TDD)	dBm	-61	-61	-61	-80	-80	-67	-80	-73	-73
H* (After PenaltyTime)		15	15	15	-4	-4	9	-4	3	3
R* (After PenaltyTime)		-41	-41	-41	-60	-60	-47	-60	-53	-53

\* this parameter is calculated internally in the UE and is only shown for clarification of the test procedure.

The UE is in the CELL\_PCH state, camping onto cell 1. SS configures Cell 2 and 3 with power levels given in column "TO" and starts to broadcast BCCH on the primary CCPCH in cell 2 & 3. UE shall remain camped on the Cell 1 even after expiry of penalty time i.e. 40 seconds. SS sets downlink transmission power settings according to columns "T1" in table 8.3.1.22-1. The UE shall find cell 3 to be more suitable for service and hence perform a cell reselection to cell 3 after at-least 40 Seconds (Penalty Time) after the power levels have been changed. After the completion of cell reselection, the UE shall move to CELL\_FACH state and transmit a CELL UPDATE message to the SS on the uplink CCCH of cell 3 and set IE "Cell update cause" to "Cell Reselection". After SS receives this message, it transmits a CELL UPDATE CONFIRM message, which includes the IE "RRC State Indicator" set to "CELL\_PCH", to the UE on the downlink DCCH. UE shall return to CELL\_PCH state in Cell 3 and will not transmit anything on PRACH. SS then sets downlink transmission power settings according to columns "T2" in table 8.3.1.22-1. The UE shall find cell 2 to be more suitable for service and hence perform a cell reselection to cell 2 after at-least 40 Seconds (Penalty Time) after the power levels have been changed. After the completion of cell reselection, the UE shall move to CELL\_FACH state and transmit a CELL UPDATE message to the SS on the uplink CCCH of cell 2 and set IE "Cell update cause" to "Cell Reselection". After the SS receives this message, it transmits a CELL UPDATE CONFIRM message, which includes the IE "RRC State Indicator" set to "CELL\_PCH", to the UE on the downlink DCCH. UE shall return to CELL\_PCH state in Cell 2 and will not transmit anything on PRACH.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_PCH state in cell 1
2		←	BCCH	SS applies the downlink transmission power settings, according to the values in columns "T0" of table 8.3.1.1-1. The SS starts to broadcast BCCH on the primary CCPCH in cell 2 and Cell 3. The UE shall find still find Cell 1 best for service even after penalty time of 40 seconds, and shall remain in Cell 1 in CELL_PCH State
3				SS changes the power levels as per column 'T1' in the table 8.3.1.21-1. For the time equal to Penalty time 40 Seconds, after the change in power levels, the UE shall still find Cell 1 as best for service and remain in cell 1. After Penalty time of 40 Seconds, UE shall find Cell 3 better for service and perform a reselection. SS waits for the maximum duration required for the UE to camp to cell 3.
4		→	CELL UPDATE	The UE moves to CELL_FACH state and transmits this message with the IE "Cell update cause" set to "cell reselection". Received in Cell 3
5		←	CELL UPDATE CONFIRM	IE "RRC State Indicator" is set to "CELL_PCH".
7				SS changes the power levels as per column 'T2' in the table 8.3.1.21-1. For the time equal to Penalty time 40 Seconds, after the change in power levels, the UE shall still find Cell 3 as best for service and remain in cell 3. After Penalty time of 40 Seconds, UE shall find Cell 2 better for service and perform a reselection. SS waits for the maximum duration required for the UE to camp to cell 2.
8		→	CELL UPDATE	The UE moves to CELL_FACH state and transmits this message with the IE "Cell update cause" set to "cell reselection". Received in Cell 2
9		←	CELL UPDATE CONFIRM	IE "RRC State Indicator" is set to "CELL_PCH".

## Specific Message Contents

## Contents of System Information Block type 3 (FDD) (Cell 2 and 3)

Information Element	Value/remark
- SIB4 indicator	TRUE
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping info	Not Present
- Cell_selection_and_reselection_quality_measure	CPICH RSCP
- CHOICE mode	FDD
- Sintrasearch	16 dB
- Sintersearch	0 dB
- SsearchHCS	35 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- Slimit,SearchRAT	Not Present
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Qhyst2s	0 dB
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	7
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 3 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 2 and 3)

Information Element	Value/remark
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping Info	Not present
- Cell_selection_and_reselection_quality_measure	(no data)
- CHOICE mode	TDD
- Sintrasearch	10 dB
- Sintersearch	10 dB
- SsearchHCS	47 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- Slimit,SearchRAT	Not Present
- Qqualmin	-20 dB
- Qrxlevmin	-103 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	7
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 4 (FDD) (Cell 2 and 3)

Information Element	Value/remark
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping Info	Not present
- Cell_selection_and_reselection_quality_measure	CPICH RSCP
- CHOICE mode	FDD
- Sintrasearch	16 dB
- Sintersearch	0 dB
- SsearchHCS	35 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- S <sub>limit,SearchRAT</sub>	Not Present
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Qhyst2s	0 dB
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	7
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 4 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 2 and 3)

Information Element	Value/remark
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping Info	Not present
- Cell_selection_and_reselection_quality_measure	(no data)
- CHOICE mode	TDD
- Sintrasearch	10 dB
- Sintersearch	10 dB
- SsearchHCS	47 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- S <sub>limit,SearchRAT</sub>	Not Present
- Qqualmin	-20 dB
- Qrxlevmin	-103 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	7
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 11 (FDD) (Cell 2)

Information Element	Value/remark
- Measurement control system information	used
- Use of HCS	CPICH RSCP
- Cell_selection_and_reselection_quality_measure	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.3 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	-20dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm

## Contents of System Information Block type 11 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 2)

Information Element	Value/remark
- Measurement control system information	
- Use of HCS	used
- Cell_selection_and_reselection_quality_measure	(no data)
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20 dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20dB
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm

## Contents of System Information Block type 12 in connected mode (FDD) (Cell 2)

Information Element	Value/remark
- Measurement control system information	
- Use of HCS	used
- Cell_selection_and_reselection_quality_measure	CPICH RSCP
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells

- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.3 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm

## Contents of System Information Block type 12 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 2)

Information Element	Value/remark
- Measurement control system information	used
- Use of HCS	(no data)
- Cell_selection_and_reselection_quality_measure	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20 dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20dB
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm

## Contents of System Information Block type 11 (FDD) (Cell 3)

Information Element	Value/remark
- Measurement control system information	used
- Use of HCS	CPICH RSCP
- Cell_selection_and_reselection_quality_measure	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm

## Contents of System Information Block type 11 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 3)

Information Element	Value/remark
- Measurement control system information	
- Use of HCS	used
- Cell_selection_and_reselection_quality_measure	(no data)
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20 dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20dB
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm

## Contents of System Information Block type 12 in connected mode (FDD) (Cell 3)

Information Element	Value/remark
- Measurement control system information	
- Use of HCS	used
- Cell_selection_and_reselection_quality_measure	CPICH RSCP
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells

- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm

## Contents of System Information Block type 12 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 3)

Information Element	Value/remark
- Measurement control system information	used
- Use of HCS	(no data)
- Cell_selection_and_reselection_quality_measure	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20 dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20dB
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm

## CELL UPDATE

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	In step 4 and 7
Cell Update Cause	Check to see if set to 'Cell Re-selection'

## CELL UPDATE CONFIRM (Step 5 and 8)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3

## 8.3.1.24.5 Test requirement

After step 3 the UE shall reselect to cell 3 and then it shall transmit a CELL UPDATE message which, sets the value "cell reselection" in IE "Cell update cause".

After step 6 the UE shall reselect to cell 2 and then it shall transmit a CELL UPDATE message which, sets the value "cell reselection" in IE "Cell update cause".

## 8.3.2 URA Update

## 8.3.2.1 URA Update: Change of URA

## 8.3.2.1.1 Definition

## 8.3.2.1.2 Conformance requirement

A UE in URA\_PCH state shall initiate the URA update procedure in the following cases:

1> URA reselection:

2> if the UE detects that the current URA assigned to the UE, stored in the variable URA\_IDENTITY, is not present in the list of URA identities in system information block type 2; or

...

3> perform URA update using the cause "change of URA".

When initiating the URA update procedure, the UE shall:

1> stop timer T305;

1> set the variables PROTOCOL\_ERROR\_INDICATOR, FAILURE\_INDICATOR, UNSUPPORTED\_CONFIGURATION and INVALID\_CONFIGURATION to FALSE;

1> move to CELL\_FACH state, if not already in that state;

1> set CFN in relation to SFN of current cell according to TS 25.331 subclause 8.5.15;

1> in case of a URA update procedure:

2> set the contents of the URA UPDATE message according to TS 25.331 subclause 8.3.1.3;

2> submit the URA UPDATE message for transmission on the uplink CCCH.

1> set counter V302 to 1;

1> start timer T302 when the MAC layer indicates success or failure in transmitting the message.

In case of URA update procedure the UE shall transmit a URA UPDATE message.

The UE shall set the IEs in the URA UPDATE message as follows:

1> set the IE "U-RNTI" to the value of the variable U\_RNTI;

- 1> set the IE "URA update cause" corresponding to which cause as specified in TS 25.331 subclause 8.3.1.2 that is valid when the URA UPDATE message is submitted to lower layers for transmission;
- 2> if the value of the variable `PROTOCOL_ERROR_INDICATOR` is TRUE:  
...  
2> if the value of the variable `PROTOCOL_ERROR_INDICATOR` is FALSE:
  - 3> if the value of the variable `INVALID_CONFIGURATION` is TRUE:  
...  
3> if the value of the variable `INVALID_CONFIGURATION` is FALSE:
    - 4> set the IE "Protocol error indicator" to FALSE.

If the URA UPDATE CONFIRM message:

- does not include "CN information elements"; and
- does not include the IE "Ciphering mode info"; and
- does not include the IE "Integrity protection mode info"; and
- does not include the IE "New U-RNTI"; and
- does not include the IE "New C-RNTI":

the UE shall:

- 1> transmit no response message.

...

If the new state is `CELL_PCH` or `URA_PCH`, the response message shall be transmitted in `CELL_FACH` state, and the UE shall:

- 1> when RLC has confirmed the successful transmission of the response message:
  - 2> for each radio bearer in the variable `PDCP_SN_INFO`:
    - 3> if the IE "RB started" in the variable `ESTABLISHED_RABS` is set to "started":
      - 4> configure the RLC entity for that radio bearer to "continue".
  - 2> enter the new state (`CELL_PCH` or `URA_PCH`, respectively).
- 1> continue with the remainder of the procedure.

## Reference

3GPP TS 25.331 clause 8.3.1

### 8.3.2.1.3 Test purpose

1. To confirm that the UE executes an URA update procedure after the successful change of URA.
2. To confirm that the UE responds correctly when it re-selects to a new cell while waiting for URA UPDATE CONFIRM message from SS.

## 8.3.2.1.4 Method of test

## Initial Condition

System Simulator: 4 cells: The URA-ID and transmission power for each cell is shown in Table 8.3.2.1, where the initial condition is shown in column "T0".

UE: URA\_PCH (state 6-13) as specified in clause 7.4 of TS 34.108, with URA-ID 1 from the list of URA-ID in cell 1.

## Test Procedure

Parameter	Unit	Cell 1				Cell 2				Cell 3				Cell 4			
		T0	T1	T2	T3	T0	T1	T2	T3	T0	T1	T2	T3	T0	T1	T2	T3
UTRA RF Channel Number		Ch. 1				Ch. 1				Ch. 1				Ch. 1			
CPICH Ec	dBm/3.84MHz	-60	-75	-75	-75	-75	-60	-75	-75	-75	-75	-60	-75	-75	-75	-60	
P-CCPCH RSCP (TDD)	dBm	-60	-75	-75	-75	-75	-60	-75	-75	-75	-75	-60	-75	-75	-75	-60	
URA ID		URA-ID 1				URA-ID 1,3 and 4				URA-ID 2				no SIB2			

The test begins with the downlink power transmission of all cells set according to 'T0' column in table 8.3.2.1. The UE is in the URA\_PCH state and assigned with only 1 URA identity in cell 1: URA-ID 1. The SS then adjusts the transmission power again according to the 'T1' column. This is expected to cause the UE to perform a cell reselection to cell 2. Since URA-ID 1 is also broadcasted in cell 2, the UE shall not perform any URA update procedure due to the change of URA. Next SS adjusts the transmission power according to 'T2' column. UE shall perform a cell reselection to cell 3 and when the UE finds that its current URA-ID 1 is not in the new broadcasted list of URA-IDs, it moves to CELL\_FACH state and transmits a URA UPDATE message on the uplink CCCH. After the SS receives this message, it transmits a URA UPDATE CONFIRM message, which includes the IEs "RRC State Indicator" and IE "URA-ID" to the UE on the downlink DCCH. The IE "RRC State Indicator" is set to "URA\_PCH". UE returns to URA\_PCH state in cell 3 without sending any uplink response message. Next SS adjusts the transmission power according to 'T1' column. UE shall re-select to cell 2 and transmit a URA UPDATE message to SS. However, SS do not acknowledge but adjusts the transmission power according to 'T0' column. UE shall perform cell re-selection to cell 1 and then sent a URA UPDATE message to SS. SS shall transmit URA UPDATE CONFIRM message to UE. Next the SS adjusts the transmission power according to the 'T3' column. The UE shall re-select to cell 4 and send a URA UPDATE message since no SIB2 is broadcasted in this cell. When the UE receives a URA UPDATE CONFIRM message including a URA identity, the UE will again send a URA UPDATE message. When receiving this last message, the SS releases the RRC connection.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is updated with only 1 URA identity carried currently by cell 1. The starting state of the UE is URA_PCH
2				SS set the power transmission of all cells according to column 'T1' of table 8.3.2.1.
3				UE shall perform a cell reselection but shall not transmit URA UPDATE message with the update cause of "change of URA".
4				SS set the power transmission of all cells according to column 'T2' of table 8.3.2.1.
5		→	URA UPDATE	The UE shall perform a cell reselection first and when it finds that its current URA-ID 1 is not in the newly broadcasted list of URA-IDs, it shall then transmit this message and set value "change of URA" into IE "URA update cause".
6		←	URA UPDATE CONFIRM	Message comprises IE "RRC State Indicator" set "URA_PCH", and also IE "URA Identity" equals to "URA-ID 2".
7				SS set the power transmission of all cells according to column 'T1' of table 8.3.2.1.
8		→	URA UPDATE	
9				SS do not respond to the URA UPDATE message from UE and set the power transmission of all cells according to column 'T0' of table 8.3.2.1.
10		→	URA UPDATE	
11		←	URA UPDATE CONFIRM	
12				SS set the power transmission of all cells according to column 'T3' of table 8.3.2.1.
13		→	URA UPDATE	The UE shall perform a cell reselection first and when it finds that no URA-ID is broadcasted in this cell, it shall then transmit this message and set value "change of URA" into IE "URA update cause".
14		←	URA UPDATE CONFIRM	Message comprises IE "RRC State Indicator" set to "URA_PCH", and also IE "URA Identity" equals to "URA-ID 2".
15		→	URA UPDATE	
16		←	RRC CONNECTION RELEASE	
17		->	RRC CONNECTION RELEASE COMPLETE	
18				UE enters idle mode

## Specific Message Contents

## SYSTEM INFORMATION BLOCK TYPE 2

Use the same message sub-type found in clause 6.1 of TS 34.108, with the following exceptions.

Cell 1:

Information Element	Value/remark
- URA identity list - URA identity	0000 0000 0000 0001B

Cell 2:

Information Element	Value/remark
- URA identity list - URA identity - URA identity - URA identity	0000 0000 0000 0011B 0000 0000 0000 0001B 0000 0000 0000 0100B

Cell 3:

Information Element	Value/remark
- URA identity list - URA identity	0000 0000 0000 0010B

Cell 4:

No SYSTEM INFORMATION BLOCK TYPE 2 is broadcasted in cell 4.

## URA UPDATE (Step 5, 8, 10, 13, and 15)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI URA Update Cause	Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'change of URA'

## URA UPDATE CONFIRM (Step 6)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
URA identity	URA-ID 2

## URA UPDATE CONFIRM (Step 11)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
URA identity	URA-ID 1

### 8.3.2.1.5 Test requirement

After step 2 the UE shall not transmit a URA UPDATE message with update cause "change of URA".

After step 4 the UE shall find that URA-ID 2 is not in its maintained list of URA-IDs. After cell reselection, the UE shall move to CELL\_FACH state and transmit a URA UPDATE message setting value "change of URA" into IE "URA update cause".

After step 7 the UE shall find that URA-ID 1 is not in its maintained list of URA-IDs. After cell reselection, the UE shall move to CELL\_FACH state and transmit a URA UPDATE message setting value "change of URA" into IE "URA update cause".

After step 9 the UE shall find the new cell and transmit a URA UPDATE message setting value "change of URA" into IE "URA update cause".

After step 12 the UE shall find that no URA-ID is broadcasted in the cell, move to CELL\_FACH state and transmit a URA UPDATE message setting the update cause to "change of URA".

After step 14 the UE shall find that no URA-ID is broadcasted in the cell and transmit a URA UPDATE message setting the update cause to "change of URA".

## 8.3.2.2 URA Update: Periodical URA update and Reception of Invalid message

### 8.3.2.2.1 Definition

### 8.3.2.2.2 Conformance requirement

A UE in URA\_PCH state shall initiate the URA update procedure in the following cases:

1> URA reselection:

...

1> Periodic URA update:

- 2> if the criteria for performing URA update with the causes as specified above in the current subclause are not met; and
  - 2> if the timer T305 expires while the UE is in the service area; and
  - 2> if periodic updating has been configured by T305 in the IE "UE Timers and constants in connected mode" set to any other value than "infinity":
- 3> perform URA update using the cause "periodic URA update".

If the URA UPDATE CONFIRM message:

- includes "CN information elements"; or
- includes the IE "Ciphering mode info"; or
- includes the IE "Integrity protection mode info"; or
- includes any one or both of the IEs "New C-RNTI" and "New U-RNTI":

the UE shall:

- 1> transmit a UTRAN MOBILITY INFORMATION CONFIRM as response message using AM RLC.

If the UE receives an URA UPDATE CONFIRM message, which contains a protocol error causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows:

- 1> If V302 is equal to or smaller than N302, the UE shall:

- 2> set the variable `PROTOCOL_ERROR_INDICATOR` to `TRUE`;
- ...
- 2> in case of a URA update procedure:
  - 3> set the contents of the URA UPDATE message according to TS 25.331 subclause 8.3.1.3;
  - 3> submit the URA UPDATE message for transmission on the uplink CCCH.
- 2> increment counter `V302`;
- 2> restart timer `T302` when the MAC layer indicates success or failure to transmit the message.
- 1> if `V302` is greater than `N302`, the UE shall:
  - ...
  - 2> release all its radio resources;
  - 2> enter idle mode;
  - 2> Other actions the UE shall perform when entering idle mode from connected mode are specified in TS 25.331 subclause 8.5.2;
  - 2> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.3.1

### 8.3.2.2.3 Test purpose

1. To confirm that the UE executes a URA update procedure after the expiry of timer `T305`.
2. To verify that the UE handles an invalid URA UPDATE CONFIRM message correctly when executing the URA update procedure.

### 8.3.2.2.4 Method of test

## Initial Condition

System Simulator: 1 cell

UE: URA\_PCH (state 6-13) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is in URA\_PCH state. When the UE detects the expiry of timer `T305`, set according to the value specified in system information, the UE moves to CELL\_FACH state and transmits a URA UPDATE message to the SS on the uplink CCCH. The message shall indicate the cause to be "periodic URA update" in IE "URA update cause". SS replies with an invalid URA UPDATE CONFIRM message sent on downlink CCCH, and check to see if the UE handles this event properly. The UE shall attempt to retransmit the identical URA UPDATE message. After the SS receives the second URA UPDATE message, it transmits a correct URA UPDATE CONFIRM message, which includes the IE "new U-RNTI", to the UE on the downlink DCCH. Then the UE shall then transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH. The UE returns to URA\_PCH state. SS calls for generic procedure C.5 to check that UE is in URA\_PCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in URA_PCH state. SS wait until T305 timer has expired.
2		→	URA UPDATE	UE shall transmit this message and set value "periodic URA update" into IE "URA update cause".
3		←	URA UPDATE CONFIRM	See specific message content.
4		→	URA UPDATE	UE shall not return to idle mode immediately, but attempts to re-transmit this message.
5		←	URA UPDATE CONFIRM	Including IE "new U-RNTI"
6		→	UTRAN MOBILITY INFORMATION CONFIRM	
7		↔	CALL C.5	If the test result of C.5 indicates that UE is in URA_PCH state, the test passes, otherwise it fails.

Specific Message Contents

URA UPDATE (Step 2)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
URA Update Cause	Check to see if set to 'Periodic URA update'

URA UPDATE (Step 4)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
RRC Transaction identifier	Check to see if set to the value given in URA UPDATE CONFIRM message in step 3.
URA Update Cause	Check to see if set to 'Periodic URA update'
Protocol error indicator	TRUE
Protocol error information	
- Protocol error cause	Message extension not comprehended

URA UPDATE CONFIRM (Step 3)

Use the URA UPDATE CONFIRM message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Critical extensions	'01'H

## URA UPDATE CONFIRM (Step 5)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
New U-RNTI	
SRNC Identity	'0000 0000 0001'
S-RNTI	'0000 0000 0000 0000 1111'

## UTRAN MOBILITY INFORMATION CONFIRM (Step 6)

Only the message type IE of this message is checked.

## 8.3.2.2.5 Test requirement

After step 1 the UE shall detect the expiry of timer T305, move to CELL\_FACH state, and transmit a URA UPDATE message which sets the value "periodical cell update" into IE "URA update cause".

After step 3 the UE shall re-transmit URA UPDATE message with IE "Protocol error indicator" set to 'TRUE' and IE "Protocol error information" set to "Message extension not comprehended".

After step 5 the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH and returns to the URA\_PCH state.

## 8.3.2.3 URA Update: re-entering of service area

## 8.3.2.3.1 Definition

## 8.3.2.3.2 Conformance requirement

When the T305 expires and the UE detects that it is "out of service area" as specified in TS 25.331 subclause 8.5.5.1, the UE shall

1> start timer T307;

...

If the UE detects "in service area" according to TS 25.331 subclause 8.5.5.2 and timer T307 or T317 is running, the UE shall:

1> check the value of V302; and

1> if V302 is equal to or smaller than N302:

2> in case of a URA update procedure:

3> set the contents of the URA UPDATE message according to TS 25.331 subclause 8.3.1.3;

3> submit the URA UPDATE message for transmission on the uplink CCCH.

2> increment counter V302;

2> restart timer T302 when the MAC layer indicates success or failure to transmit the message.

1> if V302 is greater than N302:

...

## Reference

3GPP TS 25.331 clause 8.3.1

## 8.3.2.3.3 Test purpose

To confirm that the UE executes a URA update procedure when the UE re-enters the service area before the expiry of timer T317, after expiry of T316.

## 8.3.2.3.4 Method of test

## Initial Condition

System Simulator: 1 cell with URA-ID 1 and the downlink transmission power shown in column marked "T0" in table 8.3.2.3.

UE: URA\_PCH (state 6-13) as specified in clause 7.4 of TS 34.108, with URA-ID 1 in the list of URA-ID.

## Test Procedure

Table 8.3.2.3

Parameter	Unit	Cell 1	
		T0	T1
UTRA RF Channel Number		Ch. 1	
CPICH Ec	dBm/3.84MHz	-60	-80
P-CCPCH RSCP (TDD)	dBm	-60	-80

Table 8.3.2.3 illustrates the downlink power to be applied at various time instants of the test execution. Columns marked "T0" denote the initial conditions.

The UE is initially in URA\_PCH state. The content of the SYSTEM INFORMATION BLOCK TYPE 3 and 4 is modified. After T305 expires, UE shall transmit a URA UPDATE message with IE "URA update cause" set to "periodical ura update". SS shall transmit URA UPDATE CONFIRM message. Immediately after the URA update procedure is finalized, the SS configures its downlink transmission power settings according to columns "T1" in table 8.3.2.3 so that  $S < 0$ . When the UE detects that it is out of service area, it will start T316 and search for a cell to camp. SS configures its downlink transmission power settings according to columns "T0" in table 8.3.2.3 within a time equivalent to  $T316 + T317$  but larger than T316, so that  $S > 0$ . The UE shall detect that it returns back in service area before T317 expires. Since the UE has moved to CELL\_FACH state on expiry of T316, it shall now transmit a CELL UPDATE message which contains the value "re-entering service area" in IE "Cell update cause" to the SS on the uplink CCCH. After the SS receives this message, it transmits a CELL UPDATE CONFIRM message which includes the IE "new C-RNTI", and "new U-RNTI" to the UE on the downlink DCCH. Then the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE starts operating from URA_PCH state.
1a		←	MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 3 and 4	SS changes the contents of MASTER INFORMATION BLOCK and SYSTEM INFORMATION BLOCK (see specific message contents).
1b		←	PAGING TYPE 1	Include IE "BCCH modification info"

1c	→	URA UPDATE	IE "URA update cause" shall be set to "periodical cell update".
1d	←	URA UPDATE CONFIRM	
2			SS configures its downlink transmission power settings according to columns "T1" in table 8.3.2.3 such that the cell 1 is no longer suitable for camping i.e. $S < 0$ .
3			The UE shall detect a "out of service area" condition, start T316. The UE shall start T317 on expiry of T316)
4			60 seconds after step 2 (see note 1), the SS configures its downlink transmission power settings according to columns "T0" in table 8.3.2.3 before T307 expires.
5	→	CELL UPDATE	Value "re-entering service area" shall be set in IE "Cell update cause"
6	←	CELL UPDATE CONFIRM	

NOTE: The 60 seconds in step 4 should be large enough for any UE to have detected the out of service area condition ( $N_{serv}$  consecutive DRX cycles + 12s) and have started T317 after T316 expiry (default=30s), but well before T317 expiry (default = 180s).

### Specific Message Contents

#### MASTER INFORMATION BLOCK (Step 1a)

Use the same message sub-type found in clause 6.1 of TS 34.108, with the following exception.

Information Element	Value/remark
MIB Tag	2
Scheduling information	- Scheduling info for System Information Type 3
- Cell Value tag	2
Scheduling information	- Scheduling info for System Information Type 4
- Cell Value tag	2

#### SYSTEM INFORMATION BLOCK TYPE 3 and 4 (Step 1a)

Use the same message sub-type found in clause 6.1 of TS 34.108, with the following exception.

Information Element	Value/remark
Qrxlevmin	-70

#### PAGING TYPE 1 (Step 1b)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Paging record list	Not Present
BCCH modification info	
MIB Value tag	2
BCCH modification time	Not present

## URA UPDATE (Step 1c)

The same message found in Clause 9 of TS 34.108 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
URA Update Cause	Check to see if set to 'periodical URA update'

## URA UPDATE CONFIRM (Step 1d)

Use the same message sub-type found in Clause 9 of TS 34.108, with the following exceptions:

Information Element	Value/remark
URA identity	URA-ID 1

## CELL UPDATE (Step 5)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
Cell Update Cause	Check to see if set to 're-entering service area'

## CELL UPDATE CONFIRM (Step 6)

Use the same message sub-type found in TS 34.108 clause 9.

## 8.3.2.3.5 Test requirement

After step 2 the UE shall detect that it is out of service area and shall not send a URA UPDATE on the uplink CCCH channel.

After step 4 the UE shall transmit a CELL UPDATE message which sets value "re-entering service area" into IE "Cell update cause".

## 8.3.2.4 URA Update: loss of service after expiry of timers T307 and T305

## 8.3.2.4.1 Definition

## 8.3.2.4.2 Conformance requirement

When the T305 expires and the UE detects that it is "out of service area" as specified in TS 25.331 subclause 8.5.5.1, the UE shall

1> start timer T307;

...

When the T307 expires, the UE shall:

1> move to idle mode;

1> release all dedicated resources;

- 1> indicate release (abort) of the established signalling connections (as stored in the variable ESTABLISHED\_SIGNALLING\_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED\_RABS) to upper layers;
- 1> clear the variable ESTABLISHED\_SIGNALLING\_CONNECTIONS;
- 1> clear the variable ESTABLISHED\_RABS;
- 1> perform other actions when entering idle mode from connected mode as specified in TS 25.331 subclause 8.5.2;
- 1> and the procedure ends.

## Reference

3GPP TS 25.331 clause 8.3.1.4.

### 8.3.2.4.3 Test purpose

1. To confirm that the UE moves to idle mode after the expiry of timer T307, following an expiry of timer T305 when it discovers that it is out of service area.

### 8.3.2.4.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: URA\_PCH (state 6-13) as specified in clause 7.4 of TS 34.108, with URA-ID 1 in the list of URA-ID.

#### Test Procedure

**Table 8.3.2.4**

Parameter	Unit	Cell 1	
		T0	T1
UTRA RF Channel Number		Ch. 1	
CPICH Ec	dBm/3.84MHz	-60	-80
P-CCPCH RSCP (TDD)	dBm	-60	-80

Table 8.3.2.4 illustrates the downlink power to be applied at various time instants of the test execution. Columns marked "T0" denote the initial conditions.

The UE is in URA\_PCH state. The content of the SYSTEM INFORMATION BLOCK TYPE 3 and 4 is modified. The SS waits for reception of a periodical URA update in order to know the timing of the T305 in the UE. SS configures its downlink transmission power settings according to columns "T1" in table 8.3.2.3 so that  $S < 0$ . When the UE detects the expiry of periodic URA updating timer T305 according to the system information, the UE detects that it is out of service area. After the expiry of timer T307, the UE moves to the idle state. SS configures its downlink transmission power settings according to columns "T0" in table 8.3.2.3 so that  $S > 0$ . SS waits for 5s and then calls for generic procedure C.1 to check that UE is in idle mode state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				Initially, the UE is in the URA_PCH state.
1a		←	MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 3 and 4	SS changes the contents of MASTER INFORMATION BLOCK and SYSTEM INFORMATION BLOCK (see specific message contents).
1b		←	PAGING TYPE 1	Include IE "BCCH modification info"
1c		→	URA UPDATE	IE "URA update cause" shall be set to "periodical cell update".
1d		←	URA UPDATE CONFIRM	
2a				SS configures its downlink transmission power settings according to columns "T1" in table 8.3.2.4 so that the UE detects that it is out of service area.
2b				SS waits (T305+T307) +10% for UE to enter idle mode.
3				Upon the expiry of timer T305, the UE shall search for cell to camp and triggers T307 timer. SS listens to the uplink CCCH to verify that URA UPDATE message is not transmitted.
4				After the expiry of timer T307, the UE enters idle state. SS waits for 5s.
5		←→	CALL C.1	If the test result of C.1 indicates that UE is in idle mode state, the test passes, otherwise it fails.

## Specific Message Contents

## MASTER INFORMATION BLOCK (Step 1a)

Use the same message sub-type found in clause 6.1 of TS 34.108, with the following exception.

Information Element	Value/remark
MIB Tag	2
Scheduling information	- Scheduling info for System Information Type 1
- PLMN Value tag	2
Scheduling information	- Scheduling info for System Information Type 3
- Cell Value tag	2
Scheduling information	- Scheduling info for System Information Type 4
- Cell Value tag	2

## SYSTEM INFORMATION BLOCK TYPE 1 (Step 1a)

Use the same message sub-type found in clause 6.1 of TS 34.108, with the following exception.

Information Element	Value/remark
- T305	5 minutes
- T317	1800 seconds

## SYSTEM INFORMATION BLOCK TYPE 3 and 4 (Step 1a)

Use the same message sub-type found in clause 6.1 of TS 34.108, with the following exception.

Information Element	Value/remark
Qrxlevmin	-70

## PAGING TYPE 1 (Step 1b)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Paging record list	Not Present
BCCH modification info	
MIB Value tag	2
BCCH modification time	Not present

## URA UPDATE (Step 1c)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
URA Update Cause	Check to see if set to "periodical URA update"

## URA UPDATE CONFIRM (Step 1d)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
URA identity	URA-ID 1

## 8.3.2.4.5 Test requirement

After step 2 the UE shall not transmit any URA UPDATE message on the uplink CCCH.

## 8.3.2.5 URA Update: Success after Confirmation error of URA-ID list

## 8.3.2.5.1 Definition

## 8.3.2.5.2 Conformance requirement

The UE shall:

- 1> if the IE "URA identity" is included in a received message:
- 2> if the IE "RRC State Indicator" is included and set to "URA\_PCH":
  - 3> store this URA identity in the variable URA\_IDENTITY;
  - 3> after sending a possible message to UTRAN and entering URA\_PCH state as specified elsewhere, read system information block type 2 in the selected cell;
  - 3> if the stored URA identity in the variable URA\_IDENTITY is not included in the list of URA identities in System Information Block type 2 in the selected cell, the list of URA identities in system information

block type 2 is empty or if the system information block type 2 can not be found, a confirmation error of URA identity list has occurred:

4> if no URA update procedure is ongoing:

...

4> if a URA update procedure is ongoing:

5> take actions as specified in TS 25.331 subclause 8.3.1.10.

If the URA UPDATE CONFIRM message causes a confirmation error of URA identity list as specified in TS 25.331 subclause 8.6.2.1 the UE shall:

1> check the value of V302; and

1> if V302 is smaller or equal than N302:

2> set the IEs in the URA UPDATE message according to TS 25.331 subclause 8.3.1.3;

2> submit the URA UPDATE message for transmission on the uplink CCCH;

2> increment counter V302;

2> restart timer T302 when the MAC layer indicates success or failure to transmit the message.

1> if V302 is greater than N302:

...

## Reference

3GPP TS 25.331 clause 8.3.1.10, 8.6.2.1.

### 8.3.2.5.3 Test purpose

1. To confirm that the UE retries to perform the URA update procedure following a confirmation error of URA-ID list.

### 8.3.2.5.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: URA\_PCH (state 6-13) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

At the start of this test, the UE is brought to URA\_PCH state and assigned a URA with URA-ID 1. When the UE detects the expiry of timer T305 according to the system information, the UE moves to CELL\_FACH state and transmits a URA UPDATE message to the SS on the uplink CCCH. The reason for performing URA updating shall be set to "periodic URA update" in IE "URA update cause". After the SS receives this message, it transmits a URA UPDATE CONFIRM message which includes the IE "RRC state indicator" set to "URA\_PCH" and IE "URA identity" set to "URA-ID 2" to the UE on the downlink DCCH. The UE finds that the indicated URA-ID is not included in the list of URA-IDs broadcasted in system information block type 2, and then the UE shall retry to transmit a URA UPDATE message, with "change of URA" set in IE "URA update cause", for a confirmation error of URA-ID list. SS continue to send the same URA UPDATE CONFIRM message until N302+1 URA UPDATE messages have been received. Then SS transmits a URA UPDATE CONFIRM message to the UE which includes IE "URA Identity" set to "URA-ID 1" and IE "new U-RNTI". The UE shall find this URA-ID in its URA-ID list and transmits an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is URA_PCH state. SS initializes counter K to 0
2		→	URA UPDATE	This message shall contain value "periodic URA update" set in IE "URA update cause" after expiry of timer T305.
3			Void	
4		←	URA UPDATE CONFIRM	SS transmits this message, setting the value "URA-ID 2" to IE "URA Identity".
5		→	URA UPDATE	This message shall contain value "change of URA" set in IE "URA update cause" after expiry of timer T305.
6				SS increments K by 1. If K is not greater than N302, proceed to step 7. If K is greater than N302, SS proceeds to step 8.
7		←	URA UPDATE CONFIRM	SS transmits this message, setting the value "URA-ID 2" to IE "URA Identity". And then returns to step 5.
8		←	URA UPDATE CONFIRM	SS transmits this message, setting IE "URA Identity" to "URA-ID 1". This message also comprises IE "New U-RNTI".
9		→	UTRAN MOBILITY INFORMATION CONFIRM	

Specific Message Contents

URA UPDATE (Step 2)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
URA Update Cause	Check to see if set to 'Periodic URA update'

URA UPDATE CONFIRM (Step 4)

Use the same message sub-type as specified in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
URA Identity	2

URA UPDATE CONFIRM (Step 5)

Use the same message sub-type as specified in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
New U-RNTI	
-SRNC Identity	'0000 0000 0001'
-S-RNTI	'0000 0000 0000 0101 0101'
URA Identity	1

### UTRAN MOBILITY INFORMATION CONFIRM (Step 6)

Only the message type IE in this message is checked.

#### 8.3.2.5.5 Test requirement

After step 1 the UE shall detect the expiry of timer T305, move to CELL\_FACH state, transmit a URA UPDATE message on the uplink CCCH and set value "periodic URA update" into IE "URA update cause".

After step 4 the UE shall re-transmit a URA UPDATE message with IE "URA update cause" set to "change of URA" after it detects a confirmation error of URA-ID list for the URA-ID indicated in the URA UPDATE CONFIRM message. A total of (N302+1) URA UPDATE messages shall be received by the SS.

After step 8 the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH.

#### 8.3.2.6 URA Update: Failure (V302 is greater than N302: Confirmation error of URA-ID list)

##### 8.3.2.6.1 Definition

##### 8.3.2.6.2 Conformance requirement

The UE shall:

- 1> if the IE "URA identity" is included in a received message:
  - 2> if the IE "RRC State Indicator" is included and set to "URA\_PCH":
    - 3> store this URA identity in the variable URA\_IDENTITY;
    - 3> after sending a possible message to UTRAN and entering URA\_PCH state as specified elsewhere, read system information block type 2 in the selected cell;
    - 3> if the stored URA identity in the variable URA\_IDENTITY is not included in the list of URA identities in System Information Block type 2 in the selected cell, the list of URA identities in system information block type 2 is empty or if the system information block type 2 can not be found, a confirmation error of URA identity list has occurred:
      - 4> if no URA update procedure is ongoing:
 

...
      - 4> if a URA update procedure is ongoing:
        - 5> take actions as specified in TS 25.331 subclause 8.3.1.10.

If the URA UPDATE CONFIRM message causes a confirmation error of URA identity list as specified in TS 25.331 subclause 8.6.2.1 the UE shall:

- 1> check the value of V302; and
- 1> if V302 is smaller or equal than N302:
  - 2> set the IEs in the URA UPDATE message according to TS 25.331 subclause 8.3.1.3;
  - 2> submit the URA UPDATE message for transmission on the uplink CCCH;

- 2> increment counter V302;
  - 2> restart timer T302 when the MAC layer indicates success or failure to transmit the message.
- 1> if V302 is greater than N302:
- 2> release all its radio resources;
  - 2> enter idle mode;
  - 2> perform the actions specified in TS 25.331 subclause 8.5.2 when entering idle mode from connected mode;
  - 2> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.3.1.10, 8.6.2.1

### 8.3.2.6.3 Test purpose

1. To confirm that the UE make repeated attempts to perform the URA update procedure following a detection of a confirmation error of URA-ID list. It then moves to idle state when internal counter V302 is greater than N302.

### 8.3.2.6.4 Method of test

## Initial Condition

System Simulator: 1 cell

UE: URA\_PCH (state 6-13) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is originally in URA\_PCH state updated with URA-ID 1. When the UE detects the expiry of timer T305 according to the system information, the UE shall move to CELL\_FACH state and transmit a URA UPDATE message to the SS on the uplink CCCH. In this message, the value "periodic URA update" shall be set in IE "URA update cause". After the SS receives this message, it transmits a URA UPDATE CONFIRM message which includes the IE "RRC state indicator" set to "URA\_PCH" and indicating the IE "URA Identity" to be "URA-ID 2" to the UE on the downlink DCCH. The UE finds that the indicated URA-ID is not included in the list of URA-IDs broadcasted. Then the UE shall retry to transmit a URA UPDATE message, with "change of URA" set in IE "URA update cause", for N302 times and each time the SS responds with the URA UPDATE CONFIRM message similar to the previous one. After that, the UE shall enter idle state. SS waits for 5s and then calls for generic procedure C.1 to check that UE is in idle mode state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in URA_PCH state at the start of the test. SS sets internal counter K to 0.
2		→	URA UPDATE	The message shall indicate "periodic URA update" in IE "URA update cause". This message is sent following the expiry of timer T305. SS increments counter K by 1.
3				SS increments K by 1.
4		←	URA UPDATE CONFIRM	The SS transmit this message and set IE "URA Identity" to "URA-ID 2".
5		→	URA UPDATE	The message shall indicate "change of URA" in IE "URA update cause". This message is sent following the expiry of timer T305. SS increments counter K by 1.
6		←	URA UPDATE CONFIRM	The SS transmit this message and set IE "URA Identity" to "URA-ID 2". When K is greater than N302 proceeds to step 7, else executes step 5.
7			Void	The UE shall enter idle state. SS waits for 5s.
8			Void	
9			Void	
10		↔	CALL C.1	If the test result of C.1 indicates that UE is in idle mode state, the test passes, otherwise it fails.

### Specific Message Contents

#### URA UPDATE CONFIRM (Step 3)

Use the same message sub-type defined in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
URA Identity	2

#### 8.3.2.6.5 Test requirement

After step 1 the UE shall detect the expiry of timer T305, then it shall move to CELL\_FACH state and transmit a URA UPDATE message on the uplink CCCH, setting value "periodic URA update" in IE "URA update cause".

After step 6 and if K is not greater than N302, the UE shall retry to transmit a URA UPDATE message, setting value "periodic URA update" in IE "URA update cause" after it detects the confirmation error of URA-ID list for the URA-ID included in the URA UPDATE CONFIRM message.

After step 6 and if K is greater than N302, the UE shall stop transmitting URA UPDATE message and then enters idle state.

### 8.3.2.7 URA Update: Success after T302 timeout

#### 8.3.2.7.1 Definition

#### 8.3.2.7.2 Conformance requirement

If any or several of the following conditions are true:

- expiry of timer T302;

...

the UE shall:

- 1> stop T302 if it is running;
- 1> check whether it is still in "in service area";
- 1> in case of a URA update procedure:
  - 2> clear any entry for the URA UPDATE CONFIRM message in the table "Accepted transactions" in the variable TRANSACTIONS.

If the UE detects "in service area" if it has not entered idle mode, and:

- 1> if V302 is equal to or smaller than N302, the UE shall:
  - 2> in case of a URA update procedure:
    - 3> set the contents of the URA UPDATE message according to TS 25.331 subclause 8.3.1.3;
    - 3> submit the URA UPDATE message for transmission on the uplink CCCH.
  - 2> increment counter V302;
  - 2> restart timer T302 when the MAC layer indicates success or failure to transmit the message.
- 1> if V302 is greater than N302, the UE shall:

...

#### Reference

3GPP TS 25.331 clause 8.3.1.12.

#### 8.3.2.7.3 Test purpose

1. To confirm that the UE attempts to repeat the URA update procedure upon the expiry of timer T302.

#### 8.3.2.7.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: URA\_PCH (state 6-13) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in URA\_PCH. When the UE detects the expiry of timer T305 according to the system information, the UE moves to CELL\_FACH state and transmits a URA UPDATE message to the SS on the uplink CCCH, setting value "periodic URA update" into IE "URA update cause". The SS ignores this message. The UE shall then retry to transmit a

URA UPDATE message after the expiry of timer T302, until a total of N302+1 URA UPDATE messages have been received by the SS. SS transmits a URA UPDATE CONFIRM message to the UE to end the procedure.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in URA_PCH state at the beginning of test. SS initializes counter K to 0 SS waits for T305 to expire.
2		→	URA UPDATE	This message shall contain value "periodic URA update" in IE "URA update cause" sent upon the expiry of timer T305.
3				SS shall not reply. Increment K by 1.
4		→	URA UPDATE	This message shall contain value "periodic URA update" in IE "URA update cause" sent upon the expiry of timer T302.
5				SS shall not reply. SS increments K by 1. If K is not greater than N302, proceed to step 4. If K is greater than N302, SS proceeds to step 6.
6		←	URA UPDATE CONFIRM	
7		→	UTRAN MOBILITY INFORMATION CONFIRM	

#### Specific Message Contents

##### URA UPDATE CONFIRM (Step 6)

Use the same message sub-type as in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
New U-RNTI	
SRNC identity	0000 0000 0001 B
S-RNTI	0000 0000 0000 1111 1111 B
Integrity protection mode info	
Integrity protection mode command	start
Integrity protection initialisation number	any 32 bit value different from the current FRESH
Downlink counter synchronisation info	This IE is present but empty

##### 8.3.2.7.5 Test requirement

After step 1 the UE shall detect the expiry of timer T305, then it shall move to CELL\_FACH state and transmit a URA UPDATE message on the uplink CCCH. The updating cause shall be set to "periodic URA update" in IE "URA update cause".

After step 3 the UE shall retry to transmit a URA UPDATE message at the expiry of timer T302, until a total of N302+1 URA UPDATE messages have been received by the SS.

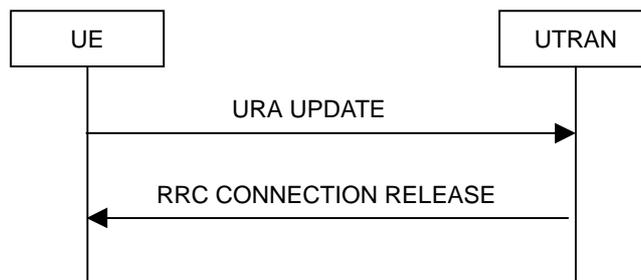
After step 6, the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH integrity protected using the new FRESH value.

8.3.2.8 Void

8.3.2.9 URA Update: Failure (UTRAN initiate an RRC connection release procedure on CCCH)

8.3.2.9.1 Definition

8.3.2.9.2 Conformance requirement



**Figure 8.3.1-10: URA update procedure, failure case**

When the UTRAN receives a CELL UPDATE/URA UPDATE message, the UTRAN should:

1> ... or

1> initiate an RRC connection release procedure (see subclause 8.1.4) by transmitting an RRC CONNECTION RELEASE message on the downlink CCCH.

The UE shall receive and act on an RRC CONNECTION RELEASE message in states CELL\_DCH and CELL\_FACH. Furthermore this procedure can interrupt any ongoing procedures with the UE in the above listed states.

When the UE receives the first RRC CONNECTION RELEASE message; and

1> if the message is received on the CCCH, and IE "U-RNTI" is present and has the same value as the variable U\_RNTI; or

1> if the message is received on DCCH:

the UE shall:

1> in state CELL\_FACH:

2> if the RRC CONNECTION RELEASE message was received on the CCCH:

3> ...

3> enter idle mode;

Reference

3GPP TS 25.331 clause 8.3.1

8.3.2.9.3 Test purpose

To confirm that the UE moves to idle state upon the reception of RRC CONNECTION RELEASE message on downlink CCCH during a URA update procedure.

8.3.2.9.4 Method of test

Initial Condition

System Simulator: 1 cell

UE: URA\_PCH (state 6-13) as specified in clause 7.4 of TS 34.108.

### Test Procedure

The UE is in URA\_PCH state. When the UE detects the expiry of periodic URA updating timer T305, the UE moves to CELL\_FACH state and transmits a URA UPDATE message to the SS on the uplink CCCH. The message shall indicate the cause to be "periodic URA update" in IE "URA update cause". The SS transmits RRC CONNECTION RELEASE message on downlink CCCH. The UE shall return to idle mode after release of all current signalling flows and radio access bearers.

### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the URA_PCH state. SS wait until T305 timer has expired.
2		→	URA UPDATE	UE shall transmit this message and set value "periodic URA update" into IE "URA update cause".
3		←	RRC CONNECTION RELEASE	SS transmits RRC CONNECTION RELEASE message to the UE on the downlink CCCH.
4				The UE releases L2 signalling radio bearer and radio resources then the UE goes to idle mode.

### Specific Message Contents

#### URA UPDATE (Step 2)

The same message found in Annex A shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
URA Update Cause	Check to see if set to 'Periodic URA update'

#### RRC CONNECTION RELEASE (Step 3)

Use the same message sub-type found in Annex A

#### 8.3.2.9.5 Test requirement

After step 1 the UE shall transmit a URA UPDATE message on the uplink CCCH and set value "periodic URA update" into IE "Cell update cause".

After step 3 the UE shall enter idle state.

### 8.3.2.10 URA Update: Reception of URA UPDATE CONFIRM message that causes invalid configuration

#### 8.3.2.10.1 Definition

#### 8.3.2.10.2 Conformance Requirement

If the variable INVALID\_CONFIGURATION is set to TRUE, the UE shall:

- 1> if V302 is equal to or smaller than N302:
  - 2> in case of a URA update procedure:
    - 3> set the contents of the URA UPDATE message according to TS 25.331 subclause 8.3.1.3;
    - 3> submit the URA UPDATE message for transmission on the uplink CCCH.
  - 2> increment counter V302;
  - 2> restart timer T302 when the MAC layer indicates success or failure to transmit the message.
- 1> if V302 is greater than N302:

...

#### Reference

3GPP TS 25.331 clause 8.3.1.9

#### 8.3.2.10.3 Test Purpose

1. To confirm that the UE retransmits a URA UPDATE message when it receives a URA UPDATE CONFIRM message that will trigger an invalid configuration in the UE, if the number of retransmissions has not reached the maximum allowed value.

#### 8.3.2.10.4 Method of Test

#### Initial Condition

System Simulator: 1 cell

UE: URA\_PCH (state 6-13) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

The UE is in URA\_PCH state. When the UE detects the expiry of timer T305 according to the system information, the UE moves to CELL\_FACH state and transmits a URA UPDATE message to the SS on the uplink CCCH. This message shall contain value "periodical URA update" in IE "URA update cause". Upon receiving such a message, the SS replies with a URA UPDATE CONFIRM message with IE "RRC State Indicator" set to "CELL\_DCH". The UE shall detect its variable "invalid configuration" is set and re-transmit URA UPDATE message. SS then transmit a valid URA UPDATE CONFIRM UPDATE message to end the procedure.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the URA_PCH state. SS wait until T305 timer has expired.
2		→	URA UPDATE	UE shall transmit this message and set value "periodic URA update" into IE "URA update cause".
3		←	URA UPDATE CONFIRM	
4		→	URA UPDATE	IE "Protocol error indicator" is set to TRUE and IE "Protocol error information" is set to "Information element value not comprehended".
5			Void	
6			Void	
7		←	URA UPDATE CONFIRM	

## URA UPDATE (Step 2)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI URA Update Cause	Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'Periodic URA update'

## URA UPDATE (Step 4)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI URA Update Cause Protocol error indicator Protocol error information - Protocol error cause	Check to see if set to '0000 0000 0001' Check to see if set to '0000 0000 0000 0000 0001' Check to see if set to 'Periodic URA update' TRUE Information element value not comprehended

## URA UPDATE CONFIRM (Step 3)

Use the same message sub-type found in TS 34.108 clause 9, with the following exception:

Information Element	Value/remark
RRC State Indicator	CELL_DCH

## 8.3.2.10.5 Test Requirement

After step 1 the UE shall detect the expiry of timer T305, then it shall move to CELL\_FACH state and transmit a URA UPDATE message on the uplink CCCH, setting value "periodic URA update" into IE "URA update cause".

After step 3 the UE shall transmit a URA UPDATE message on the uplink CCCH, setting value "TRUE" in IE "URA update cause" and value "Information element value not comprehended" in "Protocol error cause".

### 8.3.2.11 URA Update: Cell reselection to cell of another PLMN belonging to the equivalent PLMN list

#### 8.3.2.11.1 Definition

#### 8.3.2.11.2 Conformance requirement

1. A UE in URA\_PCH state shall initiate the URA update procedure in the following cases:
  - URA reselection:
    - if the UE detects that the current URA assigned to the UE, stored in the variable URA\_IDENTITY, is not present in the list of URA identities in system information block type 2; or
    - if the list of URA identities in system information block type 2 is empty; or
    - if the system information block type 2 can not be found:
      - perform URA update using the cause "change of URA".
2. A "suitable cell" is a cell on which the UE may camp on to obtain normal service. Such a cell shall fulfil all the following requirements.
  - The cell is part of the selected PLMN or, of a PLMN considered as equivalent by the UE according to the information provided by the NAS.
  - The cell is not barred, see clause 5.3.4.1 in TS 25.304.
  - The cell is not part of the list of "forbidden LAs for roaming"
  - The cell selection criteria are fulfilled, see clause 5.2.3.1.2 in TS 25.304.
3. The Mobile Equipment shall store a list of "equivalent PLMNs". This list is replaced or deleted at the end of each location update procedure, routing area update procedure and GPRS attach procedure. The stored list consists of a list of equivalent PLMNs as downloaded by the network plus the PLMN code of the network that downloaded the list. The stored list shall not be deleted when the MS is switched off. The stored list shall be deleted if the SIM is removed. The maximum number of possible entries in the stored list is six.

#### Reference

3GPP TS 25.331 clause 8.3.1.2.

3GPP TS 25.304 clause 4.3.

3GPP TS 24.008 clause 4.4.1.

#### 8.3.2.11.3 Test purpose

1. To confirm that the UE executes a URA update procedure after a successful reselection of another UTRA cell with a URA identity that is not the URA of the UE and with a PLMN identity different from the original cell but with a PLMN that is part of the equivalent PLMN list in the UE. To confirm that the UE sends the correct uplink response message when executing cell update procedure due to cell reselection.

NOTE: Verifies conformance requirements 1, 2 and 3.

2. To confirm that the UE refrains from executing a URA update procedure to a better UTRA cell with another PLMN identity when that PLMN identity is not part of the equivalent PLMN list in the UE.

NOTE: Test case in 8.3.2.1 is a test where the UE reselects to a cell with the same PLMN identity as the registered PLMN.

## 8.3.2.11.4 Method of test

## Initial Condition

System Simulator: 3 cells - Cell 1 is active, with the downlink transmission power shown in column marked "T0" in table 8.3.2.1-1, while cell 2 and cell 3 is inactive.

UE: URA\_PCH (state 6-13) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

UE: Shall have stored equivalent PLMN list containing PLMN-1 and PLMN-2. The equivalent PLMN list stored in the UE shall not contain PLMN-3. The UE shall also have stored the URA identity URA-ID 1 from the list of URA-IDs in cell 1.

## Test Procedure

Table 8.3.2.11-1

Parameter	Unit	Cell 1			Cell 2			Cell 3		
		T0	T1	T2	T0	T1	T2	T0	T1	T2
UTRA RF Channel Number		Ch. 1			Ch. 1			Ch. 1		
PLMN identity		PLMN-1			PLMN-2			PLMN-3		
URA identity		URA-ID 1			URA-ID 2			URA-ID 3		
CPICH RSCP (FDD)	dBm	-73	-79	-79	Cell 2 is switched off	-73	-79	Cell 3 is switched off	Cell 3 is switched off	-73
P-CCPCH RSCP (TDD)	dBm	-62	-68	-68	Cell 2 is switched off	-62	-68	Cell 3 is switched off	Cell 3 is switched off	-62

Table 8.3.2.11-1 illustrates the downlink power to be applied for the 3 cells at various time instants of the test execution. Columns marked "T0" denote the initial conditions, while columns marked "T1" and "T2" are to be applied subsequently.

- At T0, the SS activates Cell 1.
- At T1, the SS activates Cell 2, and monitors Cell 2 for received messages from UE.
- UE re-selects to Cell 2, and sends a URA UPDATE message
- At T2, the SS activates Cell 3, and monitors Cell 3 for received messages from UE.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				At T0: UE is camped on Cell 1 and registered to PLMN1
2		→	URA UPDATE	At T1: Sent in Cell 2 The value "change of URA" set in IE "URA update cause".
3		←	URA UPDATE CONFIRM	
4		→	UTRAN MOBILITY INFORMATION CONFIRM	

## Specific Message Contents

FFS

### 8.3.2.11.5 Test requirement

The UE shall send a URA UPATE message after T1 and refrain from sending a URA update (or any other message) after T2.

### 8.3.2.12 Restricted cell reselection to a cell belonging to forbidden LA list (URA\_PCH)

#### 8.3.2.12.1 Definition

#### 8.3.2.12.2 Conformance requirement

1. A UE in URA\_PCH state shall initiate the URA update procedure in the following cases:
  - URA reselection:
    - if the UE detects that the current URA assigned to the UE, stored in the variable URA\_IDENTITY, is not present in the list of URA identities in system information block type 2; or
    - if the list of URA identities in system information block type 2 is empty; or
    - if the system information block type 2 can not be found:
      - perform URA update using the cause "change of URA".
2. A "suitable cell" is a cell on which the UE may camp on to obtain normal service. Such a cell shall fulfil all the following requirements.
  - The cell is part of the selected PLMN or, of a PLMN considered as equivalent by the UE according to the information provided by the NAS.
  - The cell is not barred, see clause 5.3.1 in TS 25.304.
  - The cell is not part of the list of "forbidden LAs for roaming"
  - The cell selection criteria are fulfilled, see clause 5.2.3.1.2 in TS 25.304.
3. The Mobile Equipment shall contain a list of "forbidden location areas for roaming", as well as a list of "forbidden location areas for regional provision of service". These lists shall be erased when the MS is switched off or when the SIM is removed, and periodically (with period in the range 12 to 24 hours). The location area identification received on the BCCH that triggered the location updating request shall be added to the suitable list whenever a location update reject message is received with the cause "Roaming not allowed in this location area" or with the cause "Location Area not allowed". The lists shall accommodate each 10 or more location area identifications. When the list is full and a new entry has to be inserted, the oldest entry shall be deleted.

#### Reference

3GPP TS 25.331 clause 8.3.1.2.

3GPP TS 25.304 clause 4.3.

3GPP TS 24.008 clause 4.4.1.

#### 8.3.2.12.3 Test purpose

1. To confirm that the UE refrains from selecting a UTRA cell and performs a URA update if that cell has a LA identity that is part of the list of LAs stored in the UE as "forbidden location areas for roaming".

NOTE: Test case in 8.3.2.1 is a test where the UE reselects to a cell with the same LA identity as the LA identity in the original cell.

## 8.3.2.12.4 Method of test

## Initial Condition

System Simulator: 2 cells - Cell 1 is active, with the downlink transmission power shown in column marked "T0" in table 8.3.2.1-1, while cell 2 is inactive.

UE: URA\_PCH (state 6-13) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

UE: Shall have stored LA-ID 2 into the list of "forbidden location areas for roaming". The UE shall also have stored the URA identity URA-ID 1 from the list of URA-IDs in cell 1.

## Test Procedure

Table 8.3.2.12-1

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
URA identity		URA-ID 1		URA-ID 2	
LA identity		LA-ID 1		LA-ID 2	
CPICH RSCP (FDD)	dBm	-73	-79	Cell 2 is switched off	-73
P-CCPCH RSCP (TDD)	dBm	-62	-68	Cell 2 is switched off	-62

Table 8.3.2.12-1 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. Columns marked "T0" denote the initial conditions, while columns marked "T1" and "T2" are to be applied subsequently.

- a) At T1, verify that the UE does not reselect to cell 2 and not send a URA update in cell 2, although cell 2 is the best cell.

## Expected sequence

-

## Specific Message Contents

-

## 8.3.2.12.5 Test requirement

The UE shall not send a URA UPDATE (or any other message) in Cell 2 after T1.

## 8.3.2.13 URA Update: Change of URA due to HCS Cell Reselection

## 8.3.2.13.1 Definition

## 8.3.2.13.2 Conformance requirement

The UE shall perform ranking of all cells that fulfil the S criterion among

- all cells that have the highest HCS\_PRIO among those cells that fulfil the criterion  $H \geq 0$ . Note that this rule is not valid when UE high-mobility is detected.

- all cells, not considering HCS priority levels, if no cell fulfil the criterion  $H \geq 0$ . This case is also valid when it is indicated in system information that HCS is not used, that is when serving cell does not belong to a hierarchical cell structure.

The cells shall be ranked according to the R criteria.

The best ranked cell is the cell with the highest R value.

If an FDD cell is ranked as the best cell and the quality measure for cell selection and re-selection is set to CPICH RSCP, the UE shall perform cell re-selection to that FDD cell.

In all cases, the UE shall reselect the new cell, only if the following conditions are met:

- the new cell is better ranked than the serving cell during a time interval  $T_{reselection}$ .
- more than 1 second has elapsed since the UE camped on the current serving cell.

...

A UE in URA\_PCH state shall initiate the URA update procedure in the following cases:

1> URA reselection:

- 2> if the UE detects that the current URA assigned to the UE, stored in the variable URA\_IDENTITY, is not present in the list of URA identities in system information block type 2; or

...

- 3> perform URA update using the cause "change of URA".

## Reference

3GPP TS 25.331 clause 8.3.1.

3GPP TS 25.304 clause 5.2.6.1.4.

3GPP TS 25.304 clause 5.4.3.

### 8.3.2.13.3 Test purpose

1. To confirm that the UE can read HCS related SIB information and act upon all HCS parameters.
2. To confirm that the UE executes an URA update procedure after the successful change of URA due to HCS Cell Reselection.
3. To confirm UE responds correctly when it re-selects to a new cell while waiting from URA UPDATE CONFIRM message from SS.

### 8.3.2.13.4 Method of test

#### Initial Condition

System Simulator: 3 cells - Cell 1 is active with URA-ID 1 and downlink transmission power shown in column marked "T0" in table 8.3.2.11-1. Cell2 with URA-ID 1 and Cell 3 with URA-ID 2 are switched off

UE: URA\_PCH (state 6-13) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE, with URA-ID 1 from the list of URA-ID in cell 1

#### Specific Message Content

For system information blocks 3, 4, 11 & 12 for Cell 1 (gives IE's which are different from defaults given in 34.108 sec 6.1) to be transmitted before idle update preamble.

## Contents of System Information Block type 3 (FDD)

Information Element	Value/remark
- SIB4 indicator	TRUE
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping info	Not Present
- Cell selection_and_reselection_quality_- measure	CPICH RSCP
- CHOICE mode	FDD
- Sintrasearch	16 dB
- Sintersearch	0 dB
- SsearchHCS	35 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- Slimit,SearchRAT	Not Present
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Qhyst2s	0 dB
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	6
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 3 (3.84 Mcps TDD and 1.28 Mcps TDD)

Information Element	Value/remark
- SIB4 indicator	TRUE
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping info	Not Present
- Cell_selection_and_reselection_quality_measure	(no data)
- CHOICE mode	TDD
- Sintrasearch	10 dB
- Sintersearch	10 dB
- SsearchHCS	47 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- Slimit,SearchRAT	Not Present
- Qrxlevmin	-103 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	6
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 4 (FDD)

Information Element	Value/remark
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping Info	Not present
- Cell_selection_and_reselection_quality_measure	CPICH RSCP
- CHOICE mode	FDD
- Sintrasearch	16 dB
- Sintersearch	0 dB
- SsearchHCS	35 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- Slimit,SearchRAT	Not Present
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Qhyst2s	0 dB
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	6
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 4 (3.84 Mcps TDD and 1.28 Mcps TDD)

Information Element	Value/remark
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping Info	Not present
- Cell_selection_and_reselection_quality_measure	(no data)
- CHOICE mode	TDD
- Sintrasearch	10 dB
- Sintersearch	10 dB
- SsearchHCS	47 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- S <sub>limit,SearchRAT</sub>	Not Present
- Qqualmin	-20 dB
- Qrxlevmin	-103 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	6
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 11 (FDD) (Cell 1)

Information Element	Value/remark
- Measurement control system information	used
- Use of HCS	CPICH RSCP
- Cell_selection_and_reselection_quality_measure	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.3 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm

## Contents of System Information Block type 11 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 1)

Information Element	Value/remark
- Measurement control system information	
- Use of HCS	used
- Cell_selection_and_reselection_quality_measure	(no data)
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20 dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm

## Contents of System Information Block type 12 in connected mode (FDD) (Cell 1)

Information Element	Value/remark
- Measurement control system information	
- Use of HCS	used
- Cell_selection_and_reselection_quality_measure	CPICH RSCP
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells

- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.3 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm

## Contents of System Information Block type 12 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 1)

Information Element	Value/remark
- Measurement control system information	used
- Use of HCS	(no data)
- Cell_selection_and_reselection_quality_measure	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20 dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm

## Test Procedure

Table 8.3.2.13-1

Parameter	Unit	Cell 1			Cell 2			Cell 3		
		T0	T1	T2	T0	T1	T2	T0	T1	T2
UTRA RF Channel Number		Ch. 1			Ch. 1			Ch. 1		
HCS Priority		6			7			7		
CPICH Ec (FDD)	dBm	-60	-60	-60	-80	-80	-70	-80	-70	-75
H* (After PenaltyTime)		16	16	16	-4	-4	6	-4	6	1
P-CCPCH RSCP (TDD)	dBm	-61	-61	-61	-80	-80	-67	-80	-73	-73
H* (After PenaltyTime)		15	15	15	-4	-4	9	-4	3	3
R* (After PenaltyTime)		-41	-41	-41	-60	-60	-47	-60	-53	-53

\* this parameter is calculated internally in the UE and is only shown for clarification of the test procedure.

The UE is in the URA\_PCH state and assigned with only 1 URA identity in cell 1: URA-ID 1. SS configures Cell 2 and 3 with power level given in column "T0", and URA-Id 1 and 2 respectively and starts broadcast of BCCH on the primary CCPCH in cells 2 and 3. UE shall remain camped on the Cell 1 even after expiry of penalty time i.e. 40 seconds. SS sets downlink transmission power settings according to columns "T1" in table 8.3.2.13-1. SS then adjusts the transmission power again according to 'T1' column. This is expected to cause the UE to perform a cell reselection to cell 3 after at-least 40 Seconds (Penalty Time) after the power levels have been changed. UE on performing cell reselection to cell 3 finds that its current URA-ID 1 is not in the new broadcasted list of URA-IDs, it moves to CELL\_FACH state and transmits a URA UPDATE message on the uplink CCCH. After the SS receives this message, it transmits URA UPDATE CONFIRM message which includes the IEs "RRC State Indicator" and "URA-ID" to the UE on the downlink DCCH. The "RRC State Indicator" is set to "URA\_PCH". UE returns to URA\_PCH state in cell 3 without sending a uplink response message. Next SS adjusts the transmission power according to 'T2' column. UE shall re-select to cell 2 after atleast penalty time of 40 seconds, and transmit URA UPDATE message to SS. However, SS do not acknowledge but adjusts the transmission power according to 'T0' column. UE shall perform cell re-selection to cell 1 and then sent URA UPDATE message to SS. Finally SS shall transmit URA UPDATE CONFIRM message to UE.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is updated with only 1 URA identity carried currently by cell 1. The starting state of the UE is URA_PCH
2		←	BCCH	SS configures cell 2 (with URA-ID 1) and Cell 3 (with URA-ID 2) and power levels as given in column T0 of table 8.3.2.13-1 and starts transmission of BCCH.
3				UE shall Remain camped on Cell 1 and in URA_PCH state even after expiry of Penalty time.
4				SS set the power transmission of all cells according to column 'T1' of table 8.3.2.13-1.
5		→	URA UPDATE	The UE shall perform a cell reselection first after the penalty time to cell 3 and when it finds that its current URA-ID 1 is not in the new broadcasted list of URA-IDs, it shall then transmit this message and set value "change of URA" into IE "URA update cause".
6		←	URA UPDATE CONFIRM	Message comprises IE "RRC State Indicator" set "URA_PCH", and also IE "URA Identity" equals to "URA-ID 2".
7				SS set the power transmission of all cells according to column 'T2' of table 8.3.2.13-1.
8		→	URA UPDATE	In Cell 2
9				SS do not respond to the URA UPDATE message from UE and set the power transmission of all cells according to column 'T0' of table 8.3.2.13-1.
10		→	URA UPDATE	
11		←	URA UPDATE CONFIRM	

## Specific Message Contents

## Contents of System Information Block type 3 (FDD) (Cell 2 and 3)

Information Element	Value/remark
- SIB4 indicator	TRUE
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping info	Not Present
- Cell selection_and_reselection_quality_measure	CPICH RSCP
- CHOICE mode	FDD
- Sintrasearch	16 dB
- Sintersearch	0 dB
- SsearchHCS	35 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- Slimit,SearchRAT	Not Present
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Qhyst2s	0 dB
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	7
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 3 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 2 and 3)

Information Element	Value/remark
- SIB4 indicator	TRUE
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping info	Not Present
- Cell selection_and_reselection_quality_measure	(no data)
- CHOICE mode	TDD
- Sintrasearch	10 dB
- Sintersearch	10 dB
- SsearchHCS	47 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- Slimit,SearchRAT	Not Present
- Qrxlevmin	-103 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	7
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 4 (FDD) (Cell 2 and 3)

Information Element	Value/remark
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping Info	Not present
- Cell_selection_and_reselection_quality_measure	CPICH RSCP
- CHOICE mode	FDD
- Sintrasearch	16 dB
- Sintersearch	0 dB
- SsearchHCS	35 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- S <sub>limit,SearchRAT</sub>	Not Present
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Qhyst2s	0 dB
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	7
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 4 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 2 and 3)

Information Element	Value/remark
- Cell identity	0000 0000 0000 0000 0000 0000 0001B
- Cell selection and re-selection info	
- Mapping Info	Not present
- Cell_selection_and_reselection_quality_measure	(no data)
- CHOICE mode	TDD
- Sintrasearch	10 dB
- Sintersearch	10 dB
- SsearchHCS	47 dB
- RAT List	This parameter is configurable
- RAT identifier	GSM
- Ssearch,RAT	-32 dB
- SHCS,RAT	Not Present
- S <sub>limit,SearchRAT</sub>	Not Present
- Qqualmin	-20 dB
- Qrxlevmin	-103 dBm
- Qhyst1s	10 (gives actual value of 20 dB)
- Treselections	0 seconds
- HCS Serving cell information	
-HCS Priority	7
- Q HCS	39 (results in actual value of -76)
- TcrMax	Not Present

## Contents of System Information Block type 11 (FDD) (Cell 2)

Information Element	Value/remark
- Measurement control system information	used
- Use of HCS	CPICH RSCP
- Cell_selection_and_reselection_quality_measure	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.3 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	-20dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm

## Contents of System Information Block type 11 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 2)

Information Element	Value/remark
- Measurement control system information	
- Use of HCS	used
- Cell_selection_and_reselection_quality_measure	(no data)
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20 dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20dB
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm

## Contents of System Information Block type 12 in connected mode (FDD) (Cell 2)

Information Element	Value/remark
- Measurement control system information	
- Use of HCS	used
- Cell_selection_and_reselection_quality_measure	CPICH RSCP
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells

- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.3 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm

## Contents of System Information Block type 12 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 2)

Information Element	Value/remark
- Measurement control system information	used
- Use of HCS	(no data)
- Cell_selection_and_reselection_quality_measure	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20 dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20dB
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm

## Contents of System Information Block type 11 (FDD) (Cell 3)

Information Element	Value/remark
- Measurement control system information	used
- Use of HCS	CPICH RSCP
- Cell_selection_and_reselection_quality_measure	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	

- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm

## Contents of System Information Block type 11 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 3)

Information Element	Value/remark
- Measurement control system information	
- Use of HCS	used
- Cell_selection_and_reselection_quality_measure	(no data)
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20 dB
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm

## Contents of System Information Block type 12 in connected mode (FDD) (Cell 3)

Information Element	Value/remark
- Measurement control system information	
- Use of HCS	used
- Cell_selection_and_reselection_quality_measure	CPICH RSCP
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells

- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	
- Qoffset1 <sub>s,n</sub>	-20 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	33 dBm
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115 dBm

## Contents of System Information Block type 12 (3.84 Mcps TDD and 1.28 Mcps TDD) (Cell 3)

Information Element	Value/remark
- Measurement control system information	used
- Use of HCS	(no data)
- Cell_selection_and_reselection_quality_measure	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20 dB
- HCS neighbouring cell information	Present
- HCS_Priority	6
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- CHOICE mode	TDD
- Primary CCPCH info	
- Cell parameters ID	Reference clause 6.1 Default settings for cell
- Primary CCPCH TX power	Not Present
- Timeslot list	Not Present
- Burst type	Not Present
- Cell Selection and Re-selection info	
- Qoffset <sub>1s,n</sub>	-20dB
- HCS neighbouring cell information	Present
- HCS_Priority	7
-Q_HCS	39 (results in actual value of -76)
-HCS Cell Reselection Information	
- Penalty Time	40
-Temporary Offset	10
- CHOICE mode	TDD
- Qrxlevmin	-103 dBm

## URA UPDATE (Step 5, 8 and 10)

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0001'
URA Update Cause	Check to see if set to 'change of URA'

## URA UPDATE CONFIRM (Step 6)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:.

Information Element	Value/remark
URA identity	URA-ID 2

### URA UPDATE CONFIRM (Step 11)

Use the same message sub-type found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
URA identity	URA-ID 1

#### 8.3.2.13.5 Test requirement

After step 4 the UE shall find that URA-ID 2 is not in its maintained list of URA-IDs. After cell reselection, the UE shall move to CELL\_FACH state and transmit URA UPDATE message setting value "change of URA" into IE "URA update cause".

After step 7 the UE shall find that URA-ID 1 is not in its maintained list of URA-IDs. After cell reselection, the UE shall move to CELL\_FACH state and transmit URA UPDATE message setting value "change of URA" into IE "URA update cause".

## 8.3.3 UTRAN Mobility Information

### 8.3.3.1 UTRAN Mobility Information: Success

#### 8.3.3.1.1 Definition

#### 8.3.3.1.2 Conformance requirement

When the UE receives a UTRAN MOBILITY INFORMATION message, it shall:

1> act on received information elements as specified in TS 25.331 subclause 8.6;

...

1> transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC;

....

If the IE "New U-RNTI" is included in a received message, the UE shall:

1> store the value in the variable U\_RNTI, replacing any old stored value.

...

If the IE "New C-RNTI" is included, the UE shall:

1> store the value in the variable C\_RNTI, replacing any old stored value;

1> use that C-RNTI when using common transport channels of type RACH, FACH and CPCH in the current cell.

...

In case of cell update procedure the UE shall transmit a CELL UPDATE message.

The UE shall set the IEs in the CELL UPDATE message as follows:

...

1> set the IE "U-RNTI" to the value of the variable U\_RNTI;

...

## Reference

3GPP TS 25.331 clauses 8.3.3, 8.6.3.9, 8.6.3.10, 8.3.1.3.

### 8.3.3.1.3 Test purpose

1. To confirm that the UE starts to use the new identities after it receives a UTRAN MOBILITY INFORMATION message from the SS.

### 8.3.3.1.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

#### Test Procedure

Initially, the UE is in CELL\_FACH state and it has been assigned a C-RNTI and U-RNTI. The SS transmits an UTRAN MOBILITY INFORMATION message which includes new C-RNTI and U-RNTI to the UE. Then the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message using the assigned new C-RNTI in MAC header as confirmation. SS waits for UE to perform periodic cell updating. When SS received a CELL UPDATE message, SS checks that UE uses the new U-RNTI in the CELL UPDATE message. Then SS sends CELL UPDATE CONFIRM. SS waits for UE to perform periodic cell updating. When SS received a CELL UPDATE message, SS sends CELL UPDATE CONFIRM to end the test procedure.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The initial state of the UE is CELL_FACH state. UE has been allocated both C-RNTI and U-RNTI during RRC connection establishment phase.
2		←	UTRAN MOBILITY INFORMATION	Contains new C-RNTI and U-RNTI identities and a value for T305 that is different from the value defined in the system information.
3		→	UTRAN MOBILITY INFORMATION CONFIRM	The assigned new C-RNTI shall be included in MAC header.
4				SS wait for T305 (same as the value defined in system information) to expire.
5		→	CELL UPDATE	UE shall trigger cell updating. The message shall indicate the same U-RNTI assigned in the UTRAN MOBILITY INFORMATION message in step 2.
6		←	CELL UPDATE CONFIRM	
7				SS wait for T305 (the new value as specified in step 2) to expire.
8		→	CELL UPDATE	UE shall trigger cell updating. The message shall indicate the same U-RNTI assigned in the UTRAN MOBILITY INFORMATION message in step 2.
9		←	CELL UPDATE CONFIRM	

### Specific Message Content

#### UTRAN MOBILITY INFORMATION (Step 2)

Use the same message sub-type as in TS 34.108, clause 9, with the following exceptions:

Information Element	Value/remark
New U-RNTI	
- SRNC Identity	'0000 0000 0001'
- S-RNTI	'0101 0101 0101 0101 0101'
New C-RNTI	'1010 1010 1010 1010'
UE Timers and constants in connected mode	
- T305	5 minutes

#### UTRAN MOBILITY INFORMATION CONFIRM (Step 3)

Only the message type IE is checked in this message.

#### CELL UPDATE (Step 5 and 8)

The same message found in TS 34.108, clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell Update Cause	Check to see if set to '0000 0000 0001' Check to see if set to '0101 0101 0101 0101 0101' Check to see if set to 'periodical cell updating'

### CELL UPDATE CONFIRM (Step 6 and 9)

Use the same message sub-type as in TS 34.108, clause 9.

#### 8.3.3.1.5 Test requirement

After step 2 the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH that using the assigned new C-RNTI in MAC header.

After step 4 and 7 the UE shall transmit a CELL UPDATE message on the uplink CCCH with IE "Cell update cause" set to "periodical cell updating". The IE "U-RNTI" shall be identical to the IE "New RNTI" found in UTRAN MOBILITY INFORMATION message sent by the SS in step 2.

### 8.3.3.2 UTRAN Mobility Information: Failure (Invalid message reception)

#### 8.3.3.2.1 Definition

#### 8.3.3.2.2 Conformance Requirements

If the UTRAN MOBILITY INFORMATION message contains a protocol error causing the variable `PROTOCOL_ERROR_REJECT` to be set to TRUE according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

- 1> transmit a UTRAN MOBILITY INFORMATION FAILURE message on the uplink DCCH using AM RLC;
- 1> set the IE "RRC transaction identifier" in the UTRAN MOBILITY INFORMATION FAILURE message to the value of "RRC transaction identifier" in the entry for the UTRAN MOBILITY INFORMATION message in the table "Rejected transactions" in the variable `TRANSACTIONS`, and;
- 1> set the IE "failure cause" to the cause value "protocol error";
- 1> include the IE "Protocol error information" with contents set to the value of the variable `PROTOCOL_ERROR_INFORMATION`;
- 1> when the UTRAN MOBILITY INFORMATION FAILURE message has been submitted to lower layers for transmission:
  - 2> continue with any ongoing processes and procedures as if the invalid UTRAN MOBILITY INFORMATION message has not been received;
  - 2> and the procedure ends.

### References

3GPP TS 25.331 clauses 8.3.3.6

#### 8.3.3.2.3 Test Purpose

1. To confirm that the UE ignore the erroneous UTRAN MOBILITY INFORMATION message and report this event to the UTRAN by sending UTRAN MOBILITY INFORMATION FAILURE message, stating the appropriate failure cause and information.

## 8.3.3.2.4 Method of test

## Initial Conditions

System Simulator: 1 cell.

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108.

## Test Procedure

The UE is brought to CELL\_FACH state. SS waits for T305 to expire. The UE shall transmit a CELL UPDATE message. SS sends CELL UPDATE CONFIRM message to the UE on the downlink DCCH. Then SS transmits a UTRAN MOBILITY INFORMATION message, which contains an unexpected critical message extension, to the UE on the DCCH using AM-RLC mode. The UE shall respond by transmitting the UTRAN MOBILITY INFORMATION FAILURE message, indicating "protocol error" in IE "failure cause" and also "Message extension not comprehended" in IE "Protocol error information". After receiving the UTRAN MOBILITY INFORMATION FAILURE message, SS waits for T305 to expire. The UE shall transmit a CELL UPDATE message with the original U-RNTI identity assigned. SS sends CELL UPDATE CONFIRM message to the UE on the downlink DCCH.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The initial state of the UE is CELL_FACH state.
1a				SS waits for a period up to timer T305 to allow the UE to start performing a cell updating procedure.
1b		→	CELL UPDATE	
1c		←	CELL UPDATE CONFIRM	
2		←	UTRAN MOBILITY INFORMATION	See specific message content.
3		→	UTRAN MOBILITY INFORMATION FAILURE	UE shall transmit this message to report the error in UTRAN MOBILITY INFORMATION message. It shall include the appropriate cause in the message.
4				SS waits for a period up to timer T305 to allow the UE to start performing a cell updating procedure.
5		→	CELL UPDATE	
6		←	CELL UPDATE CONFIRM	

## Specific Message Content

## UTRAN MOBILITY INFORMATION (Step 2)

Use the UTRAN MOBILITY INFORMATION message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Critical extensions	'01'H

## UTRAN MOBILITY INFORMATION FAILURE (Step 3)

Information Element	Value/remark
Message Type RRC transaction identifier Integrity check info	Not checked. The presence if this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
Failure Cause  - Failure Cause - Protocol Error Information	Check to see if set to 'Protocol error' Check to see if set to Message extension not comprehended

## CELL UPDATE (Step 1b and 5)

The same message found in TS 34.108 clause 9 shall be transmitted by the UE on the uplink CCCH, with the exception of the following IEs:

Information Element	Value/remark
U-RNTI - SRNC Identity - S-RNTI Cell update cause	Check to see if set to '0000 0000 0001'B Check to see if set to '0000 0000 0000 0000 0001'B Check to see if set to 'periodical cell updating'

## CELL UPDATE CONFIRM (Step 1c and 6)

Use the same message sub-type as in TS 34.108 clause 9.

## 8.3.3.2.5 Test Requirement

After step 1a the UE shall initiate a periodic cell updating procedure by transmitting CELL UPDATE message on the CCCH. In this message, the U-RNTI identity shall be set to the same value as assigned during the RRC connection establishment procedure.

After step 2 the UE shall transmit UTRAN MOBILITY INFORMATION FAILURE message, indicating the value "protocol error" in IE "failure cause" and also "Message extension not comprehended" in IE "protocol error information".

After step 4 the UE shall initiate a periodic cell updating procedure by transmitting CELL UPDATE message on the CCCH. In this message, the U-RNTI identity shall be set to the same value as assigned during the RRC connection establishment procedure.

## 8.3.4 Active set update in soft handover (FDD)

## 8.3.4.1 Active set update in soft handover: Radio Link addition

## 8.3.4.1.1 Definition

## 8.3.4.1.2 Conformance requirement

Upon reception of an ACTIVE SET UPDATE message the UE shall act upon all received information elements as specified in TS 25.331 subclause 8.6, unless specified otherwise in the following. The UE shall:

- 1> first add the RLs indicated in the IE "Radio Link Addition Information";
- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;

1> set the IE "RRC transaction identifier" in the ACTIVE SET UPDATE COMPLETE message to the value of "RRC transaction identifier" in the entry for the ACTIVE SET UPDATE message in the table "Accepted transactions" in the variable TRANSACTIONS; and

1> clear that entry;

1> transmit an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH using AM RLC without waiting for the Physical Layer synchronization;

...

Reference

3GPP TS 25.331 clause 8.3.4

8.3.4.1.3 Test purpose

1. To confirm that the UE continues to communicate with the SS on both the additional radio link and an already existing radio link after the radio link addition.

8.3.4.1.4 Method of test

Initial Condition

System Simulator: 2 cells - Cell 1 and 2 are active

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

Test Procedure

Table 8.3.4.1

Parameter	Unit	Cell 1				Cell 2			
		T0	T1	T2	T3	T0	T1	T2	T3
UTRA RF Channel Number		Ch. 1				Ch. 1			
CPICH Ec	dBm/3.84 MHz	-60	-60	OFF	-60	-75	-60	-60	OFF

Table 8.3.4.1 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution.

Initially, the UE goes to connected mode and establishes a radio access bearer in CELL\_DCH state in cell 1.

SS configures its downlink transmission power settings according to columns "T1" in table 8.3.4.1. UE shall be triggered to transmit a MEASUREMENT REPORT message which includes the primary scrambling code for cell 2 according to IE "Intra-frequency event identity", which is set to '1a' in the SYSTEM INFORMATION BLOCK TYPE 11. After the MEASUREMENT REPORT message is received, the SS configures the new radio link to be added from cell 2 and then the SS transmits to the UE an ACTIVE SET UPDATE message in cell 1 on DCCH using AM RLC which includes the IE "Radio Link Addition Information" (e.g. Downlink DPCH information and other optional parameters relevant for the additional radio links with Primary CPICH info used for the reference ID).

When the UE receives this message, the UE shall configure layer 1 to begin reception without affecting the current uplink and downlink activities of existing radio links. The UE shall transmit an ACTIVE SET UPDATE COMPLETE message to the SS on the uplink DCCH using AM RLC without waiting for the physical channel synchronisation.

SS configures its downlink transmission power settings according to columns "T2" in table 8.3.4.1. UE shall not detect the DPCH from cell 1 but continue to communicate through the another DPCH from cell 2. The UE shall transmit a MEASUREMENT REPORT message which indicates the event '1b' for cell 1.

SS shall transmit a UE CAPABILITY ENQUIRY message to confirm that the UE can respond this message through the DPCH in cell 2. The UE shall transmit a UE CAPABILITY ENQUIRY INFORMATION message. Then SS transmits a UE CAPABILITY INFORMATION CONFIRM message.

SS configures its downlink transmission power settings according to columns "T1" in table 8.3.4.1. UE shall detect DPCH from cell 1 and 2 and transmit a MEASUREMENT REPORT message which indicates the event '1a' for cell 1.

The SS configures its downlink transmission power settings according to columns "T3" in table 8.3.4.1. UE shall not detect the DPCH from cell 2 but continue to communicate through another DPCH from cell 1. The UE shall transmit a MEASUREMENT REPORT message which indicates the event '1b' for cell 2.

SS shall transmit a UE CAPABILITY ENQUIRY message to confirm that the UE can respond this message through the DPCH in cell 1. The UE shall transmit a UE CAPABILITY INFORMATION message. Then SS transmits a UE CAPABILITY INFORMATION CONFIRM message. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				SS configures its downlink transmission power settings according to columns "T1" in table 8.3.4.1.
2		→	MEASUREMENT REPORT	See specific message contents for this message
3		←	ACTIVE SET UPDATE	SS transmits this message in cell 1 on downlink DCCH using AM RLC. The message includes IE "Radio Link Addition Information". (e.g. Downlink DPCH information and other optional parameters relevant for the additional radio links with Primary CPICH info used for the reference ID in cell 2)
4		→	ACTIVE SET UPDATE COMPLETE	The UE shall configure a new radio link to cell 2, without interfering with existing connections on the radio link in cell 1.
5				SS configures its downlink transmission power settings according to columns "T2" in table 8.3.4.1
5a		→	MEASUREMENT REPORT	See specific message contents for this message

6	←	UE CAPABILITY ENQUIRY	Use default message.
7	→	UE CAPABILITY INFORMATION	Use default message.
8	←	UE CAPABILITY INFORMATION CONFIRM	Use default message.
9			SS configures its downlink transmission power settings according to columns "T1" in table 8.3.4.1
9a	→	MEASUREMENT REPORT	See specific message contents for this message
10			Wait 15 seconds and SS configures its downlink transmission power settings according to columns "T3" in table 8.3.4.1
10a	→	MEASUREMENT REPORT	See specific message contents for this message
11	←	UE CAPABILITY ENQUIRY	Use default message.
12	→	UE CAPABILITY INFORMATION	Use default message.
13	←	UE CAPABILITY INFORMATION CONFIRM	Use default message.
14	←→	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

### Specific Message Content

The contents of SIB11 broadcasted in cell 1 shall be in accordance with the default SIB11 as specified in section 6.1 of TS 34.108, with the following exceptions:

- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1 of TS 34.108
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1 of TS 34.108
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE

The contents of SIB12 in cell 1, and SIB11 and SIB12 in cell 2 shall be in accordance with the default SIBs as specified in TS 34.108.

## MEASUREMENT REPORT (Step 2)

Information Element	Value/remark
Message Type Integrity check info  - Message authentication code  - RRC Message sequence number	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent. This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS. This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Measurement identity Measured Results - Intra-frequency measured results - Cell measured results - Cell Identity - SFN-SFN observed time difference - Cell synchronisation information - Primary CPICH info - Primary scrambling code  - CPICH Ec/N0 - CPICH RSCP - Pathloss - Cell measured results - Cell Identity - SFN-SFN observed time difference - Cell synchronisation information  - Primary CPICH info - Primary scrambling code  - CPICH Ec/N0 - CPICH RSCP - Pathloss	1  Checked that this IE is absent Checked that this IE is absent Checked that this IE is absent  Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1 of TS 34.108 Checked that this IE is absent Checked that this IE is present Checked that this IE is absent  Checked that this IE is absent Checked that this IE is absent Checked that this IE is present and includes IE COUNT-C-SFN frame difference  Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1 of TS 34.108 Checked that this IE is absent Checked that this IE is present Checked that this IE is absent
Measured results on RACH Additional measured results	Checked that this IE is absent Checked that this IE is absent
Event results - Intra-frequency measurement event results - Intra-frequency event identity - Cell measurement event results - Primary CPICH info - Primary scrambling code	1a  Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1 of TS 34.108

## ACTIVE SET UPDATE (Step 3)

The message to be used in this test is defined in TS 34.108, clause 9, with the following exceptions:

Information Element	Value/remark
Radio link addition information - Primary CPICH Info - Primary Scrambling Code  - Downlink DPCH info for each RL - CHOICE mode - Primary CPICH usage for channel estimation - DPCH frame offset  - Secondary CPICH info - DL channelisation code  - Secondary scrambling code - Spreading factor  - Code Number  - Scrambling code change - TPC Combination Index - SSDT Cell Identity - Close loop timing adjustment mode - TFCI Combining Indicator - SCCPCH information for FACH	Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1 of TS 34.108  FDD P-CPICH can be used. Calculated value from Cell synchronisation information Not Present This IE is repeated for all existing downlink DPCHs allocated to the UE Not Present Refer to TS 34.108 clause 6.10.2.4 "Typical radio parameter sets" For each DPCH, assign the same code number in the current code given in cell 1. Not Present 0 Not Present Not Present Not Present Not Present

## MEASUREMENT REPORT (Step 5a)

Information Element	Value/remark
Message Type Integrity check info  - Message authentication code  - RRC Message sequence number  Measurement identity Measured Results - Intra-frequency measured results - Cell measured results - Cell Identity - SFN-SFN observed time difference - Cell synchronisation information - Primary CPICH info - Primary scrambling code  - CPICH Ec/N0 - CPICH RSCP - Pathloss - Cell measured results - Cell Identity - SFN-SFN observed time difference - Cell synchronisation information - Primary CPICH info - Primary scrambling code  - CPICH Ec/N0 - CPICH RSCP - Pathloss Measured results on RACH Additional measured results Event results - Intra-frequency measurement event results - Intra-frequency event identity - Cell measurement event results - Primary CPICH info - Primary scrambling code	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.  This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS. This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value. 1  Checked that this IE is absent Checked that this IE is absent Checked that this IE is absent  Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1 of TS 34.108 Checked that this IE is absent Checked that this IE is present Checked that this IE is absent  Checked that this IE is absent Checked that this IE is absent Checked that this IE is absent  Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1 of TS 34.108 Checked that this IE is absent Checked that this IE is present Checked that this IE is absent Checked that this IE is absent Checked that this IE is absent  1b  Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1 of TS 34.108

## MEASUREMENT REPORT (Step 9a)

The received message at this step should have the same contents as the message received in Step 6, with the following exceptions:

Information Element	Value/remark
Event results - Intra-frequency measurement event results - Intra-frequency event identity - Cell measurement event results - Primary CPICH info - Primary scrambling code	1a  Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1 of TS 34.108

## MEASUREMENT REPORT (Step 10a)

The received message at this step should have the same contents as the message received in Step 6, with the following exceptions:

Information Element	Value/remark
Event results <ul style="list-style-type: none"> <li>- Intra-frequency measurement event results</li> <li>- Intra-frequency event identity</li> <li>- Cell measurement event results               <ul style="list-style-type: none"> <li>- Primary CPICH info</li> <li>- Primary scrambling code</li> </ul> </li> </ul>	1b  Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1 of TS 34.108

#### 8.3.4.1.5 Test requirement

After step 1 the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH using AM RLC.

After step 3 the UE shall transmit an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH using AM RLC to acknowledge the completion of the active set additional procedure.

After step 5a the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH using AM RLC.

After step 6 the UE shall transmit a UE CAPABILITY INFORMATION message.

After step 9a the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH using AM RLC.

After step 10a the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH using AM RLC.

After step 11 the UE shall transmit a UE CAPABILITY INFORMATION message.

#### 8.3.4.2 Active set update in soft handover: Radio Link removal

##### 8.3.4.2.1 Definition

##### 8.3.4.2.2 Conformance requirement

Upon reception of an ACTIVE SET UPDATE message the UE shall act upon all received information elements as specified in 8.6, unless specified otherwise in the following. The UE shall:

- 1> first add the RLs indicated in the IE "Radio Link Addition Information";
- 1> remove the RLs indicated in the IE "Radio Link Removal Information". If the UE active set is full or becomes full, an RL, which is included in the IE "Radio Link Removal Information" for removal, shall be removed before adding RL, which is included in the IE "Radio Link Addition Information" for addition;
- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> set the IE "RRC transaction identifier" in the ACTIVE SET UPDATE COMPLETE message to the value of "RRC transaction identifier" in the entry for the ACTIVE SET UPDATE message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;
- 1> transmit an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH using AM RLC without waiting for the Physical Layer synchronization;

...

#### Reference

3GPP TS 25.331 clause 8.3.4

##### 8.3.4.2.3 Test purpose

1. To confirm that the UE continues to communicate with the SS on the remaining radio link after radio link removal on the active set.

2. To confirm that the UE is not using the removed radio link to communicate with the SS.

#### 8.3.4.2.4 Method of test

##### Initial Condition

System Simulator: 2 cells - both Cell 1 and Cell 2 are active

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

##### Test Procedure

**Table 8.3.4.2**

Parameter	Unit	Cell 1				Cell 2			
		T0	T1	T2	T3	T0	T1	T2	T3
UTRA RF Channel Number		Ch. 1				Ch. 1			
CPICH Ec	dBm/3.84MHz	-60	-60	-75	-60	-75	-60	-60	OFF

Table 8.3.4.2 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution.

At the start of the test, the UE goes to connected mode and establishes a radio access bearer service in the CELL\_DCH state in cell 1.

SS configures its downlink transmission power settings according to columns "T1" in table 8.3.4.2. UE shall be triggered to transmit a MEASUREMENT REPORT message which includes the primary scrambling code for cell 2 according to IE "Intra-frequency event identity", which is set to '1a' in the SYSTEM INFORMATION BLOCK TYPE 11. After the MEASUREMENT REPORT message is received, the SS configures the new radio link to be added from cell 2 and then the SS transmits to the UE an ACTIVE SET UPDATE message in cell 1 on DCCH using AM RLC which includes the IE "Radio Link Addition Information" (e.g. Downlink DPCH information and other optional parameters relevant for the additional radio links with Primary CPICH info used for the reference ID).

When the UE receives this message, the UE shall configure layer 1 to begin reception without affecting the current uplink and downlink activities of existing radio links. The UE shall transmit an ACTIVE SET UPDATE COMPLETE message to the SS on the uplink DCCH using AM RLC.

SS configures its downlink transmission power settings according to columns "T2" in table 8.3.4.2. UE shall transmit a MEASUREMENT REPORT message which includes the primary scrambling code for cell 1 according to IE "Intra-frequency event identity", which is set to '1b' in the SYSTEM INFORMATION BLOCK TYPE 11. After the MEASUREMENT REPORT message is received, the SS remove the radio link from cell 1 and then SS transmits an ACTIVE SET UPDATE message, which includes IE "Radio Link Removal Information" and specifying the P-CPICH information of the cell to be removed.

When the UE receives this message, the UE RRC entity shall request UE L1 entity to terminate transmission and reception of the radio link from cell 1. Then the UE transmits an ACTIVE SET UPDATE COMPLETE message to the SS on the uplink DCCH using AM RLC.

SS shall transmit a UE CAPABILITY ENQUIRY message to confirm that the UE can respond this message through the DPCH in cell 2. The UE shall transmit a UE CAPABILITY INFORMATION message. Then SS transmits a UE CAPABILITY INFORMATION CONFIRM message.

SS configures its downlink transmission power settings according to columns "T3" in table 8.3.4.2 so as to generate a radio link failure condition. The UE shall detect the radio link failure UE shall re-select to cell 1 and transmit a CELL UPDATE message. SS transmits a CELL UPDATE CONFIRM message after it receive CELL UPDATE message from UE. Then the UE shall transmit an UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH to acknowledge the receipt of the new UE identities..

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				SS configures its downlink transmission power settings according to columns "T1" in table 8.3.4.2
2		→	MEASUREMENT REPORT	See specific message contents for this message
3		←	ACTIVE SET UPDATE	SS transmits this message in cell 1 on downlink DCCH using AM RLC. The message includes IE "Radio Link Addition Information". (e.g. Downlink DPCH information and other optional parameters relevant for the additional radio links with Primary CPICH info used for the reference ID in cell 2)
4		→	ACTIVE SET UPDATE COMPLETE	The UE shall configure a new radio link to cell 2, without interfering with existing connections on the radio link in cell 1.
5				SS configures its downlink transmission power settings according to columns "T2" in table 8.3.4.2
6		→	MEASUREMENT REPORT	See specific message contents for this message
7		←	ACTIVE SET UPDATE	The SS transmits this message on downlink DCCH using AM RLC which includes IE "Radio Link Removal Information".
8		→	ACTIVE SET UPDATE COMPLETE	The UE shall remove the radio link associated with cell 1.
9		←	UE CAPABILITY ENQUIRY	Use default message.
10		→	UE CAPABILITY INFORMATION	Use default message.
11		←	UE CAPABILITY INFORMATION CONFIRM	Use default message.
12				SS configures its downlink transmission power settings according to columns "T3" in table 8.3.4.2
13		→	CELL UPDATE	UE sends this message in cell 1.
14		←	CELL UPDATE CONFIRM	See message content.
15		→	UTRAN MOBILITY INFORMATION CONFIRM	

## Specific Message Contents

The contents of SIB11 broadcasted in cell 1 shall be in accordance with the default SIB11 as specified in section 6.1 of TS 34.108, with the following exceptions:

- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1 of TS 34.108
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1 of TS 34.108
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE

The contents of SIB12 in cell 1, and SIB11 and SIB12 in cell 2 shall be in accordance with the default SIBs as specified in TS 34.108.

## MEASUREMENT REPORT (Step 2)

Information Element	Value/remark
Message Type Integrity check info  - Message authentication code  - RRC Message sequence number	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent. This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS. This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Measurement identity Measured Results - Intra-frequency measured results - Cell measured results - Cell Identity - SFN-SFN observed time difference - Cell synchronisation information - Primary CPICH info - Primary scrambling code  - CPICH Ec/N0 - CPICH RSCP - Pathloss - Cell measured results - Cell Identity - SFN-SFN observed time difference - Cell synchronisation information  - Primary CPICH info - Primary scrambling code  - CPICH Ec/N0 - CPICH RSCP - Pathloss	1  Checked that this IE is absent Checked that this IE is absent Checked that this IE is absent  Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1 of TS 34.108 Checked that this IE is absent Checked that this IE is present Checked that this IE is absent  Checked that this IE is absent Checked that this IE is absent Checked that this IE is present and includes IE COUNT-C-SFN frame difference  Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1 of TS 34.108 Checked that this IE is absent Checked that this IE is present Checked that this IE is absent
Measured results on RACH Additional measured results	Checked that this IE is absent Checked that this IE is absent
Event results - Intra-frequency measurement event results - Intra-frequency event identity - Cell measurement event results - Primary CPICH info - Primary scrambling code	1a  Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1 of TS 34.108

## ACTIVE SET UPDATE (Step 3)

The message to be used in this test is defined in Annex.A, with the following exceptions:

Information Element	Value/remark
Radio link addition information - Primary CPICH Info - Primary Scrambling Code  - Downlink DPCH info for each RL - CHOICE mode - Primary CPICH usage for channel estimation - DPCH frame offset  - Secondary CPICH info - DL channelisation code  - Secondary scrambling code - Spreading factor  - Code Number  - Scrambling code change - TPC Combination Index - SSDT Cell Identity - Close loop timing adjustment mode - TFCI Combining Indicator - SCCPCH information for FACH	Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1 of TS 34.108  FDD P-CPICH can be used. Calculated value from Cell synchronisation information Not Present This IE is repeated for all existing downlink DPCHs allocated to the UE Not Present Refer to TS 34.108 clause 6.10.2.4 "Typical radio parameter sets" For each DPCH, assign the same code number in the current code given in cell 1. Not Present 0 Not Present Not Present Not Present Not Present

## MEASUREMENT REPORT (Step 6)

Information Element	Value/remark
Message Type Integrity check info  - Message authentication code  - RRC Message sequence number  Measurement identity Measured Results - Intra-frequency measured results list - Cell measured results - Cell Identity - SFN-SFN observed time difference - Cell synchronisation information - CHOICE mode - Primary CPICH info - Primary scrambling code  - CPICH Ec/N0 - CPICH RSCP - Pathloss - Cell measured results - Cell Identity - SFN-SFN observed time difference - Cell synchronisation information - CHOICE mode - Primary CPICH info - Primary scrambling code  - CPICH Ec/N0 - CPICH RSCP - Pathloss Measured results on RACH Additional measured results Event results - CHOICE event result - Intra-frequency event identity - Cell measurement event results - CHOICE mode - Primary CPICH info - Primary scrambling code	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.  This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS. This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value. 1  Checked that this IE is absent Checked that this IE is absent Checked that this IE is absent FDD  Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1 of TS 34.108 Checked that this IE is absent Checked that this IE is present Checked that this IE is absent  Checked that this IE is absent Checked that this IE is absent Checked that this IE is absent FDD  Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1 of TS 34.108 Checked that this IE is absent Checked that this IE is present Checked that this IE is absent Checked that this IE is absent Checked that this IE is absent  Intra-frequency measurement event results 1b  FDD  Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1 of TS 34.108

## ACTIVE SET UPDATE (Step 7)

The message to be used in this test is the same as the message sub-type found in TS 34.108, clause 9, with the following exceptions:

Information Element	Value/remark
Radio link removal information  - Primary CPICH info - Primary scrambling code	1 radio link to be removed  Set to the same P-CPICH scrambling code assigned for cell 1

## CELL UPDATE (Step 13)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in TS 34.108, clause 9 with the following exceptions:

Information Element	Value/remark
Cell Update Cause	"radio link failure"

#### CELL UPDATE CONFIRM (Step 14)

Use the same message sub-type found in TS 34.108, clause 9, with the following exceptions:

Information Element	Value/remark
New C-RNTI	'1010 1010 1010 1010'

#### 8.3.4.2.5 Test requirement

After step 1 the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH using AM RLC.

After step 3 the UE shall transmit an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH using AM RLC to acknowledge the completion of the active set additional procedure.

After step 5 the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH using AM RLC.

After step 7 the UE shall remove the radio link from cell 1 and it shall transmit an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH using AM RLC.

After step 10 the UE shall transmit a UE CAPABILITY INFORMATION message.

After step 12 the UE shall transmit a CELL UPDATE message on the CCCH with IE "Cell update cause" set to "radio link failure".

After step 14, the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH using AM RLC.

#### 8.3.4.3 Active set update in soft handover: Combined radio link addition and removal

##### 8.3.4.3.1 Definition

##### 8.3.4.3.2 Conformance requirement

Upon reception of an ACTIVE SET UPDATE message the UE shall act upon all received information elements as specified in 8.6, unless specified otherwise in the following. The UE shall:

- 1> first add the RLs indicated in the IE "Radio Link Addition Information";
- 1> remove the RLs indicated in the IE "Radio Link Removal Information". If the UE active set is full or becomes full, an RL, which is included in the IE "Radio Link Removal Information" for removal, shall be removed before adding RL, which is included in the IE "Radio Link Addition Information" for addition;
- 1> perform the physical layer synchronisation procedure as specified in TS 25.214;
- 1> set the IE "RRC transaction identifier" in the ACTIVE SET UPDATE COMPLETE message to the value of "RRC transaction identifier" in the entry for the ACTIVE SET UPDATE message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;
- 1> transmit an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH using AM RLC without waiting for the Physical Layer synchronization;

...

#### Reference

3GPP TS 25.331 clause 8.3.4

## 8.3.4.3.3 Test purpose

1. To confirm that the UE continues to communicate with the SS on the added radio link and removes radio link which exists prior to the execution of active set update procedure.

## 8.3.4.3.4 Method of test

## Initial Condition

System Simulator: 3 cells- Cell 1, Cell 2 and Cell 3 are active, with downlink transmission power settings according to columns "T0" in table 8.3.4.3.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE [Active set is not full.]

## Test Procedure

Table 8.3.4.3

Parameter	Unit	Cell 1					Cell 2					Cell 3				
		T0	T1	T2	T3	T4	T0	T1	T2	T3	T4	T0	T1	T2	T3	T4
UTRA RF Channel Number		Ch. 1					Ch. 1					Ch. 1				
CPICH Ec	dBm/ 3.84 MHz	-60	-60	-60	OFF	-60	-80	-60	-60	OFF	-70	-80	-80	-60	-60	OFF

Table 8.3.4.3 illustrates the downlink power to be applied for the 3 cells at various time instants of the test execution.

The UE goes to connected mode and establishes a radio access bearer in the CELL\_DCH state in cell 1.

SS configures its downlink transmission power settings according to columns "T1" in table 8.3.4.3. UE transmits a MEASUREMENT REPORT message which includes the primary scrambling code for cell 2 according to IE "Intra-frequency event identity", which is set to '1a' in the SYSTEM INFORMATION BLOCK TYPE 11. After the MEASUREMENT REPORT message is received, the SS configures the new radio link to be added from cell 2 and then the SS transmits to the UE in cell 1 an ACTIVE SET UPDATE message which includes IE "Radio Link Addition Information", indicating the addition of cell 2 into the active set, on DCCH using AM RLC.

When the UE receives this message, the UE shall configure layer 1 to begin reception without affecting the current uplink and downlink activities of existing radio links. The UE shall transmit an ACTIVE SET UPDATE COMPLETE message to the SS on the uplink DCCH using AM RLC.

SS configures its downlink transmission power settings according to columns "T2" in table 8.3.4.3. UE shall be triggered to transmit a MEASUREMENT REPORT message which includes the primary scrambling code for cell 3 according to IE "Intra-frequency event identity", which is set to '1a' in the SYSTEM INFORMATION BLOCK TYPE 11. After the MEASUREMENT REPORT message is received, the SS configures the new radio link to be added from cell 3 and then the SS transmits to the UE an ACTIVE SET UPDATE message which includes IE "Radio Link Addition Information" and IE "Radio Link Removal Information", indicating the removal of cell 2 and addition of cell 3 into the active set, on DCCH using AM RLC.

When the UE receives this message, the UE shall configure layer 1 to begin reception without affecting the current uplink and downlink activities of existing radio links and then the UE removes the radio link specified in an ACTIVE SET UPDATE message. The UE shall transmit an ACTIVE SET UPDATE COMPLETE message to the SS on the uplink DCCH using AM RLC.

SS configures its downlink transmission power settings according to columns "T3" in table 8.3.4.3.

SS shall transmit a UE CAPABILITY ENQUIRY message to confirm that the UE can respond to this message through the DPCH in cell 3. The UE shall transmit a UE CAPABILITY INFORMATION message. Then SS transmits a UE CAPABILITY INFORMATION CONFIRM message.

SS configures its downlink transmission power settings according to columns "T4" in table 8.3.4.3.

SS shall transmit a UE CAPABILITY ENQUIRY message to confirm that the UE can respond to this message through the DPCH in cell 1. The UE shall transmit a UE CAPABILITY INFORMATION message. Then SS transmits a UE CAPABILITY INFORMATION CONFIRM message.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a				SS configures the initial active set with only cell 1. SS configures its downlink transmission power settings according to columns "T1" in table 8.3.4.3
0b		→	MEASUREMENT REPORT	See specific message contents for this message
0c		←	ACTIVE SET UPDATE	The SS transmit this message on downlink DCCH using AM RLC which includes IE "Radio Link Addition Information" for cell 2.
0d		→	ACTIVE SET UPDATE COMPLETE	The UE adds the radio link in cell 2.
1				SS configures its downlink transmission power settings according to columns "T2" in table 8.3.4.3
2		→	MEASUREMENT REPORT	See specific message contents for this message
3		←	ACTIVE SET UPDATE	The SS transmit this message on downlink DCCH using AM RLC which includes IE "Radio Link Addition Information" for cell 3 and IE "Radio Link Removal Information" for cell 2.
4		→	ACTIVE SET UPDATE COMPLETE	The UE shall configure a new radio link in cell 3 and removes the old radio link in cell 2.
4a				SS configures its downlink transmission power settings according to columns "T3" in table 8.3.4.3
5		←	UE CAPABILITY ENQUIRY	Use default message.
6		→	UE CAPABILITY INFORMATION	Use default message.
7		←	UE CAPABILITY INFORMATION CONFIRM	Use default message.
8				SS configures its downlink transmission power settings according to columns "T4" in table 8.3.4.3
9		←	UE CAPABILITY ENQUIRY	Use default message.
10		→	UE CAPABILITY INFORMATION	Use default message.
11		←	UE CAPABILITY INFORMATION CONFIRM	Use default message.

#### Specific Message Content

The contents of SIB11 broadcast- in cell 1 and cell 2 shall be in accordance with the default SIB11 as specified in section 6.1 of TS 34.108, with the following exception:

- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.1 (FDD)" in clause 6.1 of TS 34.108
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1 of TS 34.108
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE
- Intra-frequency cell id	3
- Cell info	
- Cell individual offset	0dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Refer to clause titled "Default settings for cell No.3 (FDD)" in clause 6.1 of TS 34.108
- Primary CPICH TX power	Not Present
- TX Diversity indicator	FALSE

The contents of SIB12 in cell 1 and cell 2, and SIB11 and SIB12 in cell 23 shall be in accordance with the default SIBs as specified in TS 34.108.

## MEASUREMENT REPORT (Step 0b)

Information Element	Value/remark
Message Type Integrity check info  - Message authentication code  - RRC Message sequence number  Measurement identity Measured Results - Intra-frequency measured results - Cell measured results - Cell Identity - SFN-SFN observed time difference - Cell synchronisation information - Primary CPICH info - Primary scrambling code  - CPICH Ec/NO - CPICH RSCP - Pathloss - Cell measured results - Cell Identity - SFN-SFN observed time difference - Cell synchronisation information  - Primary CPICH info - Primary scrambling code  - CPICH Ec/NO - CPICH RSCP - Pathloss Measured results on RACH Additional measured results Event results - Intra-frequency measurement event results - Intra-frequency event identity - Cell measurement event results - Primary CPICH info - Primary scrambling code	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.  This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS. This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value. 1  Checked that this IE is absent Checked that this IE is absent Checked that this IE is absent  Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1 of TS 34.108 Checked that this IE is absent Checked that this IE is present Checked that this IE is absent  Checked that this IE is absent Checked that this IE is absent Checked that this IE is present and includes IE COUNT-C-SFN frame difference  Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1 of TS 34.108 Checked that this IE is absent Checked that this IE is present Checked that this IE is absent Checked that this IE is absent Checked that this IE is absent Checked that this IE is absent  1a  Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1 of TS 34.108

## ACTIVE SET UPDATE (Step 0c)

The message to be used in this test is defined in TS 34.108, clause 9, with the following exceptions:

Information Element	Value/remark
Radio link addition information - Primary CPICH Info - Primary Scrambling Code - Downlink DPCH info for each RL - DPCH frame offset	Set to same code as assigned for cell 2 Calculated value from Cell synchronisation information

## MEASUREMENT REPORT (Step 2)

Information Element	Value/remark
Message Type Integrity check info  - Message authentication code  - RRC Message sequence number	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent. This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS. This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Measurement identity	1
Measured Results - Intra-frequency measured results - Cell measured results - Cell Identity - SFN-SFN observed time difference - Cell synchronisation information - Primary CPICH info - Primary scrambling code  - CPICH Ec/N0 - CPICH RSCP - Pathloss - Cell measured results - Cell Identity - SFN-SFN observed time difference - Cell synchronisation information  - Primary CPICH info - Primary scrambling code  - CPICH Ec/N0 - CPICH RSCP - Pathloss	Checked that this IE is absent Checked that this IE is absent Checked that this IE is absent  Refer to clause titled "Default settings for cell No.3 (FDD)" in clause 6.1 of TS 34.108 Checked that this IE is absent Checked that this IE is present Checked that this IE is absent  Checked that this IE is absent Checked that this IE is absent Checked that this IE is present and includes IE COUNT-C-SFN frame difference  Refer to clause titled "Default settings for cell No.2 (FDD)" in clause 6.1 of TS 34.108  Checked that this IE is absent Checked that this IE is present Checked that this IE is absent
Measured results on RACH	Checked that this IE is absent
Additional measured results	Checked that this IE is absent
Event results	Checked that this IE is absent
- Intra-frequency measurement event results - Intra-frequency event identity - Cell measurement event results - Primary CPICH info - Primary scrambling code	1a  Refer to clause titled "Default settings for cell No.3 (FDD)" in clause 6.1 of TS 34.108

## ACTIVE SET UPDATE (Step 3)

The message to be used in this test is defined in TS 34.108, clause 9, with the following exceptions:

Information Element	Value/remark
Radio link addition information	
- Primary CPICH Info	Set to same code as assigned for cell 3
- Primary Scrambling Code	
- Downlink DPCH info for each RL	
- CHOICE mode	FDD
- Primary CPICH usage for channel estimation	P-CPICH can be used.
- DPCH frame offset	Calculated value from Cell synchronisation information
- Secondary CPICH info	Not Present
- DL channelisation code	This IE is repeated for all existing downlink DPCHs allocated to the UE
- Secondary scrambling code	Not Present
- Spreading factor	Refer to TS 34.108 clause 6.10.2.4 "Typical radio parameter sets"
- Code Number	For each DPCH, assign the same code number in the current code given in cell 1.
- Scrambling code change	Not Present
- TPC Combination Index	0
- SSDT Cell Identity	Not Present
- Close loop timing adjustment mode	Not Present
- TFCI Combining Indicator	Not Present
- SCCPCH information for FACH	Not Present
Radio link removal information	
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as assigned for cell 2

## 8.3.4.3.5 Test requirement

At step 0a the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH using AM RLC.

After step 0c the UE shall transmit an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH.

After step 1 the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH using AM RLC.

After step 3 the UE shall transmit an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH.

After step 5 the UE shall transmit a UE CAPABILITY INFORMATION message on the uplink DCCH in cell 3.

After step 9 the UE shall transmit a UE CAPABILITY INFORMATION message on the uplink DCCH in cell 1.

## 8.3.4.4 Active set update in soft handover: Invalid Configuration

## 8.3.4.4.1 Definition

## 8.3.4.4.2 Conformance requirement

If any of the following conditions are valid:

...

- a radio link in the IE "Radio link addition information" is also present in the IE "Radio Link Removal Information"; and/or

...

- the variable INVALID\_CONFIGURATION is set to TRUE:

the UE shall:

- 1> keep the active set as it was before the ACTIVE SET UPDATE message was received;
- 1> transmit an ACTIVE SET UPDATE FAILURE message on the DCCH using AM RLC;
- 1> set the IE "RRC transaction identifier" in the ACTIVE SET UPDATE FAILURE message to the value of "RRC transaction identifier" in the entry for the ACTIVE SET UPDATE message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;
- 1> set the IE "failure cause" to "Invalid configuration";
- 1> When the ACTIVE SET UPDATE FAILURE message has been submitted to lower layers for transmission:
  - 2> the procedure ends on the UE side.

## Reference

3GPP TS 25.331 clause 8.3.4.5

### 8.3.4.4.3 Test purpose

1. To confirm that the UE transmits an ACTIVE SET UPDATE FAILURE message on the DCCH using AM RLC, if the received ACTIVE SET UPDATE message includes a radio link which is specified in both IE "Radio Link Addition Information" and IE "Radio Link Removal Information".

### 8.3.4.4.4 Method of test

#### Initial Condition

System Simulator: 2 cells - Cell 1 and 2 are active.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

#### Test Procedure

**Table 8.3.4.4**

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH Ec	dBm/3.84 MHz	-60	-75	-60	-60

Table 8.3.4.4 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution.

The UE establishes a radio access bearer in the CELL\_DCH state in cell 1. SS configures its downlink transmission power settings according to columns "T1" in table 8.3.4.4. UE shall be triggered to transmit a MEASUREMENT REPORT message which includes the primary scrambling code for cell 2 according to IE "Intra-frequency event identity", which is set to '1a' in the SYSTEM INFORMATION BLOCK TYPE 11. SS then transmits an ACTIVE SET UPDATE message in cell 1 on DCCH using AM RLC which includes the same primary scrambling code in IE "Primary CPICH Info" of both IE "Radio Link Addition Information" and IE "Radio Link Removal Information". When the UE receives this message, it transmits an ACTIVE SET UPDATE FAILURE message which is set to "Invalid configuration" in IE "failure cause" on the uplink DCCH using AM RLC to the SS. UE then send another MEASUREMENT REPORT to SS 4s after step 2. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				SS configures its downlink transmission power settings according to columns "T1" in table 8.3.4.4
2		→	MEASUREMENT REPORT	
3		←	ACTIVE SET UPDATE	The SS transmits this message on downlink DCCH using AM RLC which includes the same primary scrambling code in IE"Primary CPICH Info" of both IE"Radio Link Addition Information" and IE "Radio Link Removal Information".
4		→	ACTIVE SET UPDATE FAILURE	The message shall state "Invalid configuration" in IE "failure cause".
5		→	MEASUREMENT REPORT	
6		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

Specific Message Contents

#### ACTIVE SET UPDATE (Step 3)

The message to be used in this test is defined in the default message content clause, with the following exceptions:

Information Element	Value/remark
Radio link addition information	
- Primary CPICH Info	Set to same code as assigned for cell 2
- Primary Scrambling Code	
- Downlink DPCH info for each RL	
- CHOICE mode	FDD
- Primary CPICH usage for channel estimation	P-CPICH can be used.
- DPCH frame offset	Calculated value from Cell synchronisation information
- Secondary CPICH info	Not Present
- DL channelisation code	This IE is repeated for all existing downlink DPCHs allocated to the UE
- Secondary scrambling code	Not Present
- Spreading factor	Reference TS 34.108 clause 6.10 Parameter set
- Code Number	For each DPCH, assign the same code number in the current code given in cell 1.
- Scrambling code change	Not Present
- TPC Combination Index	0
- SS DT Cell Identity	Not Present
- Close loop timing adjustment mode	Not Present
- TFCI Combining Indicator	Not Present
- SCCPCH information for FACH	Not Present
Radio link removal information	
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as assigned for cell 2

#### ACTIVE SET UPDATE FAILURE (Step 4)

Information Element	Value/remark
Integrity check info	Not Checked
Failure cause	Check to see if it's set to 'Invalid configuration'

#### 8.3.4.4.5 Test requirement

After step 1 the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH using AM RLC.

After step 3 the UE shall transmit an ACTIVE SET UPDATE FAILURE message, setting "Invalid configuration" in IE "failure cause" and sent on the uplink DCCH using AM RLC.

After step 4 the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH using AM RLC, 4s after step 2.

### 8.3.4.5 Active set update in soft handover: Reception of an ACTIVE SET UPDATE message in wrong state

#### 8.3.4.5.1 Definition

#### 8.3.4.5.2 Conformance requirement

If the UE is in another state than CELL\_DCH state upon reception of the ACTIVE SET UPDATE message, the UE shall perform procedure specific error handling as follows. The UE shall:

- 1> transmit a ACTIVE SET UPDATE FAILURE message on the uplink DCCH using AM RLC;
- 1> set the IE "RRC transaction identifier" in the ACTIVE SET UPDATE FAILURE message to the value of "RRC transaction identifier" in the entry for the ACTIVE SET UPDATE message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry;
- 1> set the IE "failure cause" to the cause value "protocol error";
- 1> include the IE "Protocol error information" with the IE "Protocol error cause" set to "Message not compatible with receiver state";
- 1> when the ACTIVE SET UPDATE FAILURE message has been delivered to lower layers for transmission:
  - 2> continue with any ongoing processes and procedures as if the ACTIVE SET UPDATE message has not been received;
  - 2> and the procedure ends.

#### Reference

3GPP TS 25.331 clause 8.3.4.0

#### 8.3.4.5.3 Test purpose

1. To confirm that the UE transmit an ACTIVE SET UPDATE FAILURE message whenit receives an ACTIVE SET UPDATE message in any state other then CELL\_DCH.

#### 8.3.4.5.4 Method of test

#### Initial Condition

System Simulator: 2 cells – Cell 1 and 2 are active.

UE: PS-DCCH+DTCH\_FACH (state 6-11) in cell 1 as specified in clause 7.4 of TS 34.108.

## Test Procedure

Table 8.3.4.5

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH Ec	dBm/3.84 MHz	-60	-75	-60	-60

Table 8.3.4.5 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution.

At the start of the test, the UE establishes a radio access bearer service in the CELL\_FACH state in cell 1. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS. SS configures its downlink transmission power settings according to columns "T1" in table 8.3.4.2. SS begins to configure the new radio link to be added from cell 2 and then the SS transmits to the UE an ACTIVE SET UPDATE message in cell 1 on DCCH using AM RLC which includes the IE "Radio Link Addition Information" indicating the addition of cell 2 into the active set. When the UE receives this message, UE shall transmit ACTIVE SET UPDATE FAILURE message, with the IE "failure cause" set to the cause value "protocol error" and includes the IE "Protocol error information" with the IE "Protocol error cause" set to "Message not compatible with receiver state", on the uplink DCCH using AM RLC. UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically. SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
0a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
0b		→	MEASUREMENT REPORT	
1				SS configures its downlink transmission power settings according to columns "T1" in table 8.3.4.5
2			Void	
3		←	ACTIVE SET UPDATE	The SS transmit this message on downlink DCCH using AM RLC which includes IE "Radio Link Addition Information".
4		→	ACTIVE SET UPDATE FAILURE	IE "failure cause" set to the cause value "protocol error" and includes the IE "Protocol error information" with the IE "Protocol error cause" set to "Message not compatible with receiver state".
5		→	MEASUREMENT REPORT	
6		↔	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

## Specific Message Content

## MEASUREMENT CONTROL (Step 0a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	Acknowledged mode RLC
- Measurement Report Transfer Mode	Periodical Reporting
- Periodical Reporting / Event Trigger Reporting Mode	
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	RACHorCPCH
- UL Target Transport Channel ID	Not Present
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

## MEASUREMENT REPORT (Step 0b and 5)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

## ACTIVE SET UPDATE

The message to be used in this test is defined in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Radio link addition information	
- Primary CPICH Info	Set to same code as assigned for cell 2
- Primary Scrambling Code	
- Downlink DPCH info for each RL	
- CHOICE mode	FDD
- Primary CPICH usage for channel estimation	P-CPICH can be used.
- DPCH frame offset	0
- Secondary CPICH info	Not Present
- DL channelisation code	This IE is repeated for all existing downlink DPCHs allocated to the UE
- Secondary scrambling code	Not Present
- Spreading factor	Reference TS 34.108 clause 6.10 Parameter set
- Code Number	For each DPCH, assign the same code number in the current code given in cell 1.
- Scrambling code change	Not Present
- TPC Combination Index	0
- SSDT Cell Identity	Not Present
- Close loop timing adjustment mode	Not Present
- TFCI Combining Indicator	Not Present
- SCCPCH information for FACH	Not Present

## 8.3.4.5.5 Test requirement

After step 0a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

After step 3 the UE shall transmit an ACTIVE SET UPDATE FAILURE message on the DCCH. In this message, the value "Message not compatible with receiver state" shall be set in IE "Protocol Error Information".

After step 4, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on RACH at every 8s interval.

## 8.3.4.6 Void

## 8.3.4.7 Active set update in soft handover: Invalid Message Reception

## 8.3.4.7.1 Definition

## 8.3.4.7.2 Conformance Requirement

If the ACTIVE SET UPDATE message contains a protocol error causing the variable `PROTOCOL_ERROR_REJECT` to be set to TRUE according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

- 1> transmit a ACTIVE SET UPDATE FAILURE message on the uplink DCCH using AM RLC;
- 1> set the IE "RRC transaction identifier" in the ACTIVE SET UPDATE FAILURE message to the value of "RRC transaction identifier" in the entry for the ACTIVE SET UPDATE message in the table "Rejected transactions" in the variable `TRANSACTIONS`; and
- 1> set the IE "failure cause" to the cause value "protocol error";
- 1> include the IE "Protocol error information" with contents set to the value of the variable `PROTOCOL_ERROR_INFORMATION`;
- 1> when the ACTIVE SET UPDATE FAILURE message has been delivered to lower layers for transmission:

- 2> continue with any ongoing processes and procedures as if the invalid ACTIVE SET UPDATE message has not been received;
- 2> and the procedure ends.

## Reference

3GPP TS 25.331 clause 8.3.4

### 8.3.4.7.3 Test Purpose

1. To confirm that the UE retains its active set list and transmits an ACTIVE SET UPDATE FAILURE message when it receives an invalid ACTIVE SET UPDATE message.

### 8.3.4.7.4 Method of test

#### Initial Condition

System Simulator: 2 cells – both cell 1 and cell 2 are active.

UE: CS-DCCH+DTCH\_DCH (state 6-9) or PS-DCCH+DTCH\_DCH (state 6-10) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE (Integrity protection algorithm is not applied at the start of test)

#### Test Procedure

**Table 8.3.4.7**

Parameter	Unit	Cell 1		Cell 2	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1	
CPICH Ec	dBm/ 3.84 MHz	-60	-75	-60	-60

Table 8.3.4.7 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution.

The UE establishes a radio access bearer in CELL\_DCH in cell 1. SS configures its downlink transmission power settings according to columns "T1" in table 8.3.4.7. UE shall be triggered to transmit a MEASUREMENT REPORT message which includes the primary scrambling code for cell 2 according to IE "Intra-frequency event identity", which is set to '1a' in the SYSTEM INFORMATION BLOCK TYPE 11. SS transmits an ACTIVE SET UPDATE message which contains an unexpected critical message extension. The UE shall transmit an ACTIVE SET UPDATE FAILURE message, stating the reason " Message extension not comprehended " in the IE "Protocol error information". UE then send another MEASUREMENT REPORT to SS 4s after step 2. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				SS configures its downlink transmission power settings according to columns "T1" in table 8.3.4.7
2		→	MEASUREMENT REPORT	
3		←	ACTIVE SET UPDATE	The SS transmits this message on downlink DCCH using AM RLC which does not include any IEs except IE "Message Type"
4		→	ACTIVE SET UPDATE FAILURE	The message shall state "Message extension not comprehended" in IE "protocol error information".
5		→	MEASUREMENT REPORT	
6		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

## ACTIVE SET UPDATE (Step 3)

Use the ACTIVE SET UPDATE message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Critical extensions	'01'H

## ACTIVE SET UPDATE FAILURE (Step 4)

Information Element	Value/remark
Protocol Error Information - Protocol Error Cause	Message extension not comprehended

## 8.3.4.7.5 Test Requirement

After step 1 the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH using AM RLC.

After step 3 the UE shall transmit an ACTIVE SET UPDATE FAILURE message on the DCCH. In this message, the value "Message extension not comprehended" shall be set in IE "Protocol Error Information".

After step 4 the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH using AM RLC, 4s after step 2.

## 8.3.5 Hard Handover

[Editor's note: This test is included in the "Physical channel reconfiguration", "Radio bearer establishment", "Radio bearer reconfiguration", "Radio bearer release" and "Transport channel reconfiguration".]

## 8.3.6 Inter-system hard handover from GSM to UTRAN

The content of this clause has been moved to 3GPP TS 51.010-1, clause 60.

### 8.3.7 Inter-system hard handover from UTRAN to GSM

Clauses 8.3.7 contains test procedures to be used for executing Inter-system Handover from UTRAN to GSM tests. Table 8.3.7-1 contains a summary of the different combinations of parameters being tested, together with a reference to the appropriate generic test procedure. If a test uses a parameter which the UE under test does not support, the test shall be skipped. Test cases in this clause are applicable only to the UE supporting both UTRAN and GSM. The test TEST USIM shall support service 27 to carry out these test cases.

Table 8.3.7-1

From	To	State of call	Ref. clause	Exec counter	Remark
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM AMR	U10	8.3.7.1	1	call active state
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM EFR	U10	8.3.7.1	2	call active state
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U10	8.3.7.1	3	call active state
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM HR	U10	8.3.7.1	4	call active state
UTRAN (Streaming/unknown/ uplink:14.4 DL:14.4 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBS)	GSM 14.4 kbps CS data	U10	8.3.7.2	1	Same data rate
UTRAN (Streaming/unknown/ uplink:28.8 DL:28.8 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBS)	GSM 28.8 kbps CS data	U10	8.3.7.2	2	Same data rate
UTRAN (Streaming/unknown/ uplink:57.6 DL:57.6 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBS)	GSM 57.6 kbps CS data	U10	8.3.7.2	3	Same data rate
UTRAN (Streaming/unknown/ uplink:28.8 DL:28.8 kbps/CS RAB + interactive/ background UL: 32kbps, DL: 32 kbps (note) + uplink:3.4 DL:3.4 kbps SRBS)	GSM 14.4 kbps CS data	U10	8.3.7.3	1	Data rate down grading
UTRAN (Streaming/unknown/ uplink:57.6 DL:57.6 kbps/CS RAB + interactive/ background UL: 32kbps, DL: 32 kbps (note) + uplink:3.4 DL:3.4 kbps SRBS)	GSM 14.4 kbps CS data	U10	8.3.7.3	2	Data rate down grading
UTRAN (Streaming/unknown/ uplink:57.6 DL:57.6 kbps/CS RAB + interactive/ background UL: 32kbps, DL: 32 kbps (note) + uplink:3.4 DL:3.4 kbps SRBS)	GSM 28.8 kbps CS data	U10	8.3.7.3	3	Data rate down grading
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U1	8.3.7.4	1	During call establishment
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U10	8.3.7.5	1	failure case

UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U10	8.3.7.6	1	failure case
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U10	8.3.7.7	1	failure case
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U10	8.3.7.8	1	failure case
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U10	8.3.7.9	1	failure case
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U10	8.3.7.10	1	failure case
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U10	8.3.7.11	1	failure case
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U10	8.3.7.12	1	failure case
UTRAN AMR (conversational/speech/ uplink:12.2 DL:12.2 kbps/CS RAB + uplink:3.4 DL3.4 kbps SRBS)	GSM FR	U1	8.3.7.13	1	call under establishment

NOTE: The PS part is only applicable for UE supporting CS+PS service.

### 8.3.7.1 Inter system handover from UTRAN/To GSM/Speech/Success

#### 8.3.7.1.1 Definition

#### 8.3.7.1.2 Conformance requirement

The UE shall be able to receive a HANOVER FROM UTRAN COMMAND message and perform an inter-RAT handover, even if no prior UE measurements have been performed on the target cell.

The UE shall:

- 1> establish the connection to the target radio access technology, by using the contents of the IE "Inter-RAT message". This IE contains a message specified in another standard, as indicated by the IE "System type", and carries information about the candidate/ target cell identifier(s) and radio parameters relevant for the target radio access technology. The correspondence between the value of the IE "System type", the standard to apply and the message contained within IE "Inter RAT message" is shown in the following:

Value of the IE "System type"	Standard to apply	Inter RAT Message
GSM	GSM TS 04.18, version 8.5.0 or later	HANOVER COMMAND
cdma2000	TIA/EIA/IS-2000 or later, TIA/EIA/IS-833 or later, TIA/EIQ/IS-834 or later	

- 1> if the IE "System type" has the value "GSM":
  - 2> if the IE "Frequency band" has the value "GSM /DCS 1800 band used":
    - 3> set the BAND\_INDICATOR [45] to "ARFCN indicates 1800 band".
  - 2> if the IE "Frequency band" has the value " GSM /PCS 1900 band used":
    - 3> set the BAND\_INDICATOR [45] to "ARFCN indicates 1900 band".
- 1> apply the "Inter RAT Message" according to the "standard to apply" in the table above.
- 1> if the IE "RAB information List" is included in the HANOVER FROM UTRAN COMMAND message:
  - 2> if the IE "RAB information List" includes one IE "RAB Info" with the IE "CN domain Identity" set to "CS domain":
    - 3> connect upper layer entities corresponding to the indicated CS domain RAB to the radio resources indicated in the inter-RAT message.

NOTE: In this version of the specification the maximum number of CS domain RABs which may be included in the IE "RAB information List" is limited to 1.

NOTE: Requirements concerning the establishment of the radio connection towards the other radio access technology and the signalling procedure are outside the scope of this specification.

Upon successfully completing the handover, the UE shall:

- 1> if the USIM is present:
  - 2> store the current START value for every CN domain in the USIM [50];
  - 2> if the "START" stored in the USIM [50] for a CN domain is greater than or equal to the value "THRESHOLD" of the variable START\_THRESHOLD:
    - 3> delete the ciphering and integrity keys that are stored in the USIM for that CN domain;
    - 3> inform the deletion of these keys to upper layers.
- 1> if the SIM is present:

- 2> store the current START value for every CN domain in the UE;
- 2> if the "START" stored in the UE for a CN domain is greater than or equal to the value "THRESHOLD" of the variable START\_THRESHOLD:
  - 3> delete the ciphering and integrity keys that are stored in the SIM for that CN domain;
  - 3> inform the deletion of these keys to upper layers.
- 1> if there are any NAS messages with the IE "CN domain identity" set to "CS domain" for which the successful delivery of the INITIAL DIRECT TRANSFER message or UPLINK DIRECT TRANSFER message on signalling radio bearer RB3 or signalling radio bearer RB4 that have not yet been confirmed by RLC:
  - 2> retransmit those NAS messages to the network on the newly established radio connection to the target radio access technology.
- 1> clear or set variables upon leaving UTRA RRC connected mode as specified in subclause 13.4.

NOTE: The release of the UMTS radio resources is initiated from the target RAT.

#### Reference(s)

TS 25.331 clause 8.3.7.3, 8.3.7.4.

#### 8.3.7.1.3 Test purpose

To test that the UE supporting both GSM and UTRAN handovers from a UTRAN serving cell to the indicated channel of GSM target cell when the UE is in the speech call active state and receives an HANDOVER FROM UTRAN COMMAND.

#### 8.3.7.1.4 Method of test

##### Initial conditions

System Simulator : 2 cells - Cell 1 is UTRAN, Cell 2 is GSM. GSM 51.010 clause 26.6.5.1 shall be referenced for the default parameters of cell 2.

UE : CC State U10 in cell 1, one CS domain RAB is established and no PS domain RABs are established.

##### Related ICS/IXIT statement(s)

- UE supports both GSM and UTRAN Radio Access Technologies,
- UE supports GSM AMR,
- UE supports GSM EFR,
- UE supports GSM HR,
- UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

##### Foreseen final state of the UE

The UE is in CC state U10 on cell 2.

##### Test Procedure

The SS starts the UTRAN cell and brings the UE into call active state (CC state U10) with AMR. The SS starts GSM cell and configures a traffic channel, then sends HANDOVER FROM UTRAN COMMAND indicating the traffic channel of the target GSM cell to the UE through DCCH of the serving UTRAN cell. After the UE receives the command it shall configure itself accordingly and switch to the new channel on the target GSM cell. The SS checks whether the handover is performed by checking that the UE transmits the HANDOVER COMPLETE message to the SS through GSM cell.

Depending on the PIXIT parameters the above procedure is executed maximum four times, each time with different target channel in the GSM cell.

UEs for which the PIXIT indicates support for the GSM/ DCS 1800 and/ or GSM/ PCS 1900 band, the test should cover these frequencies in order to verify the correct handling of the IE "Frequency band".

Inter RAT handover is normally preceded by the configuration and activation of compressed mode (depending on UE capabilities/ PIXIT) and the configuration of inter- RAT measurements. The inter RAT handover is normally initiated by the SS upon receiving an event triggered measurement report. The verification of this functionality is covered by other subclauses.

#### Expected sequence

This sequence is performed for a maximum execution counter M = 1, 2, 3, 4, depending on the PIXIT parameters.

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS bring the UE into UTRAN U10 state in cell 1
2	SS			The SS configures cell 2 as a GSM cell with a traffic channel: for GSM AMR (M = 1); or for GSM EFR (M = 2); or for GSM FR (M = 3); or for GSM HR (M = 4).
3	←		HANDOVER FROM UTRAN COMMAND-GSM	Send on cell 1 (UTRAN cell) and the message indicates: the target channel for GSM AMR (M = 1); or the target channel for GSM EFR (M = 2); or the target channel for GSM FR (M = 3); or the target channel for GSM HR (M = 4).
4	UE			The UE accepts the handover command and switches to the GSM traffic channel specified in the HANDOVER FROM UTRAN COMMAND-GSM
5	→		HANDOVER ACCESS	The SS receives this burst on the traffic channel of cell 2 (GSM cell) It implies that the UE has switched to GSM cell.
6	→		HANDOVER ACCESS	
7	→		HANDOVER ACCESS	
8	→		HANDOVER ACCESS	
9	←		PHYSICAL INFORMATION	
10	→		SABM	
11	←		UA	
12	→		HANDOVER COMPLETE	The SS receives the message on the traffic channel of GSM cell.

#### Specific message contents

For execution 1:

## HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type RRC transaction identifier Integrity check info  - Message authentication code  - RRC Message sequence number Activation time RAB Info - RAB identity - CN domain identity - NAS Synchronization Indicator - Re-establishment timer Inter-system message - System type - Frequency Band  - CHOICE GSM message - Message	Arbitrarily selects one integer between 0 to 3 The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted. SS calculates the value of MAC-I for this message and writes to this IE. SS provides the value of this IE, from its internal counter. now  0000 0001B CS domain Not present Use T315  GSM Set to "GSM/ PCS 1900" if GSM/ PCS 1900 is used in this test. Otherwise set to "GSM/DCS 1800 Band" Single GSM message GSM HANDOVER COMMAND formatted as Variable Length BIT STRING without Length Indicator. The contents of the HANDOVER COMMAND see next table.

## HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 2 in clause 26.6.5.1 of GSM 51.010, except that the CHANNEL MODE IE is included with value = speech full rate or half rate version 3

For execution 2:

## HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type RRC transaction identifier Integrity check info  - Message authentication code  - RRC Message sequence number Activation time RAB Info - RAB identity - CN domain identity - NAS Synchronization Indicator - Re-establishment timer Inter-system message - System type - Frequency Band  - CHOICE GSM message - Message	Arbitrarily selects one integer between 0 to 3 The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted. SS calculates the value of MAC-I for this message and writes to this IE. SS provides the value of this IE, from its internal counter. now  0000 0001B CS domain Not present Use T315  GSM Set to "GSM/ PCS 1900" if GSM/ PCS 1900 is used in this test. Otherwise set to "GSM/DCS 1800 Band" Single GSM message GSM HANDOVER COMMAND formatted as Variable Length BIT STRING without Length Indicator. The contents of the HANDOVER COMMAND see next table.

HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 2 in clause 26.6.5.1 of GSM 51.010, except that the CHANNEL MODE IE is included with value = speech full rate or half rate version 2

For execution 3:

HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type RRC transaction identifier Integrity check info  - Message authentication code  - Message sequence number Activation time RAB Info - RAB identity - CN domain identity - NAS Synchronization Indicator - Re-establishment timer Inter-system message - System type - Frequency Band  - CHOICE system - Message	Arbitrarily selects one integer between 0 to 3 The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted. SS calculates the value of MAC-I for this message and writes to this IE. SS provides the value of this IE, from its internal counter. now  0000 0001B CS domain Not present Use T315  GSM Set to "GSM/ PCS 1900" if GSM/ PCS 1900 is used in this test. Otherwise set to "GSM/DCS 1800 Band" Single GSM message GSM HANDOVER COMMAND formatted as BIT STRING(1..512). The contents of the HANDOVER COMMAND see next table.

HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 2 in clause 26.6.5.1 of GSM 51.010, except that the CHANNEL MODE IE is included with value = speech full rate or half rate version 1

For execution 4:

## HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type	Arbitrarily selects one integer between 0 to 3
RRC transaction identifier	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted.
Integrity check info	SS calculates the value of MAC-I for this message and writes to this IE.
- Message authentication code	SS provides the value of this IE, from its internal counter.
- RRC Message sequence number	now
Activation time	
RAB Info	
- RAB identity	0000 0001B
- CN domain identity	CS domain
- NAS Synchronization Indicator	Not present
- Re-establishment timer	Use T315
Inter-system message	
- System type	GSM
- Frequency Band	Set to "GSM/ PCS 1900" if GSM/ PCS 1900 is used in this test. Otherwise set to "GSM/DCS 1800 Band"
- CHOICE system	Single GSM message
- Message	GSM HANDOVER COMMAND formatted as Variable Length BIT STRING without Length Indicator. The contents of the HANDOVER COMMAND see next table.

## HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 4 in clause 26.6.5.1 of GSM 51.010, except that the CHANNEL MODE IE is included with value = speech full rate or half rate version 1
---

## 8.3.7.1.5 Test requirement

After step 12 the ongoing call shall be continued on the GSM cell.

## 8.3.7.2 Inter system handover from UTRAN/To GSM/Data/Same data rate/Success

## 8.3.7.2.1 Definition

## 8.3.7.2.2 Conformance requirement

The UE shall be able to receive a HANDOVER FROM UTRAN COMMAND message and perform an inter-RAT handover, even if no prior UE measurements have been performed on the target cell.

The UE shall:

- 1> establish the connection to the target radio access technology, by using the contents of the IE "Inter-RAT message". This IE contains a message specified in another standard, as indicated by the IE "System type", and carries information about the candidate/ target cell identifier(s) and radio parameters relevant for the target radio access technology. The correspondence between the value of the IE "System type", the standard to apply and the message contained within IE "Inter RAT message" is shown in the following:

Value of the IE "System type"	Standard to apply	Inter RAT Message
GSM	GSM TS 04.18, version 8.5.0 or later	HANDOVER COMMAND
cdma2000	TIA/EIA/IS-2000 or later, TIA/EIA/IS-833 or later, TIA/EIQ/IS-834 or later	

- 1> if the IE "System type" has the value "GSM":
  - 2> if the IE "Frequency band" has the value "GSM /DCS 1800 band used":
    - 3> set the BAND\_INDICATOR [45] to "ARFCN indicates 1800 band".
  - 2> if the IE "Frequency band" has the value " GSM /PCS 1900 band used":
    - 3> set the BAND\_INDICATOR [45] to "ARFCN indicates 1900 band".
- 1> apply the "Inter RAT Message" according to the "standard to apply" in the table above.
- 1> if the IE "RAB information List" is included in the HANDOVER FROM UTRAN COMMAND message:
  - 2> if the IE "RAB information List" includes one IE "RAB Info" with the IE "CN domain Identity" set to "CS domain":
    - 3> connect upper layer entities corresponding to the indicated CS domain RAB to the radio resources indicated in the inter-RAT message.

NOTE: In this version of the specification the maximum number of CS domain RABs which may be included in the IE "RAB information List" is limited to 1.

NOTE: Requirements concerning the establishment of the radio connection towards the other radio access technology and the signalling procedure are outside the scope of this specification.

Upon successfully completing the handover, the UE shall:

- 1> if the USIM is present:
    - 2> store the current START value for every CN domain in the USIM [50];
    - 2> if the "START" stored in the USIM [50] for a CN domain is greater than or equal to the value "THRESHOLD" of the variable START\_THRESHOLD:
      - 3> delete the ciphering and integrity keys that are stored in the USIM for that CN domain;
      - 3> inform the deletion of these keys to upper layers.
  - 1> if the SIM is present:
    - 2> store the current START value for every CN domain in the UE;
    - 2> if the "START" stored in the UE for a CN domain is greater than or equal to the value "THRESHOLD" of the variable START\_THRESHOLD:
      - 3> delete the ciphering and integrity keys that are stored in the SIM for that CN domain;
      - 3> inform the deletion of these keys to upper layers.
  - 1> if there are any NAS messages with the IE "CN domain identity" set to "CS domain" for which the successful delivery of the INITIAL DIRECT TRANSFER message or UPLINK DIRECT TRANSFER message on signalling radio bearer RB3 or signalling radio bearer RB4 that have not yet been confirmed by RLC:
    - 2> retransmit those NAS messages to the network on the newly established radio connection to the target radio access technology.
  - 1> clear or set variables upon leaving UTRA RRC connected mode as specified in subclause 13.4.
- NOTE: The release of the UMTS radio resources is initiated from the target RAT.

#### Reference(s)

TS 25.331 Clause 8.3.7.3, 8.3.7.4.

### 8.3.7.2.3 Test purpose

To test that the UE handovers to the indicated channel of same data rate in the GSM target cell when it is in the data call active state in the UTRAN serving cell and receives an HANOVER FROM UTRAN COMMAND.

### 8.3.7.2.4 Method of test

#### Initial conditions

System Simulator : 2 cells - Cell 1 is UTRAN, Cell 2 is GSM. GSM 51.010 clause 26.6.5.1 or clause 26.13.1.3 (for HSCSD) shall be referenced for the default parameters of cell 2.

UE : CC State U10 in cell 1, one CS domain RAB is established and no PS domain RABs are established.

#### Related ICS/IXIT statement(s)

- UE supports both GSM and UTRAN Radio Access Technologies,
- UE supports UTRAN Streaming/unknown/uplink:14.4 DL:14.4 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs,
- UE supports UTRAN Streaming/unknown/uplink:28.8 DL:28.8 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs,
- UE supports UTRAN Streaming/unknown/uplink:57.6 DL:57.6 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs,
- UE supports GSM 14.4 kbps data (HSCSD or full rate traffic channel for 14.4 kbit/s user data (TCH/F14.4)),
- UE supports GSM 28.8 kbps data (HSCSD or enhanced circuit switched full rate traffic channel for 28.8 kbit/s user data (E-TCH/F28.8)),
- UE supports GSM 57.6 kbps data,
- UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

#### Foreseen final state of the UE

The UE is in CC state U10 on cell 2.

#### Test Procedure

The SS starts the UTRAN cell and brings the UE into data call active state (CC state U10) with a suitable configuration (e.g. Streaming/unknown/uplink:14.4 DL:14.4 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs for M = 1). The SS starts GSM cell and configures a traffic channel (e.g. 14.4 kbps data channel for M = 1), then sends HANOVER FROM UTRAN COMMAND indicating the traffic channel of the target GSM cell to the UE through DCCH of the serving UTRAN cell. After the UE receives the command it shall configure itself accordingly and switch to the new channel of the GSM cell. The SS checks whether the handover is performed by checking that the UE transmits the HANOVER COMPLETE message to the SS in GSM cell.

Depending on the PIXIT parameters the above procedure is executed maximum three times, each time with different target channel in the GSM cell.

UEs for which the PIXIT indicates support for the GSM/ DCS 1800 and/ or GSM/ PCS 1900 band, the test should cover these frequencies in order to verify the correct handling of the IE "Frequency band".

Inter RAT handover is normally preceded by the configuration and activation of compressed mode (depending on UE capabilities/ PIXIT) and the configuration of inter- RAT measurements. The inter RAT handover is normally initiated by the SS upon receiving an event triggered measurement report. The verification of this functionality is covered by other subclauses.

#### Expected sequence

This sequence is performed for a maximum execution counter M = 1, 2, 3, depending on the PIXIT parameters.

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS bring the UE into UTRAN U10 state in cell 1, the configuration is: Streaming/unknown/uplink:14.4 DL:14.4 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs (for M = 1); Streaming/unknown/uplink:28.8 DL:28.8 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs (for M = 2); Streaming/unknown/uplink:57.6 DL:57.6 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs (for M = 3).
2	SS			The SS configures cell 2 as a GSM cell with a traffic channel: for GSM 14.4 kbps data (M = 1); or for GSM 28.8 kbps data (M = 2); or for GSM 57.6 kbps data (M = 3).
3	←		HANDOVER FROM UTRAN COMMAND GSM	Send on cell 1 (UTRAN cell) and the message indicates: the target channel for GSM 14.4 kbps data (M = 1); or for GSM 28.8 kbps data (M = 2); or for GSM 57.6 kbps data (M = 3).
4	UE			The UE accepts the handover command and switches to the GSM traffic channel specified in the HANDOVER FROM UTRAN COMMAND-GSM
5	→		HANDOVER ACCESS	The SS receives this burst on the traffic channel of cell 2 (GSM cell) It implies that the UE has switched to GSM cell.
6	→		HANDOVER ACCESS	
7	→		HANDOVER ACCESS	
8	→		HANDOVER ACCESS	
9	←		PHYSICAL INFORMATION	
10	→		SABM	
11	←		UA	
12	→		HANDOVER COMPLETE	The SS receives the message on the traffic channel of GSM cell.

Specific message contents

For execution :

## HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type RRC transaction identifier Integrity check info  - Message authentication code  - RRC Message sequence number Activation time RAB Info - RAB identity - CN domain identity - NAS Synchronization Indicator - Re-establishment timer Inter-system message - System type - Frequency Band  - CHOICE GSM message - Message	Arbitrarily selects one integer between 0 to 3 The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted. SS calculates the value of MAC-I for this message and writes to this IE. SS provides the value of this IE, from its internal counter. now  0000 0001B CS domain Not present Use T315  GSM Set to "GSM/ PCS 1900" if GSM/ PCS 1900 is used in this test. Otherwise set to "GSM/DCS 1800 Band" GSM message List GSM HANDOVER COMMAND formatted as BIT STRING(1..512). The contents of the HANDOVER COMMAND see next table.

If the UE supports 14.4 kbps single slot:

## HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 2 in clause 26.6.5.1 of GSM 51.010, except that the CHANNEL MODE IE is included with value = data, 14.5 kbit/s radio interface rate (14.4 kbit/s user data (TCH/F14.4))

If the UE supports HSCSD:

## HANDOVER COMMAND

Same as the HANDOVER COMMAND in clause 26.13.3.1 of GSM 51.010, except that the Description of a multi-slot configuration supporting 14.4 kbps user data.

For execution 2:

#### HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type RRC transaction identifier Integrity check info  - Message authentication code  - RRC Message sequence number Activation time RAB Info - RAB identity - CN domain identity - NAS Synchronization Indicator - Re-establishment timer Inter-system message - System type - Frequency Band  - CHOICE GSM message - Message	Arbitrarily selects one integer between 0 to 3 The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted. SS calculates the value of MAC-I for this message and writes to this IE. SS provides the value of this IE, from its internal counter. now  0000 0001B CS domain Not present Use T315  GSM Set to "GSM/ PCS 1900" if GSM/ PCS 1900 is used in this test. Otherwise set to "GSM/DCS 1800 Band" GSM message List GSM HANDOVER COMMAND formatted as BIT STRING (1..512). The contents of the HANDOVER COMMAND see next table.

If the UE supports enhanced circuit switched full rate traffic channel for 28.8 kbps user data:

#### HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 2 in clause 26.6.5.1 of GSM 51.010, except that the CHANNEL MODE IE is included with value = data, 29.0 kbit/s radio interface rate (28.8 kbit/s user data (E-TCH/F28.8))

If the UE supports HSCSD:

#### HANDOVER COMMAND

Same as the HANDOVER COMMAND in clause 26.13.3.1 of GSM 51.010, except that the Description of a multi-slot configuration supporting 28.8 kbps user data.

For execution 3:

#### HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type RRC transaction identifier Integrity check info  - Message authentication code  - RRC Message sequence number Activation time RAB Info - RAB identity - CN domain identity - NAS Synchronization Indicator - Re-establishment timer Inter-system message - System type - Frequency Band  - CHOICE GSM message - Message	Arbitrarily selects one integer between 0 to 3 The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted. SS calculates the value of MAC-I for this message and writes to this IE. SS provides the value of this IE, from its internal counter. now  0000 0001B CS domain Not present Use T315  GSM Set to "GSM/ PCS 1900" if GSM/ PCS 1900 is used in this test. Otherwise set to "GSM/DCS 1800 Band" GSM message List GSM HANDOVER COMMAND formatted as BIT STRING (1..512). The contents of the HANDOVER COMMAND see next table.

#### HANDOVER COMMAND

Same as the HANDOVER COMMAND in clause 26.13.3.1 of GSM 51.010, except that the Description of a multi-slot configuration supporting 57.6 kbps user data.

#### 8.3.7.2.5 Test requirement

After step 12 the ongoing call shall be continued on the GSM cell.

### 8.3.7.3 Inter system handover from UTRAN/To GSM/Data/Data rate down grading/Success

#### 8.3.7.3.1 Definition

#### 8.3.7.3.2 Conformance requirement

The UE shall be able to receive a HANOVER FROM UTRAN COMMAND message and perform an inter-RAT handover, even if no prior UE measurements have been performed on the target cell.

The UE shall:

- 1> establish the connection to the target radio access technology, by using the contents of the IE "Inter-RAT message". This IE contains a message specified in another standard, as indicated by the IE "System type", and carries information about the candidate/ target cell identifier(s) and radio parameters relevant for the target radio access technology. The correspondence between the value of the IE "System type", the standard to apply and the message contained within IE "Inter RAT message" is shown in the following:

Value of the IE "System type"	Standard to apply	Inter RAT Message
GSM	GSM TS 04.18, version 8.5.0 or later	HANOVER COMMAND
cdma2000	TIA/EIA/IS-2000 or later, TIA/EIA/IS-833 or later, TIA/EIQ/IS-834 or later	

- 1> if the IE "System type" has the value "GSM":

- 2> if the IE "Frequency band" has the value "GSM /DCS 1800 band used":

- 3> set the BAND\_INDICATOR [45] to "ARFCN indicates 1800 band".

- 2> if the IE "Frequency band" has the value " GSM /PCS 1900 band used":

- 3> set the BAND\_INDICATOR [45] to "ARFCN indicates 1900 band".

- 1> apply the "Inter RAT Message" according to the "standard to apply" in the table above.

- 1> if the IE "RAB information List" is included in the HANOVER FROM UTRAN COMMAND message:

- 2> if the IE "RAB information List" includes one IE "RAB Info" with the IE "CN domain Identity" set to "CS domain":

- 3> connect upper layer entities corresponding to the indicated CS domain RAB to the radio resources indicated in the inter-RAT message.

NOTE: In this version of the specification the maximum number of CS domain RABs which may be included in the IE "RAB information List" is limited to 1.

NOTE: Requirements concerning the establishment of the radio connection towards the other radio access technology and the signalling procedure are outside the scope of this specification.

Upon successfully completing the handover, the UE shall:

- 1> if the USIM is present:

- 2> store the current START value for every CN domain in the USIM [50];

- 2> if the "START" stored in the USIM [50] for a CN domain is greater than or equal to the value "THRESHOLD" of the variable START\_THRESHOLD:

- 3> delete the ciphering and integrity keys that are stored in the USIM for that CN domain;

- 3> inform the deletion of these keys to upper layers.

- 1> if the SIM is present:

- 2> store the current START value for every CN domain in the UE;
- 2> if the "START" stored in the UE for a CN domain is greater than or equal to the value "THRESHOLD" of the variable START\_THRESHOLD:
  - 3> delete the ciphering and integrity keys that are stored in the SIM for that CN domain;
  - 3> inform the deletion of these keys to upper layers.
- 1> if there are any NAS messages with the IE "CN domain identity" set to "CS domain" for which the successful delivery of the INITIAL DIRECT TRANSFER message or UPLINK DIRECT TRANSFER message on signalling radio bearer RB3 or signalling radio bearer RB4 that have not yet been confirmed by RLC:
  - 2> retransmit those NAS messages to the network on the newly established radio connection to the target radio access technology.
- 1> clear or set variables upon leaving UTRA RRC connected mode as specified in subclause 13.4.

NOTE: The release of the UMTS radio resources is initiated from the target RAT.

#### Reference(s)

TS 25.331 Clause 8.3.7.3, 8.3.7.4.

#### 8.3.7.3.3 Test purpose

To test that the UE handovers to the indicated channel of lower data rate in the GSM target cell when it is in the data call active state in the UTRAN serving cell and receives an HANDOVER FROM UTRAN COMMAND.

#### 8.3.7.3.4 Method of test

##### Initial conditions

System Simulator : 2 cells - Cell 1 is UTRAN, Cell 2 is GSM. GSM 51.010 clause 26.6.5.1 or clause 26.13.1.3 (for HSCSD) shall be referenced for the default parameters of cell 2.

UE: CC State U10 in cell 1, one CS domain RAB and one PS domain RAB (e.g. interactive/ background UL: 32kbps, DL: 32 kbps) is established (Conditional on support of CS+PS in UE).

##### Related ICS/IXIT statement(s)

- UE supports both GSM and UTRAN Radio Access Technologies,
- UE supports UTRAN Streaming/unknown/uplink:28.8 DL:28.8 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs,
- UE supports UTRAN Streaming/unknown/uplink:57.6 DL:57.6 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs,
- UE supports GSM 14.4 kbps data (HSCSD or full rate traffic channel for 14.4 kbit/s user data (TCH/F14.4)),
- UE supports GSM 28.8 kbps data (HSCSD or enhanced circuit switched full rate traffic channel for 28.8 kbit/s user data (E-TCH/F28.8)),
- UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.
- UE support CS and PS service.

##### Foreseen final state of the UE

The UE is in CC state U10 on cell 2.

##### Test Procedure

The SS starts the UTRAN cell and brings the UE into data call active state (CC state U10) with a suitable configuration (e.g. Streaming/unknown/uplink:28.8 DL:28.8 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs for M = 1). The SS starts

GSM cell and configures a traffic channel (e.g. 14.4 kbps data channel for  $M = 1$ ), then sends HANOVER FROM UTRAN COMMAND indicating the traffic channel of the target GSM cell to the UE through DCCH of the serving UTRAN cell. After the UE receives the command it shall configure itself accordingly and switch to the new channel of the GSM cell. The SS checks whether the handover is performed by checking that the UE transmits the HANOVER COMPLETE message to the SS in GSM cell.

Upon completion of the handover, depending on UE capabilities, the UE performs routing area update and (re-) establishes the connection towards the PS domain.

Depending on the PIXIT parameters the above procedure is executed maximum three times, each time with different target channel in the GSM cell.

#### Expected sequence

This sequence is performed for a maximum execution counter  $M = 1, 2, 3$ , depending on the PIXIT parameters.

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS bring the UE into UTRAN U10 state in cell 1, the configuration is: Streaming/unknown/uplink:28.8 DL:28.8 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs (for $M = 1$ ); Streaming/unknown/uplink:57.6 DL:57.6 kbps/CS RAB + uplink:3.4 DL:3.4 kbps SRBs (for $M = 2$ and 3).
2	SS			The SS configures cell 2 as a GSM cell with a traffic channel: for GSM 14.4 kbps data ( $M = 1$ and 2); or for GSM 28.8 kbps data ( $M = 3$ ).
3		←	HANOVER FROM UTRAN COMMAND-GSM	Send on cell 1 (UTRAN cell) and the message indicates: the target channel for GSM 14.4 kbps data ( $M = 1$ and 2); or for GSM 28.8 kbps data ( $M = 3$ ).
4	UE			The UE accepts the handover command and switches to the GSM traffic channel specified in the HANOVER FROM UTRAN COMMAND-GSM
5		→	HANOVER ACCESS	The SS receives this burst on the traffic channel of cell 2 (GSM cell) It implies that the UE has switched to GSM cell.
6		→	HANOVER ACCESS	
7		→	HANOVER ACCESS	
8		→	HANOVER ACCESS	
9		←	PHYSICAL INFORMATION	
10		→	SABM	
11		←	UA	
12		→	HANOVER COMPLETE	The SS receives the message on the traffic channel of GSM cell.
13		→	ROUTING AREA UPDATE	Conditional on Class A UE.

#### Specific message contents

For execution 1:

Same as the message contents of clause 8.3.7.2 for  $M = 1$ .

For execution 2:

Same as the message contents of clause 8.3.7.2 for  $M = 1$ .

For execution 3:

Same as the message contents of clause 8.3.7.2 for  $M = 2$ .

## 8.3.7.3.5 Test requirement

After step 12 the ongoing call shall be continued on the GSM cell.

## 8.3.7.4 Inter system handover from UTRAN/To GSM/Speech/Establishment/Success

## 8.3.7.4.1 Definition

## 8.3.7.4.2 Conformance requirement

The UE shall be able to receive a HANOVER FROM UTRAN COMMAND message and perform an inter-RAT handover, even if no prior UE measurements have been performed on the target cell.

The UE shall:

- 1> establish the connection to the target radio access technology, by using the contents of the IE "Inter-RAT message". This IE contains a message specified in another standard, as indicated by the IE "System type", and carries information about the candidate/ target cell identifier(s) and radio parameters relevant for the target radio access technology. The correspondence between the value of the IE "System type", the standard to apply and the message contained within IE "Inter RAT message" is shown in the following:

Value of the IE "System type"	Standard to apply	Inter RAT Message
GSM	GSM TS 04.18, version 8.5.0 or later	HANOVER COMMAND
cdma2000	TIA/EIA/IS-2000 or later, TIA/EIA/IS-833 or later, TIA/EIQ/IS-834 or later	

- 1> if the IE "System type" has the value "GSM":

- 2> if the IE "Frequency band" has the value "GSM /DCS 1800 band used":
  - 3> set the BAND\_INDICATOR [45] to "ARFCN indicates 1800 band".
- 2> if the IE "Frequency band" has the value " GSM /PCS 1900 band used":
  - 3> set the BAND\_INDICATOR [45] to "ARFCN indicates 1900 band".

- 1> apply the "Inter RAT Message" according to the "standard to apply" in the table above.

- 1> if the IE "RAB information List" is included in the HANOVER FROM UTRAN COMMAND message:

- 2> if the IE "RAB information List" includes one IE "RAB Info" with the IE "CN domain Identity" set to "CS domain":
  - 3> connect upper layer entities corresponding to the indicated CS domain RAB to the radio resources indicated in the inter-RAT message.

NOTE: In this version of the specification the maximum number of CS domain RABs which may be included in the IE "RAB information List" is limited to 1.

NOTE: Requirements concerning the establishment of the radio connection towards the other radio access technology and the signalling procedure are outside the scope of this specification.

Upon successfully completing the handover, the UE shall:

- 1> if the USIM is present:
  - 2> store the current START value for every CN domain in the USIM [50];
  - 2> if the "START" stored in the USIM [50] for a CN domain is greater than or equal to the value "THRESHOLD" of the variable START\_THRESHOLD:
    - 3> delete the ciphering and integrity keys that are stored in the USIM for that CN domain;

- 3> inform the deletion of these keys to upper layers.
- 1> if the SIM is present:
    - 2> store the current START value for every CN domain in the UE;
    - 2> if the "START" stored in the UE for a CN domain is greater than or equal to the value "THRESHOLD" of the variable START\_THRESHOLD:
      - 3> delete the ciphering and integrity keys that are stored in the SIM for that CN domain;
      - 3> inform the deletion of these keys to upper layers.
  - 1> if there are any NAS messages with the IE "CN domain identity" set to "CS domain" for which the successful delivery of the INITIAL DIRECT TRANSFER message or UPLINK DIRECT TRANSFER message on signalling radio bearer RB3 or signalling radio bearer RB4 that have not yet been confirmed by RLC:
    - 2> retransmit those NAS messages to the network on the newly established radio connection to the target radio access technology.
  - 1> clear or set variables upon leaving UTRA RRC connected mode as specified in subclause 13.4.

NOTE: The release of the UMTS radio resources is initiated from the target RAT.

#### Reference(s)

TS 25.331 Clause 8.3.7.3, 8.3.7.4.

#### 8.3.7.4.3 Test purpose

To test that the UE handovers to the indicated channel in the GSM target cell when it is in the call establishment phase in the UTRAN serving cell and receives an HANDOVER FROM UTRAN COMMAND.

#### 8.3.7.4.4 Method of test

##### Initial conditions

System Simulator : 2 cells - Cell 1 is UTRAN, Cell 2 is GSM. GSM 51.010 clause 26.6.5.1 shall be referenced for the default parameters of cell 2.

UE : CC State U1 in cell 1, no RABs are established.

##### Related ICS/IXIT statement(s)

- UE supports both GSM and UTRAN Radio Access Technologies,
- UE supports UTRAN AMR,
- UE supports GSM FR,
- UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

##### Foreseen final state of the UE

The UE is in CC state U1 on cell 2.

##### Test Procedure

The SS starts the UTRAN cell and the UE is triggered to initialise an MO speech call. During the call establishment phase, after the SS receives SETUP message the SS starts GSM cell and configures a dedicated channel, then sends the UE an HANDOVER FROM UTRAN COMMAND indicating the dedicated channel in the target GSM cell. After the UE receives the command it shall configure itself accordingly and switch to the new channel of the GSM cell. The SS checks whether the handover is performed by checking that the UE transmits the HANDOVER COMPLETE message to the SS in GSM cell.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			To trigger the UE to initialise an MO call
2	→		SETUP	U1
3	SS			The SS starts the GSM cell and configure a dedicated channel SDCCH.
4	←		HANDOVER FROM UTRAN COMMAND-GSM	Send on cell 1 (UTRAN cell) and the message indicates: the dedicated channel SDCCH.
5	UE			The UE accepts the handover command and switches to the GSM dedicated channel specified in the HANDOVER FROM UTRAN COMMAND-GSM
6	→		HANDOVER ACCESS	The SS receives this burst on the dedicated channel of cell 2 (GSM cell) It implies that the UE has switched to GSM cell.
7	→		HANDOVER ACCESS	
8	→		HANDOVER ACCESS	
9	→		HANDOVER ACCESS	
10	←		PHYSICAL INFORMATION	
11	→		SABM	
12	←		UA	
13	→		HANDOVER COMPLETE	The SS receives the message on the dedicated channel of GSM cell.

Specific message contents

#### HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type RRC transaction identifier Integrity check info  - Message authentication code  - RRC Message sequence number Activation time RAB Info Inter-system message - System type - Frequency Band  - CHOICE GSM message - Message	Arbitrarily selects one integer between 0 to 3 The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted. SS calculates the value of MAC-I for this message and writes to this IE. SS provides the value of this IE, from its internal counter. now Not present  GSM Set to "GSM/ PCS 1900" if GSM/ PCS 1900 is used in this test. Otherwise set to "GSM/DCS 1800 Band" Single GSM message GSM HANDOVER COMMAND formatted as Variable Length BIT STRING without Length Indicator. The contents of the HANDOVER COMMAND see next table.

#### HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 4 in clause 26.6.5.2 of GSM 51.010 version 8.2.0 Release 1999

#### 8.3.7.4.5 Test requirement

At step 13 the SS shall receive HANDOVER COMPLETE message on the dedicated channel of the GSM cell.

### 8.3.7.5 Inter system handover from UTRAN/To GSM/Speech/Failure

#### 8.3.7.5.1 Definition

#### 8.3.7.5.2 Conformance requirement

If the UE does not succeed to establish the connection to the other radio access technology, it shall

- resume the connection to UTRAN using the resources used before receiving the HANDOVER FROM UTRAN COMMAND message; and
- transmit the INTER-SYSTEM HANDOVER FAILURE message on uplink DCCH using AM RLC. When the successful delivery of the INTER-SYSTEM FAILURE message has been confirmed by RLC, the procedure ends.

#### Reference(s)

TS 25.331 Clause 8.3.7.5.

#### 8.3.7.5.3 Test purpose

To test that the UE reactivates the old channel and transmits HANDOVER FROM UTRAN FAILURE message to the network on the old channel in UTRAN cell when it receives an HANDOVER FROM UTRAN COMMAND and the connection to GSM for handover can not be established.

#### 8.3.7.5.4 Method of test

##### Initial conditions

System Simulator : 2 cells - Cell 1 is UTRAN, Cell 2 is GSM. GSM 51.010 clause 26.6.5.1 shall be referenced for the default parameters of cell 2.

UE: CC State U10 in cell 1

##### Related ICS/IXIT statement(s)

- UE supports both GSM and UTRAN Radio Access Technologies,
- UE supports GSM FR,
- UE supports UTRAN AMR,
- UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

##### Foreseen final state of the UE

The UE is in CC state U10 on cell 1.

##### Test Procedure

The SS starts the UTRAN cell and brings the UE into call active state (CC state U10) with AMR. The SS starts GSM cell without activating any dedicated channel in the cell, then sends HANDOVER FROM UTRAN COMMAND indicating a dedicated channel of the target GSM cell to the UE through DCCH of the serving UTRAN cell. The UE receives the command and configures itself accordingly but can not complete the handover. The SS checks that the handover is failed by checking that the UE transmits the HANDOVER FROM UTRAN FAILURE message to the SS in UTRAN cell.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS bring the UE into UTRAN U10 state in cell 1
2		SS		The SS configures cell 2 as a GSM cell but without any traffic channel.
3		←	HANDOVER FROM UTRAN COMMAND-GSM	Send on cell 1 (UTRAN cell) and the message indicates: the target channel for GSM FR which does not exist in the GSM cell.
4	UE			The UE accepts the handover command and switches to the GSM traffic channel specified in the HANDOVER FROM UTRAN COMMAND-GSM
5		→	HANDOVER FROM UTRAN FAILURE	The SS receives the message on the old channel of UTRAN cell.

Specific message contents

Same as the message contents of clause 8.3.7.1 for M = 3.

#### HANDOVER FROM UTRAN FAILURE

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it matches the same value used in the corresponding downlink HANDOVER FROM UTRAN COMMAND –GSM message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Inter-RAT handover failure	
-Inter-RAT handover failure cause	physical channel failure
Inter-system message	Not Checked

#### 8.3.7.5.5 Test requirement

After step n+1 the SS shall receive HANDOVER FROM UTRAN FAILURE message on the old channel of the UTRAN cell.

#### 8.3.7.6 Inter system handover from UTRAN/To GSM/Speech/Failure (L2 Establishment)

##### 8.3.7.6.1 Definition

##### 8.3.7.6.2 Conformance requirement

If the UE does not succeed to establish the connection to the other radio access technology , as is unable to obtain L2 establishment it shall

- resume the connection to UTRAN using the resources used before receiving the HANDOVER FROM UTRAN COMMAND message; and
- transmit the HANDOVER FROM UTRAN FAILURE message on uplink DCCH using AM RLC.

## Reference(s)

3GPP TS 25.331 clause 8.3.7

TS 04.06 Clause 5.4.1.3

TS 04.08 Clause 3.1.5

### 8.3.7.6.3 Test purpose

To Test that the UE shall keep its old configuration and transmit a HANOVER FROM UTRAN FAILURE message, which is set to "physical channel failure" in IE "Inter\_RAT HO failure cause", when it receives a HANOVER FROM UTRAN COMMAND and the connection to GSM for handover cannot be established due to failure in L2 establishment.

### 8.3.7.6.4 Method of test

#### Initial conditions

System Simulator : 2 cells - Cell 1 is UTRAN, Cell 2 is GSM. GSM 51010-1 section 26.6.5.1 shall be referenced for the default parameters of cell 2.

UE: CC State U10 in cell 1

#### Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports GSM FR,

UE supports UTRAN AMR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

#### Foreseen final state of the UE

The UE is in CC state U10 on cell 1.

#### Test Procedure

The SS starts the UTRAN cell and brings the UE into call active state (CC state U10) with AMR. SS activates a dedicated GSM traffic channel then sends HANOVER FROM UTRAN COMMAND indicating a dedicated channel of the target GSM cell to the UE through DCCH of the serving UTRAN cell. When the UE does not succeed in establishing the connection to the target radio access technology it shall revert back to UTRA configuration establish the UTRA physical channel(s) used at the time for reception of HANOVER FROM UTRAN COMMAND transmit the HANOVER FROM UTRAN FAILURE.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS brings the UE into UTRAN U10 state in cell 1
2		SS		The SS configures cell 2 as a GSM cell with traffic channel.
3		←	HANDOVER FROM UTRAN COMMAND-GSM	Send on cell 1 (UTRAN cell) and the message indicates: The target channel.
4	UE			The UE accepts the handover command and switches to the GSM traffic channel specified in the HANDOVER FROM UTRAN COMMAND-GSM
5		→	HANDOVER ACCESS	The SS receives this burst on the traffic channel of cell 2 (GSM cell) It implies that the UE has switched to GSM cell.
6		→	HANDOVER ACCESS	
7		→	HANDOVER ACCESS	
8		→	HANDOVER ACCESS	
9		←	PHYSICAL INFORMATION	Allows a proper transmission by the MS. Sent in unacknowledged mode as soon as the SS has detected a HANDOVER ACCESS. As soon as MS detects it then it stops T3124. On SS side T3105 could be started N times at the maximum as long as the step 8 is not performed
10		→	SABM	To establish L2 connection
11		SS		SS does not sent UA frame
12	UE			On T200 expiration, SS sends N200 times the SABM frame (steps 10) Then MS deactivates new channels and reactivates old UTRA resources it had before receiving the handover command
13		→	HANDOVER FROM UTRAN FAILURE	The SS receives the message on the old channel of UTRAN cell. Sent in acknowledge mode The cause in the IE "inter-RAT change failure" is set to "physical channel failure"

Specific message contents

Same as the message contents of clause 8.3.7.1 for M = 3.

HANDOVER FROM UTRAN FAILURE

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it matches the same value used in the corresponding downlink HANDOVER FROM UTRAN COMMAND –GSM message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Inter-RAT handover failure	
-Inter-RAT handover failure cause	physical channel failure
Inter-system message	Not Checked

#### 8.3.7.6.5 Test requirement

The SS shall receive HANOVER FROM UTRAN FAILURE message on the old channel of the UTRAN cell.

### 8.3.7.7 Inter system handover from UTRAN/To GSM/Speech/Failure (L1 Synchronization)

#### 8.3.7.7.1 Definition

#### 8.3.7.7.2 Conformance requirement

If the UE does not succeed to establish the connection to the other radio access technology, as is unable to obtain L1 synchronization it shall

- resume the connection to UTRAN using the resources used before receiving the HANOVER FROM UTRAN COMMAND message; and
- transmit the HANOVER FROM UTRAN FAILURE message on uplink DCCH using AM RLC.

#### Reference(s)

TS 25.331 Clause 8.3.7.5

TS 04.06 Clause 5.4.1

#### 8.3.7.7.3 Test purpose

To Test that the UE shall keep its old configuration and transmit a HANOVER FROM UTRAN FAILURE message, which is set to "physical channel failure" in IE "Inter\_RAT HO failure cause", when it receives a HANOVER FROM UTRAN COMMAND and the connection to GSM for handover cannot be established due failure in L1 Synchronization.

#### 8.3.7.7.4 Method of test

##### Initial conditions

System Simulator : 2 cell - Cell 1 is UTRAN, Cell 2 is GSM. GSM 51.010 version 4.4.0 section 26.6.5.1 shall be referenced for the default parameters of cell 2.

UE : CC State U10 in cell 1

##### Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports GSM FR,

UE supports UTRAN AMR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

##### Foreseen final state of the UE

The UE is in CC state U10 on cell 1.

##### Test Procedure

The SS starts the UTRAN cell and brings the UE into call active state (CC state U10). The SS starts GSM cell activating dedicated channel in the cell, then sends HANOVER FROM UTRAN COMMAND indicating a dedicated channel of the target GSM cell to the UE through DCCH of the serving UTRAN cell. The power level of target GSM cell is kept at very low level. The UE receives the command and configures itself accordingly but cannot complete the

handover. The SS checks that the handover is failed by checking that the UE transmits the HANOVER FROM UTRAN FAILURE message to the SS in UTRAN cell.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS brings the UE into UTRAN U10 state in cell 1.
2		SS		The SS configures cell 2 as a GSM cell with a traffic channel.
3		←	HANOVER FROM UTRAN COMMAND-GSM	Send on cell 1 (UTRAN cell) and the message indicates: The target channel for GSM FR in GSM Cell.
4	UE			The UE accepts the handover command and switches to the GSM traffic channel specified in the HANOVER FROM UTRAN COMMAND-GSM
5		→	HANOVER ACCESS	The SS receives this burst on the traffic channel of cell 2 (GSM cell) It implies that the UE has switched to GSM cell.
6		→	HANOVER ACCESS	
7		SS		The target GSM Traffic Channel is Switched off
8		→	HANOVER FROM UTRAN FAILURE	The SS receives the message on the old channel of UTRAN cell. The cause in the IE "inter-RAT change failure" is set to "physical channel failure"

Specific message contents

Same as the message contents of clause 8.3.7.1 for M = 3.

HANOVER FROM UTRAN FAILURE

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it matches the same value used in the corresponding downlink HANOVER FROM UTRAN COMMAND –GSM message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Inter-RAT handover failure	
-Inter-RAT handover failure cause	physical channel failure
Inter-system message	Not Checked

8.3.7.7.5 Test requirement

The SS shall receive HANOVER FROM UTRAN FAILURE message on the old channel of the UTRAN cell.

### 8.3.7.8 Inter system handover from UTRAN/To GSM/Speech/Failure (Invalid Inter-RAT message)

#### 8.3.7.8.1 Definition

#### 8.3.7.8.2 Conformance requirement

If the UE does not succeed to establish the connection to the other radio access technology, as the Inter-RAT message received is invalid, it shall

- resume the connection to UTRAN using the resources used before receiving the INTER-SYSTEM HANDOVER COMMAND message; and
- transmit the INTER-SYSTEM HANDOVER FAILURE message on uplink DCCH using AM RLC. When the successful delivery of the INTER-SYSTEM FAILURE message has been confirmed by RLC, the procedure ends.

#### Reference

3GPP TS 25.331 clause 8.3.7.6

#### 8.3.7.8.3 Test purpose

To Test that the UE shall keep its old configuration and transmit a HANDOVER FROM UTRAN FAILURE message, which is set to "Inter-RAT protocol error" in IE "Inter\_RAT HO failure cause", when it receives a Handover From UTRAN message, with the IE "Inter-RAT message" received within the HANDOVER FROM UTRAN COMMAND message not including a valid inter RAT handover message in accordance with the protocol specifications for the target RAT.

#### 8.3.7.8.4 Method of test

##### Initial conditions

System Simulator : 1 UTRAN cell.

UE : CC State U10 in cell 1

##### Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports GSM FR,

UE supports UTRAN AMR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

##### Foreseen final state of the UE

The UE is in CC state U10 on cell 1.

##### Test Procedure

The SS starts the UTRAN cell and brings the UE into call active state (CC state U10) with AMR. The SS then sends an HANDOVER FROM UTRAN COMMAND message not including a valid inter RAT handover message in accordance with the protocol specifications for the target RAT, to the UE through DCCH of the serving UTRAN cell. The UE receives the command and finds that the Inter Rat message is Invalid. The SS checks that the handover is failed by checking that the UE transmits the INTER-SYSTEM HANDOVER FAILURE message to the SS in UTRAN cell.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS brings the UE into UTRAN U10 state in cell 1
2	←		HandoverFromUTRAN Command-GSM	Send on cell 1 (UTRAN cell) and the message carries an Invalid HANDOVER FROM UTRAN COMMAND -GSM
3	→		InterSystemHandoverFailure	The SS receives the message on the old channel of UTRAN cell.

Specific message contents

#### HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type RRC transaction identifier Integrity check info  - Message authentication code  - RRC Message sequence number Activation time RAB Info Inter-system message - System type - Frequency Band - CHOICE GSM message - Message	Arbitrarily selects one integer between 0 to 3 The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted. SS calculates the value of MAC-I for this message and writes to this IE. SS provides the value of this IE, from its internal counter. Now Not present  GSM GSM/DCS 1800 Band Single GSM message GSM HANDOVER COMMAND formatted as Variable Length BIT STRING without Length Indicator. The contents of the HANDOVER COMMAND see next table.

#### HANDOVER COMMAND

Contains an Invalid Handover Command.
---------------------------------------

#### HANDOVER FROM UTRAN FAILURE

Information Element	Value/remark
Message Type RRC transaction identifier  Integrity check info  - Message authentication code  - RRC Message sequence number  Inter-RAT handover failure -Inter-RAT handover failure cause Inter-system message	Checked to see if it matches the same value used in the corresponding downlink HANDOVER FROM UTRAN COMMAND -GSM message The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent. This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS. This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.  Inter-RAT protocol error Not checked

#### 8.3.7.8.5 Test requirement

In step 3 the SS shall receive INTER-SYSTEM HANDOVER FAILURE message on the old channel of the UTRAN cell.

#### 8.3.7.9 Inter system handover from UTRAN/To GSM/Speech/Failure (Unsupported configuration)

##### 8.3.7.9.1 Definition

##### 8.3.7.9.2 Conformance requirement:

If the UE does not succeed to establish the connection to the other radio access technology, as the configuration specified in the Inter-RAT message is not supported, it shall

- resume the connection to UTRAN using the resources used before receiving the INTER-SYSTEM HANDOVER COMMAND message; and
- transmit the INTER-SYSTEM HANDOVER FAILURE message on uplink DCCH using AM RLC. When the successful delivery of the INTER-SYSTEM FAILURE message has been confirmed by RLC, the procedure ends.

#### Reference

3GPP TS 25.331 clause 8.3.7.8

##### 8.3.7.9.3 Test purpose

To Test that the UE shall keep its old configuration and transmit a HANDOVER FROM UTRAN FAILURE message, which is set to "configuration unsupported" in IE "Inter\_RAT HO failure cause", when it receives a Handover From UTRAN message, with the IE "Inter-RAT message" received within the HANDOVER FROM UTRAN COMMAND message including a Configuration not Supported by the UE.

##### 8.3.7.9.4 Method of test

#### Initial conditions

System Simulator : 1 UTRAN cell.

UE : CC State U10 in cell 1

#### Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports GSM FR,

UE supports UTRAN AMR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

#### Foreseen final state of the UE

The UE is in CC state U10 on cell 1.

#### Test Procedure

The SS starts the UTRAN cell and brings the UE into call active state (CC state U10) with AMR. The SS then sends an HANDOVER FROM UTRAN COMMAND message including a Configuration not Supported by the UE in inter RAT handover message, to the UE through DCCH of the serving UTRAN cell. The UE receives the command and

finds that the configuration given in Inter Rat message is not supported. The SS checks that the handover is failed by checking that the UE transmits the INTER-SYSTEM HANDOVER FAILURE message to the SS in UTRAN cell.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS brings the UE into UTRAN U10 state in cell 1
2	←		HandoverFromUTRAN Command-GSM	Send on cell 1 (UTRAN cell) and the message carries an unsupported configuration.
3	→		InterSystemHandoverFailure	The SS receives the message on the old channel of UTRAN cell.

Specific message contents

#### HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type RRC transaction identifier Integrity check info  - Message authentication code  - RRC Message sequence number Activation time RAB Info Inter-system message - System type - Frequency Band - CHOICE GSM message - Message	Arbitrarily selects one integer between 0 to 3 The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted. SS calculates the value of MAC-I for this message and writes to this IE. SS provides the value of this IE, from its internal counter. Now Not present  GSM GSM/DCS 1800 Band Single GSM message GSM HANDOVER COMMAND formatted as Variable Length BIT STRING without Length Indicator. The contents of the HANDOVER COMMAND see next table.

#### HANDOVER COMMAND

Contains a Configuration not supported By the UE (Handover to a Band not supported by the UE)
---

#### HANDOVER FROM UTRAN FAILURE

Information Element	Value/remark
Message Type RRC transaction identifier  Integrity check info  - Message authentication code  - RRC Message sequence number  Inter-RAT handover failure -Inter-RAT handover failure cause	Checked to see if it matches the same value used in the corresponding downlink HANDOVER FROM UTRAN COMMAND –GSM message The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent. This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS. This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.  configuration unsupported

Inter-system message	Not checked
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#### 8.3.7.9.5 Test requirement

In step 3 the SS shall receive INTER-SYSTEM HANDOVER FAILURE message on the old channel of the UTRAN cell.

#### 8.3.7.10 Inter system handover from UTRAN/To GSM/Speech/Failure (Reception by UE in CELL\_FACH)

##### 8.3.7.10.1 Definition

##### 8.3.7.10.2 Conformance requirement

If the UE does not succeed to establish the connection to the other radio access technology, as the Message received is not compatible with receiver state, it shall

- resume the connection to UTRAN using the resources used before receiving the INTER-SYSTEM HANDOVER COMMAND message; and
- transmit the INTER-SYSTEM HANDOVER FAILURE message on uplink DCCH using AM RLC. When the successful delivery of the INTER-SYSTEM FAILURE message has been confirmed by RLC, the procedure ends.

#### Reference

3GPP TS 25.331 clause 8.3.7.8a

##### 8.3.7.10.3 Test purpose

The UE shall keep its old configuration when the UE receives a HANDOVER FROM UTRAN COMMAND message when in CELL\_FACH state and then transmit a HANDOVER FROM UTRAN COMMAND FAILURE message on the DCCH using AM RLC, which sets value "protocol error" in IE "Inter\_RAT HO failure cause" and is set to "Message not compatible with receiver state" in IE "Protocol error cause".

##### 8.3.7.10.4 Method of test

#### Initial conditions

System Simulator : 1 UTRAN Cell

UE : RRC State CS-DCCH\_FACH (state 6-6) as specified in clause 7.4 of TS 34.108, on Cell 1

#### Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports GSM FR,

UE supports UTRAN AMR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

#### Foreseen final state of the UE

The UE is in RRC is in State CS-DCCH\_FACH (state 6-6) as specified in clause 7.4 of TS 34.108, on cell 1.

## Test Procedure

The SS starts the UTRAN cell and brings the UE into RRC Cell\_FACH\_DTCH. It then Transmits Radio Bearer reconfiguration PDU to move UE to Cell\_FACH state. The SS starts GSM cell without activating any dedicated channel in the cell, then sends INTER-SYSTEM HANDOVER COMMAND indicating a dedicated channel of the target GSM cell to the UE through DCCH of the serving UTRAN cell. The UE receives the command and configures itself accordingly but cannot complete the handover. The SS checks that the handover is failed by checking that the UE transmits the INTER-SYSTEM HANDOVER FAILURE message to the SS in UTRAN cell.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS brings the UE into CS-DCCH_FACH (state 6-6) _FACH state in cell 1
2		←	InterSystemHandoverCommand-GSM	Send on cell 1 (UTRAN cell) and the message indicates: The target channel for GSM
3		→	InterSystemHandoverFailure	The SS receives the message on the old channel of UTRAN cell.

## Specific message contents

Same as the message contents of clause 8.3.7.1 for M = 3.

## HANDOVER FROM UTRAN FAILURE

Information Element	Value/remark
Message Type	
RRC transaction identifier	Checked to see if it matches the same value used in the corresponding downlink HANDOVER FROM UTRAN COMMAND –GSM message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Inter-RAT handover failure	
-Inter-RAT handover failure cause	Protocol Error
-Diagnostics Type	Type1
-Protocol Error Cause	Message Not Compatible With Receiver State
Inter-system message	Not Checked

### 8.3.7.10.5 Test requirement

After step 2 the SS shall receive INTER-SYSTEM HANDOVER FAILURE message on the old channel of the UTRAN cell.

### 8.3.7.11 Inter system handover from UTRAN/To GSM/Speech/Failure (Invalid message reception)

#### 8.3.7.11.1 Definition

#### 8.3.7.11.2 Conformance requirement:

If the UE does not succeed to establish the connection to the other radio access technology, as the Handover Message received is short to decode into a valid message, it shall

- resume the connection to UTRAN using the resources used before receiving the INTER-SYSTEM HANDOVER COMMAND message; and
- transmit the INTER-SYSTEM HANDOVER FAILURE message on uplink DCCH using AM RLC. When the successful delivery of the INTER-SYSTEM FAILURE message has been confirmed by RLC, the procedure ends.

#### Reference

3GPP TS 25.331 clause 8.3.7

#### 8.3.7.11.3 Test purpose

The UE shall keep its old configuration when the UE receives a Handover From UTRAN message, which will be short to decode into a valid Handover From UTRAN message. It shall then transmit an RRC STATUS message on the uplink DCCH. The IE "Protocol error information" shall contain an IE "Protocol error cause" set to "ASN.1 violation or encoding error";

#### 8.3.7.11.4 Method of test

##### Initial conditions

System Simulator : 1 UTRAN cell.

UE : CC State U10 in cell 1

##### Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports GSM FR,

UE supports UTRAN AMR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

##### Foreseen final state of the UE

The UE is in CC state U10 on cell 1.

##### Test Procedure

The SS starts the UTRAN cell and brings the UE into call active state (CC state U10) with AMR. The SS then sends an HANDOVER FROM UTRAN COMMAND message, which will be short to decode into a valid Handover From UTRAN message, to the UE through DCCH of the serving UTRAN cell. The SS checks that the handover is failed by checking that the UE transmits an RRC STATUS message on the uplink DCCH. The IE "Protocol error information" shall contain an IE "Protocol error cause" set to "ASN.1 violation or encoding error";

##### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS brings the UE into UTRAN U10 state in cell 1
2		←	HandoverFromUTRAN Command-GSM	Send on cell 1 (UTRAN cell) and the message is short in length to be decoded into a valid Handover From UTRAN command
3		→	RRCStatus	The SS receives the message on the old channel of UTRAN cell.

Specific message contents

### HANDOVER FROM UTRAN COMMAND-GSM

A Short Message that shall not result in a valid Handover From UTRAN Command shall be sent.

#### RRC STATUS (Step 3)

Information Element	Value/remark
Protocol error information	Checked to see if set to "ASN.1 Violation or Encoding error"

#### 8.3.7.11.5 Test requirement

In step 3 the SS shall receive RRC Status message in the UTRAN cell.

### 8.3.7.12 Inter system handover from UTRAN/To GSM/Speech/Failure (Physical channel Failure and Reversion Failure)

#### 8.3.7.12.1 Definition

#### 8.3.7.12.2 Conformance requirement:

If the UE does not succeed to establish the connection to the other radio access technology and fail to resume the connection to UTRAN using the resources used before receiving the INTER-SYSTEM HANDOVER COMMAND message, it shall

- perform a cell update procedure; and
- transmit the INTER-SYSTEM HANDOVER FAILURE message on uplink DCCH using AM RLC. When the successful delivery of the INTER-SYSTEM FAILURE message has been confirmed by RLC, the procedure ends.

#### Reference

3GPP TS 25.331 clause 8.3.7.5

#### 8.3.7.12.3 Test purpose

The UE shall perform a cell update when the UE fails to revert to the old configuration after the detection of physical channel failure in the target RAT cell as given in HANDOVER FROM UTRAN procedure. After the UE completes cell update procedure, the UE transmit HANDOVER FROM UTRAN FAILURE message on the DCCH using AM RLC, which is set IE "failure cause" to "physical channel failure".

#### 8.3.7.12.4 Method of test

#### Initial conditions

System Simulator : 2 cells - Cell 1 is UTRAN, Cell 2 is GSM. GSM 11.10-1 section 26.6.5.1 shall be referenced for the default parameters of cell 2.

UE : CC State U10 in cell 1

#### Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports GSM FR,

UE supports UTRAN AMR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

Foreseen final state of the UE

The UE is in CC state U10 on cell 1.

#### Test Procedure

The SS starts the UTRAN cell and brings the UE into call active state (CC state U10) with AMR. The SS starts GSM cell without activating any dedicated channel in the cell, then sends INTER-SYSTEM HANDOVER COMMAND indicating a dedicated channel of the target GSM cell to the UE through DCCH of the serving UTRAN cell. The UE receives the command and configures itself accordingly but cannot complete the handover and wants to revert to the old configuration, but the UE cannot revert to the old configuration because the SS shall not use the old configuration. The UE transmit CELL UPDATE message on uplink CCCH with IE "Cell update cause" set to "radio link failure". The SS shall transmit CELL UPDATE CONFIRM message on downlink CCCH after receiving CELL UPDATE message. The UE transmits PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC and subsequently transmits the INTER-SYSTEM HANDOVER FAILURE message to the SS in UTRAN cell, on the DCCH using AM RLC, setting the value of IE "failure cause" to "physical channel failure".

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The SS brings the UE into UTRAN U10 state in cell 1
2	SS			The SS configures cell 2 as a GSM cell but without any traffic channel.
3	←		HandoverFromUTRAN Command-GSM	Send on cell 1 (UTRAN cell) and the message indicates: The target channel for GSM FR, which does not exist in the GSM cell.
4	UE			The UE accepts the handover command and switches to the GSM traffic channel specified in the InterSystemHandoverCommand-GSM
5	SS			SS removes the Physical channel (DPCH) allocated to the mobile before handover command transmission
6	→		CELL UPDATE	The value "radio link failure" shall be set in IE "Cell update cause".
7	←		CELL UPDATE CONFIRM	This message include IE "Physical channel information elements".
8				The SS configure the dedicated physical channel according to the IE "Physical channel information elements" included in the CELL UPDATE CONFIRM message.
9	→		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
10	→		InterSystemHandoverFailure	The IE "failure cause" shall be set to "physical channel failure"

#### Specific message contents

Same as the message contents of clause 8.3.7.1 for M = 3.

#### CELL UPDATE (Step n+1)

The contents of CELL UPDATE message is identical as "Contents of CELL UPDATE message" as found in TS 34.108, clause 9, with the following exceptions:

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
Cell Update Cause	"radio link failure"

## CELL UPDATE CONFIRM (Step n+2)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in TS 34.108, clause 9, with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 3
RRC State indicator	CELL_DCH
Frequency info	
- UARFCN uplink (Nu)	Reference to TS34.108 clause 5.1 Test frequencies
- UARFCN downlink (Nd)	Reference to TS34.108 clause 5.1 Test frequencies
Maximum allowed UL TX power	33dBm
CHOICE Mode	FDD
Downlink information for each radio links	
- Primary CPICH info	
- Primary scrambling code	100
- PDSCH with SHO DCH info	Not Present
- PDSCH code mapping	Not Present
- Downlink DPCH info for each RL	
- Primary CPICH usage for channel estimation	Primary CPICH may be used
- DPCH frame offset	0 chips
- Secondary CPICH info	Not Present
- DL channelisation code	
- Secondary scrambling code	2
- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
- Code number	SF-1(SF is reference to TS34.108 clause 6.10 Parameter Set)
- Scrambling code change	No change
- TPC combination index	0
- SSDT Cell Identity	-a
- Closed loop timing adjustment mode	Not Present
- SCCPCH information for FACH	Not Present

## CELL UPDATE CONFIRM (Step n+2) (3.84 Mcps TDD)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in TS34.108, clause 9, with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 3
RRC State indicator	CELL_DCH
Frequency info	
- CHOICE mode	TDD
- UARFCN (Nt)	Reference to TS34.108 clause 5.1 Test frequencies
Maximum allowed UL TX power	30dBm
CHOICE Mode	TDD
Downlink information for each radio links	
- Primary CCPCH info	
- CHOICE mode	TDD
- CHOICE TDD option	3.84 Mcps TDD
- CHOICE SyncCase	Not Present
- Cell Parameters ID	Not Present
- Block STTD indicator	FALSE
- Downlink DPCH info for each RL	
- CHOICE mode	TDD
- DL CCTrCh List	
- TFCS ID	1
- Time info	
- Activation time	Not Present (default)
- Duration	Not Present (default)
- Common timeslot info	Not Present (default)
- Downlink DPCH timeslots and codes	Not Present (default)
- UL CCTrCh TPC List	Not Present (default)

## CELL UPDATE CONFIRM (Step n+2) (1.28 Mcps TDD)

The contents of CELL UPDATE CONFIRM message is identical as "CELL UPDATE CONFIRM message" as found in TS34.108, clause 9, with the following exceptions:

Information Element	Value/remark
U-RNTI	Same as CELL UPDATE message in step 3
RRC State indicator	CELL_DCH
Frequency info	
- CHOICE mode	TDD
- UARFCN (Nt)	Reference to TS34.108 clause 5.1 Test frequencies
Maximum allowed UL TX power	30dBm
CHOICE Mode	TDD
Downlink information for each radio links	
- Primary CCPCH info	
- CHOICE mode	TDD
- CHOICE TDD option	1.28 Mcps TDD
- TSTD indicator	FALSE
- Cell Parameters ID	Not Present
- Block STTD indicator	FALSE
- Downlink DPCH info for each RL	
- CHOICE mode	TDD
- DL CCTrCh List	
- TFCS ID	1
- Time info	
- Activation time	Not Present (default)
- Duration	Not Present (default)
- Common timeslot info	Not Present (default)
- Downlink DPCH timeslots and codes	Not Present (default)
- UL CCTrCh TPC List	Not Present (default)

## HANDOVER FROM UTRAN FAILURE

Information Element	Value/remark
Message Type RRC transaction identifier	Checked to see if it matches the same value used in the corresponding downlink HANDOVER FROM UTRAN COMMAND –GSM message
Integrity check info	The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE shall be present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs shall be absent.
- Message authentication code	This IE is checked to see if it is present. The value is compared against the XMAC-I value computed by SS.
- RRC Message sequence number	This IE is checked to see if it is present. The value is used by SS to compute the XMAC-I value.
Inter-RAT handover failure -Inter-RAT handover failure cause	physical channel failure
Inter-system message	Not Checked

## 8.3.7.12.5 Test requirement

In step 3 the SS shall receive RRC Status message in the UTRAN cell.

## 8.3.7.13 Inter system handover from UTRAN/To GSM/ success / call under establishment

## 8.3.7.13.1 Definition

## 8.3.7.13.2 Conformance requirement:

When the UE receives an HANDOVER FROM UTRAN COMMAND message from UTRAN the UE shall take the following actions:

- Establish the connection to the other radio access system, by using the contents of the IE "Inter system message". This IE contains candidate/ target cell identifier(s) and radio parameters relevant for the other radio access system.
- For each IE "Remaining radio access bearer", associate the radio access bearer given by the IE "RAB info" to the radio resources in the target system given by the IE "Inter system message". Other information for making the association may be included in the IE "Inter system message" and requirements may be stated in the specifications relevant for the target system [FFS].
- Switch the current call under establishment to the other radio access system.

## Reference

3GPP TS 25.331 clause 8.3.7.3

## Test purpose

To test that the UE supporting both GSM and UTRAN handovers from a UTRAN serving cell to the indicated channel of GSM target cell when the UE is in call establishment phase and receives an HANDOVER FROM UTRAN COMMAND.

To Test that the UE continues the call in GSM cell, after Successful completion of the Handover.

## 8.3.7.13.4 Method of test

## Initial conditions

System Simulator : 1 UTRAN cell.

UE : CC State U10 in cell 1.

## Related ICS/IXIT statement(s)

UE supports both GSM and UTRAN Radio Access Technologies,

UE supports GSM FR,

UE supports UTRAN AMR,

UE supports GSM-P, GSM-E, GSM-DCS, GSM-450, GSM-480.

## Foreseen final state of the UE

The UE is in CC state U10 on cell 1.

## Test Procedure

The SS activates the UTRAN cell and GSM Cell. The UE is triggered to initialise an MO speech call. During the call establishment phase, the SS is configured to not transmit the RLC Acknowledgment for SETUP message. SS configures a dedicated channel in GSM Cell, then sends the UE an HANOVER FROM UTRAN COMMAND indicating the dedicated channel in the target GSM cell. After the UE receives the command it shall configure itself accordingly and switch to the new channel of the GSM cell. The SS checks whether the handover is performed by checking that the UE transmits the HANOVER COMPLETE message to the SS in GSM cell. The SS checks MS correctly retransmits CC SETUP message, that was not acknowledged by UTRAN RLC Layer before the Handover, following completion of the handover to GSM cell.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			To trigger the UE to initialise an MO call
2	→		SETUP	SS does not Acknowledge it
3		SS		The SS starts the GSM cell and configure a dedicated channel SDCCH.
4	←		HANOVER FROM UTRAN COMMAND GSM	Send on cell 1 (UTRAN cell) and the message indicates: the dedicated channel SDCCH.
5	UE			The UE accepts the handover command and switches to the GSM dedicated channel specified in the HANOVER FROM UTRAN COMMAND-GSM
6	→		HANOVER ACCESS	The SS receives this burst on the dedicated channel of cell 2 (GSM cell) It implies that the UE has switched to GSM cell.
7	→		HANOVER ACCESS	
8	→		HANOVER ACCESS	
9	→		HANOVER ACCESS	
10	←		PHYSICAL INFORMATION	
11	→		SABM	
12	←		UA	
13	→		HANOVER COMPLETE	The SS receives the message on the dedicated channel of GSM cell.
14	->		SETUP	The SS receives the message on the dedicated channel of GSM cell.
15	<-		CHANNEL RELEASE	

Specific message contents

#### HANDOVER FROM UTRAN COMMAND-GSM

Information Element	Value/remark
Message Type RRC transaction identifier Integrity check info  - Message authentication code  - RRC Message sequence number Activation time RAB Info Inter-system message - System type - Frequency Band - CHOICE GSM message - Message	Arbitrarily selects one integer between 0 to 3 The presence of this IE is dependent on IXIT statements in TS 34.123-2. If integrity protection is indicated to be active, this IE is present with the values of the sub IEs as stated below. Else, this IE and the sub-IEs are omitted. SS calculates the value of MAC-I for this message and writes to this IE. SS provides the value of this IE, from its internal counter. now Not present  GSM GSM/DCS 1800 Band Single GSM message GSM HANDOVER COMMAND formatted as Variable Length BIT STRING without Length Indicator. The contents of the HANDOVER COMMAND see next table.

#### HANDOVER COMMAND

Same as the HANDOVER COMMAND for M = 4 in clause 26.6.5.2 of GSM 11.10-1 version 8.2.0 Release 1999
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#### 8.3.7.13.5 Test requirement

At step 14 the SS shall receive SETUP message on the dedicated channel of the GSM cell, and at step.

### 8.3.8 Inter system cell reselection to UTRAN

[Editor's note: This test is FFS until R2000 core specification will be defined.]

### 8.3.9 Inter system cell reselection from UTRAN

[Editor's note: This test is FFS until R2000 core specification will be defined.]

## 8.4 Measurement procedure

### 8.4.1 Measurement Control and Report

#### 8.4.1.1 Measurement Control and Report: Intra-frequency measurement for transition from idle mode to CELL\_DCH state

##### 8.4.1.1.1 Definition

##### 8.4.1.1.2 Conformance requirement

Upon transition from idle mode to CELL\_DCH state, the UE shall:

- 1> begin or continue monitoring the list of cells assigned in the IE "intra-frequency cell info list" in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11);
- 1> if the "intra-frequency measurement reporting criteria" IE was included in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11):
  - 2> begin measurement reporting according to the IE.

In CELL\_DCH state, the UE shall:

- 1> transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable MEASUREMENT\_IDENTITY are met for any ongoing measurements that are being performed in the UE.

...

The reporting criteria are fulfilled if either:

- the first measurement has been completed for a newly initiated measurement with periodic reporting; or
- the time period indicated in the stored IE "Periodical reporting criteria" has elapsed since the last measurement report was submitted to lower layers for a given measurement; or
- an event in stored IE "Measurement reporting criteria" was triggered.

For the measurement, which triggered the MEASUREMENT REPORT message, the UE shall:

- 1> set the IE "measurement identity" to the measurement identity, which is associated with that measurement in variable MEASUREMENT\_IDENTITY;
- 1> set the IE "measured results" to include measurements according to the IE "reporting quantity" of that measurement stored in variable MEASUREMENT\_IDENTITY; and
  - 2> if all the reporting quantities are set to "false":
    - 3> not set the IE "measured results".
- 1> set the IE "Measured results" in the IE "Additional measured results" according to the IE "reporting quantity" for all measurements associated with the measurement identities included in the "Additional measurements list" stored in variable MEASUREMENT\_IDENTITY of the measurement that triggered the measurement report; and
  - 2> if more than one additional measured results are to be included:
    - 3> sort them in ascending order according to their IE "measurement identity" in the MEASUREMENT REPORT message.
- 1> if the MEASUREMENT REPORT message was triggered by an event (i.e. not a periodical report):

...

The UE shall:

- 1> transmit the MEASUREMENT REPORT message on the uplink DCCH using either AM or UM RLC according to the stored IE "measurement reporting mode" associated with the measurement identity that triggered the report.

When the MEASUREMENT REPORT message has been submitted to lower layers for transmission:

- 1> the procedure ends.

...

Upon reception of a MEASUREMENT CONTROL message the UE shall perform actions specified in TS 25.331 subclause 8.6 unless otherwise specified below.

The UE shall:

- 1> read the IE "Measurement command";
- 1> if the IE "Measurement command" has the value "setup":
  - 2> store this measurement in the variable MEASUREMENT\_IDENTITY according to the IE "measurement identity", first releasing any previously stored measurement with that identity if that exists;
  - 2> for measurement types "inter-RAT measurement" or "inter-frequency measurement":  
...  
2> for measurement type "UE positioning measurement":  
...  
2> for any other measurement type:
    - 3> if the measurement is valid in the current RRC state of the UE:
      - 4> begin measurements according to the stored control information for this measurement identity.
- 1> if the IE "Measurement command" has the value "modify":
  - 2> for all IEs present in the MEASUREMENT CONTROL message:
    - 3> if a measurement was stored in the variable MEASUREMENT\_IDENTITY associated to the identity by the IE "measurement identity":
      - 4> for measurement types "inter-frequency measurement" that require measurements on a frequency other than the actually used frequency, or that require measurements on another RAT:  
...  
4> for any other measurement type:
        - 5> replace the corresponding information stored in variable MEASUREMENT\_IDENTITY associated to the identity indicated by the IE "measurement identity" with the one received in the MEASUREMENT CONTROL message;
        - 5> resume the measurements according to the new stored measurement control information.
    - 3> otherwise:
      - 4> set the variable CONFIGURATION\_INCOMPLETE to TRUE.
  - 2> for all optional IEs that are not present in the MEASUREMENT CONTROL message:
    - 3> leave the currently stored information elements unchanged in the variable MEASUREMENT\_IDENTITY if not stated otherwise for that IE.
- 1> if the IE "measurement command" has the value "release":  
...  
1> clear the entry for the MEASUREMENT CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS;

## Reference

3GPP TS 25.331 clause 8.4.1.8.1, 8.4.1.3, 8.4.2.2.

### 8.4.1.1.3 Test Purpose

1. To confirm that the UE continues to monitor intra-frequency measurement quantity of the cells listed in System Information Block type 11 or 12 messages, after it has entered CELL\_DCH state from idle mode. When the intra-frequency measurement reporting criteria specified in System Information Block type 11 or 12 messages have been met, it shall report the measurements using MEASUREMENT REPORT message(s).

2. To confirm that the UE terminates monitoring and reporting activities for the cells listed in "intra-frequency cell info list" IE in System Information Block type 11 or 12 messages, after it has received a MEASUREMENT CONTROL message that specifies the measurement type to be "intra-frequency measurement" with the same measurement identity as in System Information Block Type 11 or 12 messages. To confirm that the UE reconfigures the monitoring and reporting activities based on the last MEASUREMENT CONTROL message received.

#### 8.4.1.1.4 Method of test

##### Initial Condition

System Simulator: 3 cells – Cell 1, Cell 2 and Cell 3 are active.

UE: "Registered idle mode on CS" (state 2) or "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

##### Test Procedure

Table 8.4.1.1-1 illustrates the downlink power to be applied for the 3 cells at various time instants of the test execution. Column marked "T0" denotes the initial conditions, while columns marked "T1" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

**Table 8.4.1.1-1**

Parameter	Unit	Cell 1			Cell 2			Cell 3		
		T0	T1	T2	T0	T1	T2	T0	T1	T2
UTRA RF Channel Number		Ch. 1			Ch. 1			Ch. 1		
CPICH Ec	dBm/3.84 MHz	-60	-60	-60	-70	-80	-60	-60	-80	-80

The UE is initially in idle mode and has selected cell 1 for camping. The System Information Block type 11 messages are modified with respect to the default settings to prevent reporting of "Cell synchronisation information" and also to include cell 2 into the monitored neighbour cell list. The key measurement parameters in the modified System Information Block message are as follow: measurement type = "intra-frequency measurement", measurement quantity = "CPICH RSCP", report criteria = "periodic reporting criteria", reporting interval = "64 seconds".

SS prompts the operator to make an outgoing call of a supported traffic class. SS and UE shall execute procedure P3 (for CS service) or P5 (for PS service). Next SS and UE shall execute procedure P7 (for CS service) or P9 (for PS service). Then SS and UE shall execute procedure P11 (for CS service) or P13 (for PS service). The UE shall send a MEASUREMENT REPORT message after reaching CELL\_DCH state, reporting cell 2's CPICH RSCP value. After 64 seconds has passed since SS receives the first MEASUREMENT REPORT message, the UE shall transmit a second MEASUREMENT REPORT message.

SS sends a MEASUREMENT CONTROL message on the downlink DCCH. In this message, SS configures an intra-frequency measurement based on the measurement quantity CPICH RSCP. Parameters used in this message are: measurement identity = "1", report criteria = "event-trigger", event identity = "1f", reporting threshold = "-70 dBm". SS checks to see that no MEASUREMENT REPORT messages are sent within the next 64 seconds (which is due to periodic reporting). SS reconfigures the downlink transmission power settings according to values in column "T1" in table 8.4.1.1-1. The UE shall transmit a MEASUREMENT REPORT message when it detects that the CPICH RSCP of cell 3 has dropped below the threshold value specified in the previous MEASUREMENT CONTROL message.

SS sends then a new MEASUREMENT CONTROL message to add cells 1 and 2 to the list of the cells the UE shall measure. Since the RSCP for cell 2 is below the threshold for event 1f to be triggered, a MEASUREMENT REPORT triggered by cell 2 shall be sent by the UE.

SS reconfigures the downlink transmission power settings according to values in column "T2" in table 8.4.1.1-1. SS sends a new MEASUREMENT CONTROL message on the downlink DCCH. In this message, SS configures an intra-frequency measurement based on the measurement quantity CPICH RSCP. Parameters used in this message are:

measurement identity = "1", report criteria = "event-trigger", event identity = "1B", Reporting range 8db. SS reconfigures the downlink transmission power settings according to values in column "T0" in table 8.4.1.1-1. The UE shall transmit a MEASUREMENT REPORT message when it detects that the condition for event 1b is fulfilled. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

#### Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	System Information Block type 11	The UE is in idle mode and camped onto cell 1. The System Information Block type 11 messages to be transmitted are different from the default settings (see specific message contents)
2		↔	SS executes procedure P3 (clause 7.4.2.1.2) or P5 (clause 7.4.2.2.2) specified in TS 34.108.	
3		↔	SS executes procedure P7 (clause 7.4.2.3.2) or P9 (clause 7.4.2.4.2) specified in TS 34.108.	
4		↔	SS executes procedure P11 (clause 7.4.2.5.2) or P13 (clause 7.4.2.6.2) specified in TS 34.108.	
5		→	Void	
6		→	MEASUREMENT REPORT	SS waits 64 seconds
6a		→	MEASUREMENT REPORT	SS shall receive consecutive MEASUREMENT REPORT messages at 64 seconds interval.
7		←	MEASUREMENT CONTROL	A measurement with "measurement identity" IE set to "1" is assigned, with the IE "CHOICE reporting criteria" set to "intra-frequency measurement reporting criteria". See specific message content for the rest of the message.
8				SS waits for 64 seconds and verifies that no further MEASUREMENT REPORT messages are detected on the uplink DCCH.
9				SS re-adjusts the downlink transmission power settings according to columns "T1" in table 8.4.1.1-1.
10		→	MEASUREMENT REPORT	SS verifies that UE transmits a MEASUREMENT REPORT message triggered by cell 3 and containing report the measured CPICH RSCP value of cell 3.
10a		←	MEASUREMENT CONTROL	A MEASUREMENT CONTROL is sent to the UE to modify the list of the cells the UE shall monitor.
10b		→	MEASUREMENT REPORT	SS verifies that UE transmits a MEASUREMENT REPORT message triggered by cell 2.
11				SS re-adjusts the downlink transmission power settings according to columns "T2" in table 8.4.1.1-2.

Step	Direction		Message	Comment
	UE	SS		
12		←	MEASUREMENT CONTROL	A measurement with "measurement identity" IE set to "1" is assigned, with the IE "CHOICE reporting criteria" set to "intra-frequency measurement reporting criteria". See specific message content for the rest of the message.
13				SS re-adjusts the downlink transmission power settings according to columns "T0" in table 8.4.1.1-3 and waits 5 seconds.
14		→	MEASUREMENT REPORT	SS verifies that UE transmits a MEASUREMENT REPORT message to report occurrence of event 1b.
15		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

### Specific Message Contents

All messages indicated below shall use the same content as described in default message content, with the following exceptions:

System Information Block type 11 (Step 1)

Information Element	Value/remark
SIB12 indicator	FALSE
FACH measurement occasion info	Not Present
Measurement control system information	Not used
- Use of HCS	CPICH RSCP
- Cell selection and reselection quality measure	1
- Intra-frequency measurement system information	Remove no intra-frequency cells
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	0 dB
- CHOICE intra-frequency cell removal	Not Present
- New intra-frequency cells	TRUE
- Intra-frequency cell id	FDD
- Cell info	Set to same code as used for cell 1
- Cell individual offset	Not Present
- Reference time difference to cell	FALSE
- Read SFN Indicator	Not Present
- CHOICE Mode	FDD
- Primary CPICH Info	Set to same code as used for cell 2
- Primary Scrambling Code	Not Present
- Primary CPICH TX power	FALSE
- TX Diversity Indicator	Not Present
- Cell selection and Re-selection	2
- Intra-frequency cell id	0 dB
- Cell info	256 chips
- Cell individual offset	TRUE
- Reference time difference to cell	FDD
- Read SFN Indicator	Set to same code as used for cell 2
- CHOICE Mode	Not Present
- Primary CPICH Info	FALSE
- Primary Scrambling Code	Not Present (Default is 0dB)
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	Not Present
- Cell selection and Re-selection info	+33dBm
- Qoffset1 <sub>s,n</sub>	Not Present
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	FDD
- HCS neighbouring cell information	-20dB
- CHOICE Mode	-115dBm
- Qqualmin	Not Present (Default is 0)
- Qrxlevmin	FDD
- Intra-frequency measurement quantity	CPICH RSCP
- Filter Coefficient	Not Present
- CHOICE Mode	Not Present
- Measurement quantity	Not Present
- Intra-frequency measurement for RACH reporting	Not Present
- Maximum number of reported cells on RACH	Not Present
- Reporting information for state CELL_DCH	No report
- Intra-frequency reporting quantity	FALSE
- Reporting quantities for active set cells	FALSE
- SFN-SFN observed time difference reporting	FALSE
indicator	FALSE
- Cell synchronisation information reporting	FALSE
indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	No report
- SFN-SFN observed time difference reporting	FALSE
indicator	FALSE
- Cell synchronisation information reporting	FALSE
indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE

- Reporting quantities for detected cells	Not present
- Measurement Reporting Mode	Acknowledged mode RLC
- Measurement Report Transfer Mode	Periodical reporting
- Periodical Reporting / Event Trigger Reporting Mode	
- CHOICE report criteria	Periodic reporting criteria
- Amount of reporting	Infinity
- Reporting interval	64 seconds
- Inter-frequency measurement system information	Not present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

## MEASUREMENT REPORT (Step 6 and 6a)

Information Element	Value/remark
Measurement identity	Check to see if set to 1
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 2
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	"Checked to see if set to within an acceptable range"
- Pathloss	Check to see if this IE is present
Measured Results on RACH	Check to see if this IE is absent
Additional Measured results	Check to see if this IE is absent
Event Results	Check to see if this IE is absent

## MEASUREMENT CONTROL (Step 7)

Information Element	Value/remark
Measurement Identity	1
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Event Trigger
Additional measurements list	Not Present
CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove all intra-frequency cells
- New intra-frequency cells	2 new intra-frequency cells
- Intra-frequency cell id	3
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	256 chips
- Read SFN Indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 2
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	Not Present
- Read SFN Indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 1
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell for measurement	Not Present
- Intra-frequency measurement quantity	
- Filter Coefficient	Not Present (Default is 0)
- CHOICE Mode	FDD
- Measurement quantity	CPICH RSCP
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	TRUE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	TRUE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected cells	Not present
- Reporting cell status	Not Present
- Measurement validity	Not present
- CHOICE report criteria	Intra-frequency measurement reporting criteria
- Parameters required for each events	
- Intra-frequency event identity	
- Triggering condition 1	1f
- Triggering condition 2	Monitored set cells
- Reporting range	Not Present
- Cells forbidden to affect reporting range	Not Present
- W	Not Present

- Hysteresis	Not Present
- Threshold used frequency	1 dB
- Reporting deactivation threshold	-70 dBm
- Replacement activation threshold	Not Present
- Time to trigger	Not Present
- Amount of reporting	0 msec
- Reporting interval	Not Present
- Reporting cell status	Not Present
- CHOICE reported cell	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- Maximum number of reported cells	3
DPCH compressed mode status info	Not Present

MEASUREMENT REPORT (Step 10)

Information Element	Value/remark
Measurement identity	Check to see if set to 1
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measurement results	Check to see if measurement results for 2 cells are included (the order in which the different cells are reported is not important)
- Cell measured results	(for cell 1)
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 1
- CPICH Ec/No	Check to see if this IE is present
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
- Cell measured results	(for cell 3)
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is present and that the COUNT-C-SFN frame difference is included in it.
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 3
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Additional Measured Results	Check to see if this IE is absent
Event Results	
- CHOICE event result	Check to see if this IE is set to "Intra-frequency measurement event results"
- Intra-frequency event identity	Check to see if this IE is set to "1f"
- Cell measured event results	
- CHOICE mode	Check to see if this IE is set to "FDD"
- Primary CPICH info	
- Primary Scrambling Code	Check to see if it's the same code for cell 3

## MEASUREMENT CONTROL (Step 10a)

Information Element	Value/remark
Measurement Identity	1
Measurement Command	Modify
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency info list	1 new intra-frequency cells
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	Not Present
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 2
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell for measurement	Not Present
- Intra-frequency measurement quantity	Not Present
- Intra-frequency reporting quantity	Not Present
- Reporting cell status	Not Present
- Measurement validity	Not Present
- CHOICE report criteria	Not Present

## MEASUREMENT REPORT (Step 10b)

Information Element	Value/remark
Measurement identity	Check to see if set to 1
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measurement results	Check to see if measurement results for 3 cells are included (the order in which the different cells are reported is not important)
- Cell measured results	(for cell 1)
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 1
- CPICH Ec/No	Check to see if this IE is present
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
- Cell measured results	(for cell 2)
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is present and that the COUNT-C-SFN frame difference is included in it.
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 2
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
- Cell measured results	(for cell 3)
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is present and that the COUNT-C-SFN frame difference is included in it.
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 3
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Additional Measured Results	Check to see if this IE is absent
Event Results	
- CHOICE event result	Check to see if this IE is set to "Intra-frequency measurement event results"
- Intra-frequency event identity	Check to see if this IE is set to "1f"
- Cell measured event results	
- CHOICE mode	Check to see if this IE is set to "FDD"
- Primary CPICH info	
- Primary Scrambling Code	Check to see if it's the same code for cell 2

## MEASUREMENT CONTROL (Step 12)

Information Element	Value/remark
Measurement Identity	1
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Event Trigger
Additional measurements list	Not Present
CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove all intra-frequency cells
- New intra-frequency cells	2 new intra-frequency cells
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	Not Present
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 1
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	256 chips
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 2
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cells for measurement	Not Present
- Intra-frequency cell id	
- Intra-frequency measurement quantity	
- Filter Coefficient	Not Present (Default is 0)
- Measurement quantity	CPICH RSCP
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected cells	Not present
- Reporting cell status	Not Present
- Measurement validity	Not present
- CHOICE report criteria	Intra-frequency measurement reporting criteria
- Parameters required for each events	
- Intra-frequency event identity	1b
- Triggering condition 1	Monitored Cells
- Triggering condition 2	Not Present
- Reporting range	8 dB
- Cells forbidden to affect reporting range	Not Present
- W	0

- Hysteresis	0 dB
- Threshold used frequency	Not Present
- Reporting deactivation threshold	Not Present
- Replacement activation threshold	Not Present
- Time to trigger	5000 msec
- Amount of reporting	Not Present
- Reporting interval	Not Present
- Reporting cell status	Not Present
DPCH compressed mode status info	Not Present

#### MEASUREMENT REPORT (Step 14)

Information Element	Value/remark
Measurement identity	Check to see if set to 1
Measured Results	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Additional Measured Results	Check to see if this IE is absent
Event Results	
- CHOICE event result	
- Intra-frequency event identity	Check to see if this IE is set to "1b"
- Cell measured event results	
- CHOICE mode	Check to see if this IE is set to "FDD"
- Primary CPICH info	
- Primary Scrambling Code	Check to see if it's the same code for cell 2

#### 8.4.1.1.5 Test Requirement

After step 5 the UE shall start to transmit 2 MEASUREMENT REPORT messages at 64 seconds interval. The measurement quantity "CPICH RSCP" of cell 2 shall be reported in these messages.

After step 7 the UE shall not transmit any MEASUREMENT REPORT messages within 64 seconds after SS has transmitted the MEASUREMENT CONTROL message in step 7.

After step 9 the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, to report that the CPICH RSCP value for cell 2 has dropped below the threshold stated in the MEASUREMENT CONTROL message transmitted by the SS in step 7. This MEASUREMENT REPORT message shall also contain IE "Event results", indicating the triggering of event '1f' by cell 3. It shall also contain the measured CPICH RSCP value and cell synchronisation information for cell 3, and the measured CPICH Ec/No and RSCP values for cell 1.

After step 10a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH to report that the CPICH RSCP value for cell 2 has dropped below the threshold stated in the MEASUREMENT CONTROL message transmitted by the SS in step 7. The MEASUREMENT REPORT message shall contain the measured CPICH RSCP value and cell synchronisation information for cell 2 and cell 3, as well as the measured CPICH Ec/No and RSCP for cell 1. The IE "Event results" in this message shall indicate that cell 2 has triggered the event.

After step 13, the UE shall transmit a MEASUREMENT REPORT message containing IE "Event results", indicating the triggering of event '1b' by cell 2. The MEASUREMENT REPORT message shall not contain any measured results.

#### 8.4.1.2 Measurement Control and Report: Inter-frequency measurement for transition from idle mode to CELL\_DCH state

##### 8.4.1.2.1 Definition

##### 8.4.1.2.2 Conformance requirement

Upon transition from idle mode to CELL\_DCH state, the UE shall:

1> stop monitoring the list of cells assigned in the IE "inter-frequency cell info list" in System Information Block type 12 (or System Information Block type 11).

Upon reception of a MEASUREMENT CONTROL message the UE shall:

- 1> read the IE "Measurement command";
- 1> if the IE "Measurement command" has the value "setup":
  - 2> store this measurement in the variable MEASUREMENT\_IDENTITY according to the IE "measurement identity", first releasing any previously stored measurement with that identity if that exists;
  - 2> for measurement types "inter-frequency measurement":
    - 3> if, according to its measurement capabilities, the UE requires compressed mode to perform that measurement type and a compressed mode pattern sequence with an appropriate measurement purpose is simultaneously activated by the IE "DPCH compressed mode status info"; or
    - 3> if the IE "Inter-frequency cell info list" for that measurement identity is empty; or
    - 3> if, according to its measurement capabilities, the UE does not require compressed mode to perform the measurements:
  - 4> if the measurement is valid in the current RRC state of the UE:
    - 5> begin measurements according to the stored control information for this measurement identity.

If the IE "Reporting Cell Status" is not received for inter-frequency measurement, the UE shall:

- 1> exclude the IE "Cell Measured Results" for any cell in MEASUREMENT REPORT.

## Reference

3GPP TS 25.331 clauses 8.4.1.3, 8.4.1.8.2 and 8.6.7.9

### 8.4.1.2.3 Test Purpose

1. To confirm that the UE stops monitoring the list of cells assigned in the IE "inter-frequency cell info" in System Information Block type 11 messages, after it enters CELL\_DCH state from idle mode.
2. To confirm that the UE starts to perform inter-frequency measurement and related reporting activities, when it receives a MEASUREMENT CONTROL message with the "DPCH compress mode status info" IE indicating that a stored compressed mode pattern sequence be simultaneously activated.
3. To confirm that the UE excludes the IE "cell measured results" for any cells in the MEASUREMENT REPORT messages, after it receives a MEASUREMENT CONTROL message with "Reporting cell status" IE omitted.

Note that this test case is only applicable in case the UE requires compressed mode to perform inter-frequency measurements.

### 8.4.1.2.4 Method of test

#### Initial Condition

System Simulator: 2 cells – Cell 1 and cell 4 are active..

UE: "Registered idle mode on CS" (state 2) or "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

#### Related ICS/IXIT statements

- Compressed mode required      yes/no

#### Test Procedure

Table 8.4.1.2-1 illustrates the downlink power to be applied for the 2 cells.

Table 8.4.1.2-1

Parameter	Unit	Cell 1	Cell 4
UTRA RF Channel Number		Ch. 1	Ch. 2
CPICH Ec	dBm/ 3.84 MHz	-60	-75

The UE is initially in idle mode and has selected cell 1 for camping.

SS prompts the operator to make an outgoing call for one of the traffic classes supported by the UE. SS and UE shall execute procedure P3 (for CS service) or P5 (for PS service). The RRC CONNECTION SETUP message used in procedure P3 or P5 should contain IE "DPCH compressed mode info", activating the transmission pattern gap sequence with TGPSI=1 only if UE requires compressed mode. Next SS and UE shall execute procedure P7 (for CS service) or P9 (for PS service). Then SS and UE shall execute procedure P11 (for CS service) or P13 (for PS service). The UE shall not transmit any MEASUREMENT REPORT messages, which pertain to measurement readings for cells listed in the IE "inter-frequency cell info list" in System Information Block Type 11.

If UE requires compressed mode, SS sends PHYSICAL CHANNEL RECONFIGURATION message on the downlink DCCH, specifying that compressed mode sequence pattern with TGPSI=1 be deactivated. The UE shall reply with PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH if UE configures according to the PHYSICAL CHANNEL RECONFIGURATION message.

SS sends MEASUREMENT CONTROL message on the downlink DCCH. In this message, SS requests UE to perform inter-frequency measurement with periodic reporting of CPICH RSCP values for cell 4. If UE requires compressed mode, IE "DPCH compressed status info" IE to activate the transmission gap pattern sequence with TGPSI = 1 is included in this message.

The UE shall start inter-frequency measurement and reporting for cell 4's CPICH RSCP values. It shall report this measurement result by transmitting MEASUREMENT REPORT messages on uplink DCCH periodically at 16 seconds interval.

SS sends MEASUREMENT CONTROL message on the downlink DCCH omitting the IE "Reporting cell status". The UE shall send MEASUREMENT REPORT messages on the uplink DCCH, with the IE "Cell measured results" excluded in these messages. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

#### Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	System Information Block type 11	The UE is idle mode and camped onto cell 1. System Information Block Type 11 to be transmitted is different from the default settings (see specific message contents)
2		↔	SS executes procedure P3 (clause 7.4.2.1.2) or P5 (clause 7.4.2.2.2) specified in TS 34.108.	SS prompts the operator to make an outgoing call.
3		↔	SS executes procedure P7 (clause 7.4.2.3.2) or P9 (clause 7.4.2.4.2) specified in TS 34.108.	
4		↔	SS executes procedure P11 (clause 7.4.2.5.2) or P13 (clause 7.4.2.6.2) specified in TS 34.108.	
5			Void	

6			SS checks to see that no MEASUREMENT REPORT messages are received. If compressed mode is not required (refer ICS/IXIT), then goto step 9.
7	←	PHYSICAL CHANNEL RECONFIGURATION	Existing compressed mode sequence pattern is deactivated in this message.
8	→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall remain in CELL_DCH state.
9	←	MEASUREMENT CONTROL	SS requests UE to start inter-frequency measurement for cell 4, and performing periodic reporting for cell 4's CPICH RSCP. See specific message content below.
10	→	MEASUREMENT REPORT	UE shall report cell 4's CPICH RSCP reading periodically.
11	←	MEASUREMENT CONTROL	SS changes the reporting criteria of cell 4 to 'event 2c'. "Reporting cell status" IE in this message is omitted.
12	→	MEASUREMENT REPORT	SS monitors the uplink DCCH to make sure that only 1 such message is received almost immediately after step 11. This message shall not contain IE "Inter-frequency cell measured results"
13	↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

### Specific Message Content

All messages indicated below shall use the same content as described in default message content, with the following exceptions:

## System Information Block type 11 (Step 1)

Information Element	Value/remark
SIB12 indicator	FALSE
FACH measurement occasion info	Not Present
Measurement control system information	
-Use of HCS	Not used
-Cell selection and reselection quality measure	CPICH Ec/No
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	Not present
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency Cell
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	Not present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Primary scrambling code of cell 1
- Primary CPICH Tx power	Not present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	Not present
- Cells for measurement	Not present
- Intra-frequency measurement quantity	Not present
- Intra-frequency reporting quantity for RACH reporting	
- Maximum number of reported cells on RACH	Not present
- Reporting information for state CELL_DCH	Not present
- Inter-frequency measurement system information	
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency cells	
- Inter-frequency cell id	4
- Frequency info	
- UARFCN uplink (Nu)	Set to the uplink UARFCN of cell 4
- UARFCN downlink (Nd)	Set to the downlink UARFCN of cell 4
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 4
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and re-selection info	
- Qoffset1 <sub>s,n</sub>	0 dB
- Qoffset2 <sub>s,n</sub>	Not Present
- Maximum allowed UL TX power	0 dBm
- HCS neighbouring cell information	Not Present
- CHOICE Mode	FDD
- Qqualmin	-20 dB
- Qrxlevmin	-115dBm
-Cells for measurement	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

## RRC CONNECTION SETUP (Step 2)

If UE do not require compressed mode, use the message found in TS 34.108 clause 9.

If UE requires compressed mode, use the message found in TS 34.108 clause 9, with the following exceptions:

Information Element	Value/remark
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	
- Timing Indication	Initialise
- CFN-targetSFN frame offset	Not Present
- Downlink DPCH power control information	
- DPC mode	Single TPC
- CHOICE Mode	FDD
- Power offset $P_{Pilot-DPCH}$	0
- DL rate matching restriction information	Not Present
- Spreading factor	Refer to the parameter set in TS 34.108
- Fixed or flexible position	Flexible
- TFCI existence	FALSE
- Number of bits for Pilot bits (SF=128, 256)	Refer to the parameter set in TS 34.108
- DPCH compressed mode info	
- TGPSI	1
- TGPS Status Flag	Activate
- TGCFN	$(Current\ CFN + (256 - TTI/10msec)) \bmod 256$
- Transmission gap pattern sequence	
configuration parameters	
- TGMP	FDD Measurement
- TGPRC	Infinity
- TGSN	4
- TGL1	7
- TGL2	Not Present
- TGD	0
- TGPL1	3
- TGPL2	Not Present
- RPP	Mode 0
- ITP	Mode 0
- CHOICE UL/DL Mode	UL and DL or DL only depending the on UE capability
- Downlink compressed mode method	SF/2 (or Not present depending on the UE capability)
- Uplink compressed mode method	SF/2 or Not present depending on the UE capability
- Downlink frame type	B
- DeltaSIR1	2.0
- DeltaSIRAfter1	1.0
- DeltaSIR2	Not Present
- DeltaSIR2After2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	Not Present
- TX Diversity Mode	None
- SSDT information	Not Present
- Default DPCH Offset Value	0
Downlink information for each radio link list	
- Downlink information for each radio link	
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Reference to 34.108
- PDSCH with SHO DCH info	Not Present
- PDSCH code mapping	Not Present
- Downlink DPCH info for each RL	
- Primary CPICH usage for channel estimation	Primary CPICH can be used
- DPCH frame offset	Set to value: Default DPCH Offset value mod 38400
- Secondary CPICH info	Not Present
- DL Channelisation code	
- Secondary scrambling code	1
- Spreading factor	Reference to 34.108
- Code number	0
- Scrambling code change	No code change
- TPC combination index	0
- SSDT Cell identity	Not present
- Closed loop timing adjustment mode	Not present

SCCPCH information for FACH	Not present
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### PHYSICAL CHANNEL RECONFIGURATION (Step 7)

Use the same message sub-type in Annex A titled "Non speech in CS" or "Speech in CS" or "Packet to CELL\_DCH from CELL\_DCH in PS", with the following exceptions:

Information Element	Value/remark
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	
- Timing Indication	Maintain
- Downlink DPCH power control information	
- DPC mode	0 (single)
- CHOICE mode	FDD
- Power offset $P_{\text{Pilot-DPCH}}$	0
- DL rate matching restriction information	Not Present
- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
- Fixed or Flexible Position	Reference to TS34.108 clause 6.10 Parameter Set
- TFCI existence	Reference to TS34.108 clause 6.10 Parameter Set
- Number of bits for Pilot bits (SF=128,256)	Reference to TS34.108 clause 6.10 Parameter Set
- DPCH compressed mode info	
- Transmission gap pattern sequence	
- TGPSI	1
- TPGS status Flag	Deactivate
- TGCFN	Not Present
- Transmission gap pattern sequence configuration parameters	Not Present
- TX Diversity mode	None
- SSDT information	Not Present
- Default DPCH Offset Value	0
Downlink information per radio link list	Not Present

### MEASUREMENT CONTROL (Step 9)

If UE requires compressed mode,

Information Element	Value/remark
Measurement Identity	1
Measurement Command	Setup
Measurement Reporting Mode	Acknowledged Mode RLC
- Measurement Reporting Transfer Mode	Periodical reporting
- Periodical Reporting / Event Trigger Reporting Mode	
Additional measurements list	Not Present
CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency info list	
- Inter-frequency cell id	4
- Frequency info	
- UARFCN uplink (Nu)	UARFCN of the uplink frequency for cell 4
- UARFCN downlink (Nd)	UARFCN of the downlink frequency for cell 4
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	Not Present
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 4
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cells for measurement	Not Present
- Inter-frequency measurement quantity	
- CHOICE reporting criteria	Inter-frequency reporting criteria
- Filter Coefficient	0
- Measurement quantity for frequency quality estimate	CPICH RSCP
- Inter-frequency reporting quantity	
- UTRA Carrier RSSI	FALSE
- Frequency quality estimate	FALSE
- Non frequency related cell reporting quantities	
- SFN-SFN observed time difference reporting	No report
indicator	
- Cell synchronisation information reporting	FALSE
indicator	
- Cell Identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting cell status	
- CHOICE reported cell	Report cell within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- Maximum number of reported cells	2
- Measurement validity	Not present
- Inter-frequency set update	Not present
- CHOICE report criteria	Periodic reporting criteria
- Amount of reporting	Infinity
- Reporting interval	16 seconds
DPCH compressed mode status info	
TGPS reconfiguration CFN	$(\text{Current CFN} + (256 - \text{TTI}/10\text{msec})) \bmod 256$
Transmission gap pattern sequence	
- TGPSI	1
- TGPS Status Flag	Activate
- TGCFN	$(\text{Current CFN} + (256 - \text{TTI}/10\text{msec})) \bmod 256$

If UE do not require compressed mode,

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Event Trigger
Additional measurements list	Not Present
CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency info list	
- Inter-frequency cell id	4
- Frequency info	
- UARFCN uplink (Nu)	UARFCN of the uplink frequency for cell 4
- UARFCN downlink (Nd)	UARFCN of the downlink frequency for cell 4
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 4
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cells for measurement	
- Inter-frequency cell id	4
- Inter-frequency measurement quantity	
- CHOICE reporting criteria	Inter-frequency reporting criteria
- Filter Coefficient	0
- Measurement quantity for frequency quality estimate	CPICH RSCP
- Inter-frequency reporting quantity	
- UTRA Carrier RSSI	FALSE
- Frequency quality estimate	FALSE
- Non frequency related cell reporting quantities	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell Identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting cell status	
- CHOICE reported cell	Report cell within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- Maximum number of reported cells	2
- Measurement validity	Not present
- Inter-frequency set update	Not present
- CHOICE report criteria	Periodic reporting criteria
- Amount of reporting	Infinity
- Reporting interval	16 seconds
DPCH compressed mode status info	Not Present

## MEASUREMENT REPORT (Step 10)

Information Element	Value/remark
Measurement identity	Check to see if set to 1
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-frequency measured results list"
- Inter-frequency measurement results	
- Frequency info	
- UARFCN (uplink)	Check to see if set to the UARFCN of the uplink frequency for cell 4
- UARFCN (downlink)	Check to see if set to the UARFCN of the downlink frequency for cell 4
- UTRA carrier RSSI	Check to see if it is absent
- Inter-frequency cell measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if it is absent
- Cell synchronisation information	Check to see if it is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if set to the same code for cell 4
- CPICH Ec/No	Check to see if it is absent
- CPICH RSCP	Check to see if it is present
- Pathloss	Check to see if it is absent
Measured Results on RACH	Check to see if it is absent
Additional Measured results	Check to see if it is absent
Event Results	Check to see if it is absent

## MEASUREMENT CONTROL (Step 11)

Information Element	Value/remark
Measurement Identity	1
Measurement Command	Set up
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Event Trigger
Additional measurements list	Not Present
CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency info list	
- Inter-frequency cell id	4
- Frequency info	
- UARFCN uplink (Nu)	UARFCN of the uplink frequency for cell 4
- UARFCN downlink (Nd)	UARFCN of the downlink frequency for cell 4
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	Not Present
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 4
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cells for measurement	Not Present
- Inter-frequency measurement quantity	
- CHOICE reporting criteria	Inter-frequency reporting criteria
- Filter Coefficient	0
- Measurement quantity for frequency quality estimate	CPICH RSCP
- Inter-frequency reporting quantity	
- UTRA Carrier RSSI	FALSE
- Frequency quality estimate	FALSE
- Non frequency related cell reporting quantities	
- SFN-SFN observed time difference reporting	No report
indicator	
- Cell synchronisation information reporting	FALSE
indicator	
- Cell Identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting cell status	Not Present
- Measurement validity	Not present
- Inter-frequency set update	
-UE Autonomous update mode	On with no reporting
-Non autonomous update mode	Not Present
- CHOICE report criteria	Inter-frequency measurement reporting criteria
- Parameters required for each event	
- Inter-frequency event identity	2c
- Threshold used frequency	Not Present
- W used frequency	Not Present
- Hysteresis	0.5 dB
- Time to trigger	0 milliseconds
- Reporting cell status	Not Present
- Parameters required for each non-used frequency	
- Threshold non used frequency	-85 dBm
- W non used frequency	0
DPCH compressed mode status info	Not Present

## MEASUREMENT REPORT (Step 12)

Information Element	Value/remark
Measurement identity	Check to see if set to 1
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-frequency measured results list"
- Inter-frequency measurement results	
- Frequency info	
- UARFCN (uplink)	Check to see if set to the UARFCN of the uplink frequency for cell 4
- UARFCN (downlink)	Check to see if set to the UARFCN of the downlink frequency for cell 4
- UTRA carrier RSSI	Check to see if it is absent
- Inter-frequency cell measurement results	Check to see if it is absent
Measured Results on RACH	Check to see if it is absent
Additional Measured Results	Check to see if it is absent
Event Results	
- CHOICE event result	Check to see if this IE is set to "Intra-frequency measurement event results"
- Inter-frequency event identity	Check to see if this IE is set to "2c"
- Inter-frequency cells	
- Frequency info	
- UARFCN (uplink)	Check to see if set to the UARFCN of the uplink frequency for cell 4
- UARFCN (downlink)	Check to see if set to the UARFCN of the downlink frequency for cell 4
- Non frequency related measurement event results	
- CHOICE Mode	Check to see if set to "FDD"
- Primary CPICH info	
- Primary Scrambling Code	Check to see if set to the same code as cell 4

## 8.4.1.2.5 Test Requirement

After step 5 the UE shall not transmit any MEASUREMENT REPORT messages pertaining to the measurement of CPICH RSCP of cell 4.

If UE requires compressed mode, after step 7, UE shall transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on uplink DCCH using AM RLC.

After step 9 the UE shall transmit MEASUREMENT REPORT messages on uplink DCCH, reporting cell 4's CPICH RSCP value at periodic time interval of 16 seconds in "inter-frequency cell measurement results" IE.

After step 11 the UE shall transmit only 1 MEASUREMENT REPORT message on the uplink DCCH. In this message, IE "inter-frequency cell measured results" shall be absent.

## 8.4.1.3 Measurement Control and Report: Intra-frequency measurement for transition from idle mode to CELL\_FACH state

## 8.4.1.3.1 Definition

## 8.4.1.3.2 Conformance requirement

Upon transition from idle mode to CELL\_FACH state, the UE shall:

- 1> begin or continue monitoring cells listed in the IE "intra-frequency cell info list" received in System Information Block type 12 (or System Information Block type 11).

In CELL\_FACH state, the UE shall:

- 1> include a measurement report in the IE "Measured results on RACH", as specified in the IE "Intra-frequency reporting quantity for RACH reporting" and the IE "Maximum number of reported cells on RACH" in System

Information Block type 12 (or "System Information Block Type 11" if "System Information Block Type 12" is not being broadcast);

- 1> include in the IE "Measured results on RACH" all requested reporting quantities for cells for which measurements are reported.

Upon transition from CELL\_FACH to CELL\_DCH state, the UE shall:

- 1> retrieve each set of measurement control information of measurement type "intra-frequency" stored in the variable MEASUREMENT\_IDENTITY;
- 1> if the IE "measurement validity" for a measurement has been assigned the value "CELL\_DCH":
  - 2> resume the measurement reporting.
- 1> if no intra-frequency measurements applicable to CELL\_DCH state are stored in the variable MEASUREMENT\_IDENTITY:
  - 2> continue monitoring the list of neighbouring cells assigned in the IE "intra-frequency cell info list" in System Information Block type 12 (or System Information Block type 11);
  - 2> if the IE "intra-frequency measurement reporting criteria" was included in System Information Block type 12 (or System Information Block type 11):
    - 3> send the MEASUREMENT REPORT message when reporting criteria in IE "Reporting information for state CELL\_DCH" are fulfilled.

## Reference

3GPP TS 25.331, clause 8.4.1.9.1, 8.4.1.7.1, 8.4.2.2.

### 8.4.1.3.3 Test Purpose

1. To confirm that the UE begins or continues to monitor cells listed in IE "intra-frequency cell info list" of System Information Block type 11 or 12 messages after it has entered CELL\_FACH state from idle mode.
2. To confirm that the UE applies the reporting criteria stated in "intra-frequency measurement reporting criteria" IE in System Information Block Type 11 or 12 in a subsequent transition to CELL\_DCH state.
3. To confirm that the UE reports measured results on RACH messages, if it receives IE "Intra-frequency reporting quantity for RACH reporting" and IE "Maximum number of reported cells on RACH" from System Information Block Type 11 or 12 upon a transition from idle mode to CELL\_FACH state.

### 8.4.1.3.4 Method of test

#### Initial Condition

System Simulator: 2 cells. Cell 1 and cell 2 are active.

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

#### Test Procedure

Table 8.4.1.3-1 illustrates the downlink power to be applied for the 2 cells in this test case.

Table 8.4.1.3-1

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel Number		Ch. 1	Ch. 1
CPICH Ec	dBm/ 3.84 MHz	-60	-70

The UE is initially in idle mode and camps on cell 1. The System Information Block type 11 are modified compared to the default settings to prevent reporting of "Cell synchronisation information" and also to include cell 2 into the IE "intra-frequency cell info list". The key measurement parameters are as follow: measurement type = "intra-frequency measurement", measurement quantity = "CPICH RSCP", reporting mode = "event reporting". In the System Information Block type 11 messages, reporting of CPICH RSCP is also required for intra-frequency reporting when transmitting RACH messages on cell 1.

SS prompts the operator to make an outgoing call for one of the traffic classes supported by the UE. SS and UE shall execute procedure P6. Next SS and UE shall execute procedure P10. Then SS and UE shall execute procedure P14. SS starts timer T305 and waits until timer T305 expires, the UE shall send a CELL UPDATE message on the CCCH which includes the measured value of cell 1's CPICH RSCP in IE "Measured results on RACH". SS then replies with CELL UPDATE CONFIRM message on the downlink DCCH, without changing the physical channel resources.

SS transmits PHYSICAL CHANNEL RECONFIGURATION message, and allocates dedicated physical channels to the UE. The UE shall transit to CELL\_DCH state and then send a MEASUREMENT REPORT message, correctly stating the measurement identity. The measurement identity indicated shall match the value that was previously broadcast on System Information Block type 11 messages when the UE was still in idle mode. The IE "Measured results" in the MEASUREMENT REPORT messages shall contain measured values of cell 2's CPICH RSCP.

#### Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	System Information Block type 1, System Information Block type 11	The UE is in idle mode and camps onto cell 1. System Information Block type 1 and 11 to be transmitted are different from the default settings (see specific message contents)
2		↔	SS executes procedure P6 (clause 7.4.2.2.2) specified in TS 34.108.	SS prompts the test operator to make an outgoing call.
3		↔	SS executes procedure P10 (clause 7.4.2.4.2) specified in TS 34.108.	
4		↔	SS executes procedure P14 (clause 7.4.2.6.2) specified in TS 34.108.	
5			Void	
6				SS monitors the uplink DCCH to confirm that no MEASUREMENT REPORT messages are detected. SS waits for 5 minutes (for the expiry of T305 timer).
7		→	CELL UPDATE	This message shall contain IE "Measured results on RACH" reporting the measured CPICH RSCP for cell 1.
8		←	CELL UPDATE CONFIRM	SS does not change the physical channel configurations.

9	←	PHYSICAL CHANNEL RECONFIGURATION	SS assigns dedicated physical resources.
10	→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall transit to CELL_DCH state.
11	→	MEASUREMENT REPORT	UE shall begin to report cell 2's CPICH RSCP value periodically at 16 seconds interval. The measurement identity shall match the one that is broadcast for use in CELL_DCH in SIB11 in step 1.

## Specific Message Content

## System Information Block type 1 (Step 1)

Information Element	Value/Remarks
UE Timers and constants in connected mode - T305	5 minutes.

System Information Block type 11 (Step 1)

Information Element	Value/remark
SIB12 indicator	FALSE
FACH measurement occasion info	Not Present
Measurement control system information	Not used
- Use of HCS	CPICH RSCP
- Cell selection and reselection quality measure	5
- Intra-frequency measurement system information	Remove no intra-frequency cells
- Intra-frequency measurement identity	1
- Intra-frequency cell info list	0 dB
- CHOICE intra-frequency cell removal	Not present
- New intra-frequency cells	FALSE
- Intra-frequency cell id	FDD
- Cell info	Set to same code as used for cell 1
- Cell individual offset	Not Present
- Reference time difference to cell	FALSE
- Read SFN Indicator	FDD
- CHOICE mode	Set to same code as used for cell 2
- Primary CPICH Info	Not Present
- Primary Scrambling Code	FALSE
- Primary CPICH TX power	Not present
- TX Diversity Indicator	2
- Cell selection and Re-selection info	0 dB
- Intra-frequency cell id	Not Present
- Cell info	TRUE
- Cell individual offset	FDD
- Reference time difference to cell	Set to same code as used for cell 2
- Read SFN Indicator	Not Present
- CHOICE mode	FALSE
- Primary CPICH Info	Not Present
- Primary Scrambling Code	FALSE
- Primary CPICH TX power	Not Present (Default is 0 dB)
- TX Diversity Indicator	Not Present
- Cell selection and Re-selection info	Not Present
- Qoffset1 <sub>s,n</sub>	Not Present
- Qoffset2 <sub>s,n</sub>	0 dBm
- Maximum allowed UL TX power	Not Present
- HCS neighbouring cell information	FDD
- CHOICE Mode	-20dB
- Qqualmin	-115dBm
- Qrxlevmin	0
- Intra-frequency Measurement quantity	FDD
- Filter Coefficient	CPICH RSCP
- CHOICE Mode	CPICH RSCP
- Measurement quantity	No report
- Intra-frequency measurement for RACH reporting	CPICH RSCP
- SFN-SFN observed time difference	Current cell
- Reporting quantity	No report
- Maximum number of reported cells on RACH	No report
- Reporting information for state CELL_DCH	FALSE
- Intra-frequency reporting quantity	FALSE
- Reporting quantities for active set cells	FALSE
- SFN-SFN observed time difference reporting	FALSE
- SFN-SFN observed time difference reporting	No report
indicator	FALSE
- Cell synchronisation information reporting	FALSE
indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	No report
- SFN-SFN observed time difference reporting	No report
indicator	TRUE
- Cell synchronisation information reporting	FALSE
indicator	FALSE
- Cell identity reporting indicator	FALSE

- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected set cells	Not present
- Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged mode RLC
- Periodic Reporting/Event Trigger Reporting Mode	Event trigger
- CHOICE report criteria	Intra-frequency measurement reporting criteria
- Parameters required for each event	
- Intra-frequency event identity	1a
- Triggering condition 1	Not Present
- Triggering condition 2	Monitored set cells
- Reporting Range Constant	15 dB
- Cells forbidden to affect reporting range	Not Present
- W	0.0
- Hysteresis	1.0 dB
- Threshold used frequency	Not Present
- Reporting deactivation threshold	0
- Replacement activation threshold	Not Present
- Time to trigger	60 ms
- Amount of reporting	Infinity
- Reporting interval	16 seconds
- Reporting Cell Status	
- CHOICE reported cell	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- Maximum number of reported cells	2
- Inter-frequency measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

CELL UPDATE (Step 7)

Information Element	Value/remark
U-RNTI	Check to see if set to same U-RNTI value assigned in the execution of procedure P6.
START list	Checked to see if this IE is present
AM_RLC error indication(RB2, RB3 or RB4)	FALSE
AM_RLC error indication(RB>4)	FALSE
Cell update cause	Check to see if set to 'Periodical cell update'
Failure cause	Check to see if this IE is absent
Measured results on RACH	
- Measurement result for current cell	
- CHOICE measurement quantity	Check to see if set to 'CPICH RSCP'
- CPICH RSCP	Checked to see if set to within an acceptable range.
- Measurement results for monitored cells	Checked to see if this IE is absent.

PHYSICAL CHANNEL RECONFIGURATION (Step 9)

Use the same message sub-type found in [9] TS 34.108 clause 9, which is entitled "Packet to CELL\_DCH from CELL\_FACH".

## MEASUREMENT REPORT (Step 11)

Information Element	Value/remark
Measurement identity	Check to see if set to 5
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is present and if the reported cell synchronisation information is correct
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 2
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	Check to see if it's the same code for cell 1
- Primary Scrambling Code	Check to see if this IE is absent
- CPICH Ec/No	Check to see if this IE is present
- CPICH RSCP	Check to see if this IE is absent
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Event Results	
- CHOICE event result	Check to see if set to "Intra-frequency measurement event results"
- Intra-frequency event identity	Check to see if set to "1a"
- Cell measurement event results	
- CHOICE Mode	Check to see if set to "FDD"
- Primary CPICH info	
- Primary Scrambling Code	Check to see if set to the scrambling code of cell 2

## 8.4.1.3.5 Test Requirement

After step 5 the UE shall not transmit any MEASUREMENT REPORT messages on the uplink DCCH.

After step 6 the UE shall initiate cell update procedure by transmitting CELL UPDATE message on CCCH. In this message, IE "cell update cause" shall be set to "periodic cell update". It shall include IE "measured results on RACH", containing the measurement value for cell 1's CPICH RSCP.

After step 10 the UE shall transmit MEASUREMENT REPORT messages at 16 seconds interval. In these messages, cell 2's CPICH RSCP value shall be reported in IE "Measured results". The IE "measurement identity" in this message shall match the IE "Intra-frequency measurement identity" found in System Information Block type 11 messages transmitted in step 1. The MEASUREMENT REPORT messages shall also contain IE "Event results", indicating that intra-frequency event "1a" has triggered in the UE.

## 8.4.1.4 Measurement Control and Report: Inter-frequency measurement for transition from idle mode to CELL\_FACH state

## 8.4.1.4.1 Definition

## 8.4.1.4.2 Conformance requirement

Upon transition from idle mode to CELL\_FACH state, the UE shall:

- 1> begin or continue monitoring cells listed in the IE "inter-frequency cell info list" received in System Information Block type 12 (or System Information Block type 11);

## Reference

3GPP TS 25.331, clause 8.4.1.9.2

## 8.4.1.4.3 Test Purpose

1. To confirm that the UE begins to monitor the list of cells assigned in the IE "inter-frequency cell info list" in System Information Block type 11 or 12 messages, after it enters CELL\_FACH state from idle mode. However, it shall not transmit any MEASUREMENT REPORT messages to report measured results for inter-frequency cells.

## 8.4.1.4.4 Method of test

## Initial Condition

System Simulator: 2 cells – Cell 1 and cell 4 are active.

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

## Test Procedure

Table 8.4.1.4-1 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. Columns marked "T0" denote the initial conditions, while columns marked "T1" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

**Table 8.4.1.4-1**

Parameter	Unit	Cell 1		Cell 4	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/ 3.84 MHz	-60	-75	-75	-60

The UE is initially at idle mode and has selected cell 1 for camping. The System Information Block type 11 messages are modified with respect to the default settings to prevent reporting of "Cell synchronisation information" and also to include cell 4 into the "inter-frequency cell list" IE.

SS prompts the operator to make an outgoing call of a supported traffic class. SS and UE shall execute procedure P6. Next SS and UE shall execute procedure P10. Then SS and UE shall execute procedure P14. The UE shall not transmit any MEASUREMENT REPORT messages, which pertain to measurement readings for inter-frequency cells belonging to the monitored set. SS re-adjusts its downlink power settings according to columns marked "T1" in table 8.4.1.4-1. This is expected to trigger a cell reselection in the UE. The UE shall send CELL UPDATE message to cell 4 in order to report this event. Upon receiving this message, SS replies with the CELL UPDATE CONFIRM message, which includes IE "New C-RNTI", on the downlink DCCH. UE shall then reply with a UTRAN MOBILITY INFORMATION CONFIRM message.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	System Information Block type 11	The UE is PS-DCCH+DTCH_FACH (state 6-11) in cell 1. System Information Block type 11 to be transmitted is different from the default settings (see specific message contents)
2		↔	SS executes procedure P6 (clause 7.4.4.4.2) specified in TS 34.108.	
3		↔	SS executes procedure P10 (clause 7.4.2.4.2) specified in TS 34.108.	
4		↔	SS executes procedure P6 (clause 7.4.4.4.2) specified in TS 34.108.	
5		→	Void	
6				SS checks to see that no MEASUREMENT REPORT messages are received.
7				SS reconfigures the downlink transmission power, according to columns "T1" of table 8.4.1.4-1.
8		→	CELL UPDATE	UE shall detect that cell 4 has become stronger than cell 1. It sends this message after re-selecting to cell 4
9		←	CELL UPDATE CONFIRM	Use message content.
10		→	UTRAN MOBILITY INFORMATION CONFIRM	

## Specific Message Content

All messages indicated below shall use the same content as described in default message content, with the following exceptions:

## System Information Block type 11 (Step 1)

Information Element	Value/remark
SIB12 Indicator	FALSE
FACH measurement occasion info	
- FACH Measurement occasion cycle length coefficient	2
- Inter-frequency FDD measurement indicator	TRUE
- Inter-frequency TDD measurement indicator	FALSE
- Inter-RAT measurement indicators	Not Present
Measurement control system information	
- Intra-frequency measurement system information	Not Present
- Inter-frequency measurement system information	
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency cells	
- Inter-frequency cell id	4
- Frequency info	
- UARFCN uplink (Nu)	Set to uplink UARFCN of cell 4
- UARFCN downlink (Nd)	Set to the downlink UARFCN of cell 4
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 4
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and re-selection info	
- Qoffset <sub>s,n</sub>	0 dB
- Maximum allowed UL TX power	0 dBm
- HCS neighbouring cell information	Not Present
- CHOICE Mode	FDD
- Qqualmin, Qrxlevmin	-20dB, -115dBm
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

## CELL UPDATE (Step 8)

Information Element	Value/remark
U-RNTI	Check to see if set to same U-RNTI assigned during the execution of procedure P6.
Cell update cause	Check to see if it is set to "Cell Reselection"
Protocol error info	Check to see if it is absent or set to FALSE
Measured results on RACH	Check to see if it is absent
Protocol error information	Check to see if it is absent

## CELL UPDATE CONFIRM (Step 9)

Use the message sub-type in default message content defined in Annex A, with the following exceptions.

Information Element	Value/Remarks
New C-RNTI	'1010 1010 1010 1010'

## UTRAN MOBILITY INFORMATION CONFIRM (Step 10)

Only the message type is checked.

#### 8.4.1.4.5 Test Requirement

After step 5 the UE shall not transmit any MEASUREMENT REPORT messages pertaining to any measurement quantities for cell 4.

After step 7 the UE shall reselect to cell 4 and transmit a CELL UPDATE message on the uplink CCCH of cell 4.

After step 9, the UE shall transmit a UTRAN MOBILITY INFORMATION CONFIRM message on uplink DCCH AM RLC.

#### 8.4.1.5 Measurement Control and Report: Intra-frequency measurement for transition from CELL\_DCH to CELL\_FACH state

##### 8.4.1.5.1 Definition

##### 8.4.1.5.2 Conformance requirement

Upon transition from CELL\_DCH to CELL\_FACH/CELL\_PCH/URA\_PCH state, the UE shall:

- 1> stop intra-frequency type measurement reporting;
- 1> if the transition is due to a reconfiguration message which included the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD), and the UE selects a cell other than that indicated by this IE; or
- 1> if the transition is due to a reconfiguration message which does not include the IE "Primary CPICH info" (for FDD) or "Primary CCPCH info" (for TDD); or
- 1> if the transition is not due to a reconfiguration message:
  - 2> delete the measurements of type intra-frequency associated with the variable MEASUREMENT\_IDENTITY.
- 1> begin monitoring cells listed in the IE "intra-frequency cell info list" received in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11 in [8] TS 25.331).

Upon transition from CELL\_FACH to CELL\_DCH state, the UE shall:

- 1> retrieve each set of measurement control information of measurement type "intra-frequency" stored in the variable MEASUREMENT\_IDENTITY;
- 1> if the IE "measurement validity" for a measurement has been assigned the value "CELL\_DCH":
  - 2> resume the measurement reporting.
- 1> if no intra-frequency measurements applicable to CELL\_DCH state are stored in the variable MEASUREMENT\_IDENTITY:
  - 2> continue monitoring the list of neighbouring cells assigned in the IE "intra-frequency cell info list" in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11 in [8] TS 25.331);
  - 2> if the IE "intra-frequency measurement reporting criteria" was included in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11 in [8] TS 25.331):
    - 3> send the MEASUREMENT REPORT message when reporting criteria in IE "Reporting information for state CELL\_DCH" are fulfilled.

#### Reference

3GPP TS 25.331, clause 8.4.1.6.1, 8.4.1.7.1

### 8.4.1.5.3 Test Purpose

1. To confirm that the UE stops performing intra-frequency measurement reporting specified in a MEASUREMENT CONTROL message, when it moves from CELL\_DCH state to CELL\_FACH state.
2. To confirm that the UE reads the System Information Block type 11 or 12 messages when it enters CELL\_FACH state from CELL\_DCH state, and starts to monitor the cells listed in the IE "intra-frequency cell info list".
3. To confirm that the UE performs measurements on uplink RACH transmissions and appends the measured results in RACH messages, when it receives IE "intra-frequency reporting quantity for RACH reporting" and IE "Maximum number of reported cells on RACH" in the System Information Block type 11 or 12 messages.
4. To confirm that the UE applies the reporting criteria in IE "intra-frequency reporting criteria" in System Information Block Type 11 or 12 messages following a state transition from CELL\_FACH to CELL\_DCH, if no intra-frequency measurements applicable to CELL\_DCH are stored.

### 8.4.1.5.4 Method of test

#### Initial Condition

System Simulator: 3 cells – Cell 1 and cell 2 are active, while cell 3 is switched off..

UE: PS-DCCH+DTCH\_DCH (state 6-10) in cell 1 as specified in clause 7.4 of TS 34.108.

#### Test Procedure

Table 8.4.1.5-1 illustrates the downlink power to be applied for the 3 cells at various time instants of the test execution. Columns marked "T0" denote the initial conditions, while columns marked "T1" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

**Table 8.4.1.5-1**

Parameter	Unit	Cell 1		Cell 2		Cell 3	
		T0	T1	T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1		Ch. 1	
CPICH Ec	dBm/ 3.84 MHz	-60	-60	-75	-85	-122	-70

The UE is initially in CELL\_DCH state. The System Information Block type 11 message is modified compared to the default message contents, in order to prevent the reporting of "Cell synchronisation information". No measurement to be applied by the UE in CELL\_DCH state is specified in any of the System Information Block type 11 or 12 messages.

SS sends a MEASUREMENT CONTROL message to UE. In this message, the SS requests the establishment of an intra-frequency measurement for the measurement of cell 2's CPICH RSCP. At the same time, reporting of CPICH RSCP values of active set cells and monitored set cells are requested with the reporting criteria set to "periodic reporting" and "reporting interval" set to 16 seconds. The UE shall start transmitting MEASUREMENT REPORT messages at 16 seconds interval corresponding to the requested reporting event.

SS transmits PHYSICAL CHANNEL RECONFIGURATION message to move the UE to CELL\_FACH. After receiving this message, the UE shall reconfigure itself and reply with a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on RACH. SS monitors the uplink channels to verify that no MEASUREMENT REPORT messages are received.

SS reconfigures itself according to the settings in columns marked "T1" in table 8.4.1.5-1. SS transmits System Information Block type 12 messages in cell 1, which include cell 3 into the IE "intra-frequency cell info list" and modifies SIB11 to indicate that SIB12 is now being broadcast. IEs "Intra-frequency reporting quantity for RACH Reporting" and IE "Maximum number of Reported cells on RACH" are also specified in the System Information Type 12 messages. Event type 1a reporting criterion is specified for intra-frequency measurements. SS transmit SYSTEM INFORMATION CHANGE INDICATION message to UE. SS waits until T305 has expired. The UE shall respond with a CELL UPDATE message, which comprises IE "Measured results on RACH" to report the readings of CPICH RSCP for cell 1 and cell 3. SS replies with CELL UPDATE CONFIRM message on the downlink DCCH. This message does not change the physical resources nor allocate any new RNTI identities. SS transmits PHYSICAL CHANNEL RECONFIGURATION message again, and configures dedicated physical channel for both uplink and downlink directions. The UE shall send PHYSICAL CHANNEL RECONFIGURATION COMPLETE message and return to CELL\_DCH state. SS listens to the uplink DCCH for MEASUREMENT REPORT messages.

SS shall receive the MEASUREMENT REPORT messages at 500 milliseconds interval.

SS verifies that it includes CPICH RSCP values of the cells 1, 2 and 3 in IE "Cell measured results" and the triggering of event '1a' on cell 3 in IE "Event results".

#### Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	Master Information Block System Information Block type 11	UE is in PS-DCCH+DTCH_DCH (state 6-10) in cell 1. System Information Block Type 11 to be broadcast does not specify any measurement type to be configured in the UE in CELL_DCH.
2			Void	
3			Void	
4			Void	
5		←	MEASUREMENT CONTROL	SS requests for measurement of cell 2's CPICH RSCP value and reporting of CPICH RSCP values of active cells and monitored set cells.
6		→	MEASUREMENT REPORT	UE shall send periodic report at 16 seconds interval.
7		←	PHYSICAL CHANNEL RECONFIGURATION	SS moves the UE to CELL_FACH state.
8		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall move to CELL_FACH state.
9		←	Master Information Block System Information Block type 12	SS reconfigures itself according to the settings stated in column "T1" of table 8.4.1.5-1. SIB 11 is modified to indicate that SIB12 is now broadcast and to add cell 2 as a neighbour cell. SIB 12 indicates that cell 3 is included in the IE "intra-frequency cell info list". SS waits for 1 minute and verifies that no MEASUREMENT REPORT messages are detected on the uplink.
10		←	SYSTEM INFORMATION CHANGE INDICATION	SS waits until T305 has expired.
11		→	CELL UPDATE	UE shall transmit this message with measured results on RACH channels for cell 1 and cell 3 present in this message.

Step	Direction		Message	Comment
	UE	SS		
12		←	CELL UPDATE CONFIRM	No changes in physical resource allocation and RNTI identities.
13		←	PHYSICAL CHANNEL RECONFIGURATION	SS configures dedicated physical channels.
14		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall transit to CELL_DCH state.
15		→	MEASUREMENT REPORT	Repeated at 500 milliseconds interval

### Specific Message Content

#### MASTER INFORMATION BLOCK (Step 1)

Use the same message sub-type found in clause 6.1 of TS 34.108, with the following exception:

Information Element	Value/Remarks
MIB Value Tag	1

#### System Information Block type 11 (Step 1)

Information Element	Value/remark
SIB12 indicator	FALSE
FACH measurement occasion info	Not Present
Measurement control system information	
- Use of HCS	Not used
- Cell selection and reselection quality measure	CPICH RSCP
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	Not present
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	Not present
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 1
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection info	Not present
- Cells for measurement	Not Present
-Intra-frequency measurement quantity	Not Present
-Intra-frequency reporting quantity for RACH reporting	Not Present
-Maximum number of reported cells on RACH	Not Present
-Reporting information for state CELL_DCH	Not Present
- Inter-frequency measurement system information	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

## MEASUREMENT CONTROL (Step 5)

Information Element	Value/remark
Measurement Identity	5
Measurement Command	Setup
Measurement Reporting Mode	Acknowledged Mode RLC
- Measurement Reporting Transfer Mode	Periodical Reporting
- Periodic Reporting / Event Trigger Reporting Mode	Not Present
Additional measurements list	Intra-frequency measurement
CHOICE measurement type	Remove no intra-frequency cells
- Intra-frequency cell info list	2
- CHOICE intra-frequency cell removal	0 dB
- New intra-frequency info list	Not Present
- Intra-frequency cell id	FALSE
- Cell info	FDD
- Cell individual offset	Set to same code as used for cell 2
- Reference time difference to cell	Not Present
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	Set to same code as used for cell 2
- Primary Scrambling Code	Not Present
- Primary CPICH TX power	FALSE
- TX Diversity Indicator	Not Present
- Cells for measurement	Not Present
- Intra-frequency measurement quantity	Not Present (Default is 0)
- Filter Coefficient	CPICH RSCP
- Measurement quantity	
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting	No report
indicator	
- Cell synchronisation information reporting	FALSE
indicator	
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting	No report
indicator	
- Cell synchronisation information reporting	FALSE
indicator	
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected cells	Not present
- Reporting cell status	
- CHOICE reported cell	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- Maximum number of reported cells	2
- Measurement validity	Not present
- CHOICE report criteria	Periodical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	16 seconds
DPCH compressed mode status info	Not Present

## MEASUREMENT REPORT (Step 6)

Information Element	Value/remark
Measurement identity	Check to see if set to 5
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measured results list	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 1
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 2
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Additional measured result list	Check to see if this IE is absent
Event results	Check to see if this IE is absent

## PHYSICAL CHANNEL RECONFIGURATION (Step 7)

Use the same message sub-type found in [9] TS 34.108 clause 9, which is entitled "(Packet to CELL\_FACH from CELL\_DCH in PS)"

## MASTER INFORMATION BLOCK (Step 9)

Use the same message sub-type found in clause 6.1 of TS 34.108, with the following exception:

Information Element	Value/Remarks
MIB Value Tag	2

## System Information Block type 11 (Step 9)

Information Element	Value/remark
SIB12 indicator	TRUE
FACH measurement occasion info	Not Present
Measurement control system information	
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	Not present
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	Not present
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 1
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection info	Not present
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	Not present
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 2
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection info	
- $Q_{offset_{s,n}}$	0 dB
- Maximum allowed UL TX power	0 dBm
- HCS neighbouring cell information	Not Present
- CHOICE Mode	FDD
- $Q_{qualmin}$	-20dB
- $Q_{rxlevmin}$	-115dBm
- Cells for measurement	Not Present
-Intra-frequency measurement quantity	Not Present
-Intra-frequency reporting quantity for RACH	Not Present
reporting	
-Maximum number of reported cells on RACH	Not Present
-Reporting information for state CELL_DCH	Not Present
- Inter-frequency measurement system information	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

## System Information Block type 12 (Step 9)

Information Element	Value/remark
FACH measurement occasion info	Not Present
Measurement control system information	
- Use of HCS	Not used
- Cell selection and reselection quality measure	CPICH RSCP
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	6
- Intra-frequency cell cells	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	3
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	Not Present
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 3
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection info	
- Qoffset <sub>s,n</sub>	0dB
- Maximum allowed UL TX power	0dBm
- HCS neighbouring cell information	Not Present
- CHOICE Mode	FDD
- Qqualmin, Qrxlevmin	-20dB, -115dBm
- Intra-frequency measurement quantity	
- Filter Coefficient	Not Present (Default is 0)
- Measurement quantity	CPICH RSCP
- Intra-frequency measurement for RACH reporting	
- SFN-SFN observed time difference	No report
- Reporting quantity	CPICH RSCP
- Maximum number of reported cells on RACH	Current cell + best neighbour
- Reporting information for state CELL_DCH	
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected cells	Not present
- CHOICE report criteria	Intra-frequency measurement reporting criteria
- Parameter required for each event	
- Intra-frequency event identity	1a
- Triggering condition 1	Not Present
- Triggering condition 2	Monitored set cells
- Reporting range constant	20.0 dB
- Cells forbidden to affect reporting	Not present
- W	0.0
- Hysteresis	1.0 dB
- Threshold used frequency	Not Present
- Reporting deactivation threshold	7
- Replacement activation threshold	Not Present

<ul style="list-style-type: none"> <li>- Time to trigger</li> <li>- Amount of reporting</li> <li>- Reporting Interval</li> <li>- Reporting cell status</li> <li>- CHOICE <i>reported cell</i></li> </ul>	60 ms Infinity 500 milliseconds  Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
<ul style="list-style-type: none"> <li>- Maximum number of reported cells</li> <li>- Inter-frequency measurement system information</li> <li>- Inter-RAT measurement system information</li> <li>- Traffic volume measurement system information</li> <li>- UE internal measurement system information</li> </ul>	3 Not present Not present Not present Not present

## SYSTEM INFORMATION CHANGE INDICATION (Step 10)

Information Element	Value/Remarks
BCCH modification info - MIB Value tag	2

## CELL UPDATE (Step 11)

Information Element	Value/remark
U-RNTI	Check to see if set to the same value assigned during the execution of procedure P3 or P5.
START list	Checked to see if this IE is present
AM_RLC error indication(RB2, RB3 or RB4)	FALSE
AM_RLC error indication(RB>4)	FALSE
Cell update cause	Check to see if it is set to "Periodical cell update"
Failure case	Check to see if it is absent
Measured results on RACH	
- Measurement result for current cell	
- CHOICE measurement quantity	Check to see if set to "CPICH RSCP"
- CPICH RSCP	Check to see if it is present
- Measurement results for monitored cells	
- SFN-SFN observed time difference	Not Checked
- Primary CPICH info	
- Primary scrambling code	Check to see if the same as cell 3's code.
- CHOICE measurement quantity	Check to see if set to "CPICH RSCP"
- CPICH RSCP	Check to see if it is present

## PHYSICAL CHANNEL RECONFIGURATION (Step 13)

Use the same message sub-type found in [9] TS 34.108 clause 9, which is entitled "(Packet to CELL\_DCH from CELL\_FACH in PS)".

## MEASUREMENT REPORT (Step 15)

Information Element	Value/remark
Measurement identity	Check to see if set to 6
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measurement results list	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 1
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 2
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 3
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Event results	Check to see if this set to 'Intra-frequency measurement event results'
- Intra-frequency event identity	Check to see if set to '1a'
- Cell measurement event results	
- CHOICE Mode	Check to see if set to 'FDD'
- Primary CPICH info	
- Primary Scrambling Code	Check to see if set to the same code for cell 3

## 8.4.1.5.5 Test Requirement

After step 5, the UE shall start to transmit MEASUREMENT REPORT messages at 16 seconds interval. The message shall contain IE "measured result" to report cell 2's CPICH RSCP value.

After step 8, the UE shall not send any MEASUREMENT REPORT messages containing reporting quantities requested in MEASUREMENT CONTROL messages in step 5.

After step 10, the UE shall perform a cell update procedure and transmit a CELL UPDATE message. In this message, measured values CPICH RSCP for cell 1 and cell 3 shall be included in the IE "measured results on RACH".

After step 15, the UE shall apply the intra-frequency measurement reporting criteria" received in System Information Block type 12 messages of step 9. It shall send MEASUREMENT REPORT messages at 500 milliseconds interval. In these messages, triggering of event '1a' shall be reported in IE "Event results" with IE "Primary CPICH info" containing the primary scrambling code for cell 3.

The message shall contain IE "measured result" to report CPICH RSCP values of cell 1, 2 and 3.

### 8.4.1.6 Measurement Control and Report: Inter-frequency measurement for transition from CELL\_DCH to CELL\_FACH state

#### 8.4.1.6.1 Definition

#### 8.4.1.6.2 Conformance requirement

Upon transition from CELL\_DCH to CELL\_FACH/ CELL\_PCH/URA\_PCH state, the UE shall:

- 1> stop the inter-frequency type measurement reporting assigned in a MEASUREMENT CONTROL message;
- 1> begin monitoring cells listed in the IE "inter-frequency cell info list" received in System Information Block type 12 (or System Information Block type 11);
- 1> in CELL\_FACH state:
  - 2> perform measurements on other frequencies according to the IE "FACH measurement occasion info".

#### Reference

3GPP TS 25.331, clause 8.4.1.6.2

#### 8.4.1.6.3 Test Purpose

1. To confirm that UE ceases inter-frequency type measurement reporting assigned in MEASUREMENT CONTROL message when moving from CELL\_DCH state to CELL\_FACH.
2. To confirm that the UE begins to monitor the cells listed in "inter-frequency cell info" received in System Information Block type 11 or 12 messages, following a state transition from CELL\_DCH state to CELL\_FACH state.

#### 8.4.1.6.4 Method of test

#### Initial Condition

System Simulator: 2 cells – Cell 1 and cell 2 are active.

UE: PS-DCCH+DTCH\_DCH (state 6-10) in cell 1 as specified in clause 7.4 of TS 34.108.

#### Related ICS/IXIT statements

- Compressed mode required            yes/no

#### Test Procedure

Table 8.4.1.6-1 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. Columns marked "T0" denote the initial conditions, while columns marked "T1" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

**Table 8.4.1.6-1**

Parameter	Unit	Cell 1		Cell 4	
		T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 2	
CPICH Ec	dBm/ 3.84 MHz	-60	-75	-75	-60

The UE is initially in CELL\_DCH state. The System Information Block type 11 message is modified with respect to the default settings, so that no measurement tasks are required of the UE. If UE requires compressed mode, SS transmits PHYSICAL CHANNEL RECONFIGURATION message. In this message, IE "DPCH compressed mode info" is present, which indicates that the UE shall apply the given parameters for compressed mode operations. The UE shall return a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to acknowledge that compressed mode mechanism can be exercised.

SS sends a MEASUREMENT CONTROL message to the UE, including cell 4 into the IE "inter-frequency cell info". The IE "CHOICE reporting criteria" in this message is set to "periodic reporting criteria". SS waits for 8 seconds to allow the periodic timer to expire. The UE shall send a MEASUREMENT REPORT message containing IE "inter-frequency cell measurement results" to report cell 4's CPICH RSCP value. SS transmits PHYSICAL CHANNEL RECONFIGURATION message and reconfigures common physical channels. The UE shall move to CELL\_FACH state and then return a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to SS.

SS modifies the contents of Master Information Block (MIB) and System Information Block (SIB) type 12. In SIB 12, cell 4 is added to the cells listed in the "inter-frequency cell info" IE. SS transmit SYSTEM INFORMATION CHANGE INDICATION message to UE. SS waits for 8 seconds to detect any uplink MEASUREMENT REPORT messages. SS verifies that no MEASUREMENT REPORT message(s) are received as a result of inter-frequency measurements. SS then reconfigures the downlink transmission power settings of cell 1 and cell 4 according to the values stated in columns "T1" of table 8.4.1.6-1. SS waits for the UE to perform cell re-selection. The UE shall transmit a CELL UPDATE message on the uplink CCCH of cell 4, specifying the "cell update cause" IE as "cell re-selection". SS replies with CELL UPDATE CONFIRM message, which includes IE "New C-RNTI", on the downlink DCCH to complete the cell update procedure. The UE shall reply with a UTRAN MOBILITY INFORMATION CONFIRM message.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	System Information Block type 11	PS-DCCH+DTCH_DCH (state 6-10) in cell 1. System Information Block type 11 is modified with respect to the default settings. All measurement and reporting activities are disabled in this message.
2			Void	If compressed mode is not required (refer ICS/IXIT), goto step 8.
3			Void	
4			Void	
5			Void	
6		←	PHYSICAL CHANNEL RECONFIGURATION	SS instructs UE to begin compressed mode operation.
7		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall remain in CELL_DCH state.
8		←	MEASUREMENT CONTROL	SS indicates that the CPICH RSCP of cell 4 shall be monitored and reported. SS waits for 8 seconds for the reception of MEASUREMENT REPORT message.
9		→	MEASUREMENT REPORT	UE shall transmit this message to report cell 4's CPICH RSCP value.
10		←	PHYSICAL CHANNEL RECONFIGURATION	SS configures common physical channels.
11		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall moves to CELL_FACH state.
12		←	Master Information Block, System Information Block type 12	SS modifies MIB and SIB 12. Cell 4 is included in the IE "inter-frequency cell info"
13		←	SYSTEM INFORMATION CHANGE INDICATION	SS waits for 8 seconds to verify that no MEASUREMENT REPORT messages are detected on the uplink DCCH.
14				SS changes the power settings for cell 1 and cell 4 according to columns marked "T1" of table 8.4.1.6-1, and then waits for the UE to re-select to a new cell.
15		→	CELL UPDATE	UE shall perform cell re-selection and transmit this message on the new cell.
16		←	CELL UPDATE CONFIRM	See message content.
17		→	UTRAN MOBILITY INFORMATION CONFIRM	

## Specific Message Content

## System Information Block Type 11 (Step 1)

Information Element	Value/remark
References to other system information blocks	Not Present
FACH measurement occasion info	
- FACH Measurement occasion cycle length coefficient	2
- Inter-frequency FDD measurement indicator	FALSE
- Inter-frequency TDD measurement indicator	FALSE
- Inter-RAT measurement indicators	Not Present
Measurement control system information	
- Intra-frequency measurement system information	Not Present
- Inter-frequency measurement system information	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE Internal measurement system information	Not Present

## RRC CONNECTION SETUP (Step 4)

Use the same message sub-type found in Clause 9 of TS 34.108, which is entitled "Transition to CELL\_DCH"

## PHYSICAL CHANNEL RECONFIGURATION (Step 6)

Use the same message sub-type found in Annex A, which is entitled "(Packet to CELL\_DCH from CELL\_DCH in PS)", with the following exceptions in the IE(s) concerned:

Information Element	Value/remark
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	Not Present
- CHOICE Mode	FDD
- DPCH compressed mode info	
- TGPSI	1
- TGPS Status Flag	Activate
- TGCFN	(Current CFN+(256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence configuration parameters	
- TGMP	FDD Measurement
- TGPRC	Infinity
- TGSN	4
- TGL1	7
- TGL2	Not Present
- TGD	0
- TGPL1	3
- TGPL2	Not Present
- RPP	Mode 0
- ITP	Mode 0
- CHOICE UL/DL Mode	UL and DL or DL only depending on UE capability
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2 or Not present depending on UE capability
- Downlink frame type	B
- DeltaSIR1	2.0
- DeltaSIRAfter1	1.0
- DeltaSIR2	Not Present
- DeltaSIRAfter2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	Not Present
- TX Diversity Mode	None
- SSDT information	Not Present
- Default DPCH Offset Value	Not Present
Downlink information for each radio link	Not Present

## MEASUREMENT CONTROL (Step 8)

Information Element	Value/remark
Measurement Identity	15
Measurement Command	Setup
Measurement Reporting Mode	Acknowledged Mode RLC
- Measurement Reporting Transfer Mode	Periodical Reporting
- Periodic Reporting / Event Trigger Reporting Mode	Not Present
Additional measurements list	Inter-frequency measurement
CHOICE measurement type	No inter-frequency cells removed
- Inter-frequency cell info list	4
- CHOICE inter-frequency cell removal	UARFCN of the uplink frequency for cell 4
- New inter-frequency info list	UARFCN of the downlink frequency for cell 4
- Inter-frequency cell id	4
- Frequency info	0 dB
- UARFCN uplink (Nu)	0 chips
- UARFCN downlink (Nd)	FALSE
- Cell info	FDD
- Cell individual offset	Set to same code as used for cell 4
- Reference time difference to cell	Not Present
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	Set to same code as used for cell 4
- Primary Scrambling Code	Not Present
- Primary CPICH TX power	FALSE
- TX Diversity Indicator	FALSE
- Cells for measurement	4
- Inter-frequency cell id	4
- Inter-frequency measurement quantity	Inter-frequency reporting criteria
- CHOICE reporting criteria	0
- Filter Coefficient	CPICH RSCP
- Measurement quantity for frequency quality estimate	
- Inter-frequency reporting quantity	FALSE
- UTRA Carrier RSSI	FALSE
- Frequency quality estimate	FALSE
- Non frequency related cell reporting quantities	No report
- SFN-SFN observed time difference reporting	No report
indicator	FALSE
- Cell synchronisation information reporting	FALSE
indicator	FALSE
- Cell Identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting cell status	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- CHOICE reported cell	2
- Maximum number of reported cells	2
- Measurement validity	CELL_DCH
- UE state	Not Present
- Inter-frequency set update	Not Present
- CHOICE report criteria	Periodic reporting criteria
- Amount of reporting	Infinity
- Reporting interval	8 seconds
DPCH compressed mode status info	Not Present

## MEASUREMENT REPORT (Step 9)

Information Element	Value/remark
Measurement identity	Check to see if set to 15
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-frequency measured results list"
- Inter-frequency measurement results	
- Frequency info	
- UARFCN (uplink)	Check to see if set to the UARFCN of the uplink frequency for cell 4
- UARFCN (downlink)	Check to see if set to the UARFCN of the downlink frequency for cell 4
- UTRA carrier RSSI	Check to see if it is absent
- Inter-frequency cell measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if it is absent
- Cell synchronisation information	Check to see if it is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if set to the same code for cell 4
- CPICH Ec/No	Check to see if it is absent
- CPICH RSCP	Check to see if it is present
- Pathloss	Check to see if it is absent
Measured Results on RACH	Check to see if it is absent
Event Results	Check to see if it is absent

## PHYSICAL CHANNEL RECONFIGURATION (Step 10)

If UE do not require compressed mode, use the same message sub-type found in TS 34.108 clause 9, which is entitled "(Packet to CELL\_FACH from CELL\_DCH in PS)".

If UE requires compressed mode, use the same message sub-type found in TS34.108 clause 9, which is entitled "(Packet to CELL\_FACH from CELL\_DCH in PS)", with the following exceptions in the IE(s) concerned:

Information Element	Value/Remarks
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	Not present
- DPCH compressed mode info	
- TGPSI	1
- TGPS Status Flag	Deactivate
- TGCFN	Not present
- Transmission gap pattern sequence configuration parameters	Not present
- TX Diversity Mode	None
- SSDT information	Not Present
- Default DPCH Offset Value	Not present

## Master Information Block (Step 12)

Information Element	Value/Remarks
MIB value tag	2

## System Information Block type 12 (Step 12)

Information Element	Value/remark
Measurement control system information	
- Use of HCS	Not used
- Cell_selection_and_reselection_quality_measure	CPICH_Ec/No
- Intra-frequency measurement system information	Not Present
- Inter-frequency measurement system information	
- Inter-frequency cell info list	
- CHOICE Inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency cells	
- Inter-frequency cell id	4
- Frequency info	
- CHOICE mode	FDD
- UARFCN uplink (Nu)	Set to uplink UARFCN for cell 4
- UARFCN downlink (Nd)	Set to downlink UARFCN for cell 4
- Cell info	
- Cell individual offset	Not Present
- Reference time difference to cell	Not Present
- Read SFN indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH info	
- Primary scrambling code	Set to the scrambling code of cell 4
- Primary CPICH Tx power	Not Present
- TX diversity indicator	FALSE
- Cell selection and re-selection info	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE Internal measurement system information	Not Present

## SYSTEM INFORMATION CHANGE INDICATION (Step 13)

Information Element	Value/Remarks
BCCH modification info	
- MIB Value tag	2

## CELL UPDATE (Step 15)

Information Element	Value/remark
U-RNTI	Check to see if same to value assigned in P3 or P5
Cell update cause	Check to see if it is set to "Cell Reselection"
Protocol error info	Check to see if it is absent or set to FALSE
Measured results on RACH	Check to see if it is absent
Protocol error information	Check to see if it is absent

## CELL UPDATE CONFIRM (Step 16)

Use the same message sub-type found in Annex A, with the following exceptions.

Information Element	Value/Remarks
New C-RNTI	'1010 1010 1010 1010'

## UTRAN MOBILITY INFORMATION CONFIRM (Step 17)

Only the message type is checked.

## 8.4.1.6.5 Test Requirement

If UE requires compressed mode, after step 6, the UE shall transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

After step 8 the UE shall transmit MEASUREMENT REPORT message to report cell 4's RSCP value in the IE "inter-frequency cell measured results".

After step 10, the UE shall transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

After step 11 the UE shall stop sending MEASUREMENT REPORT messages, which contain inter-frequency measured results for cell 4's CPICH RSCP value.

After step 14 the UE shall transmit CELL UPDATE message on the uplink CCCH of cell 4, and the "cell update cause" IE shall be set to "cell reselection".

After step 16, the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH AM RLC.

#### 8.4.1.7 Measurement Control and Report: Intra-frequency measurement for transition from CELL\_FACH to CELL\_DCH state

##### 8.4.1.7.1 Definition

##### 8.4.1.7.2 Conformance requirement

Upon transition from CELL\_FACH to CELL\_DCH state, the UE shall:

- 1> retrieve each set of measurement control information of measurement type "intra-frequency" stored in the variable MEASUREMENT\_IDENTITY;
- 1> if the IE "measurement validity" for a measurement has been assigned the value "CELL\_DCH":
  - 2> resume the measurement reporting.
- 1> if no intra-frequency measurements applicable to CELL\_DCH state are stored in the variable MEASUREMENT\_IDENTITY:
  - 2> continue monitoring the list of neighbouring cells assigned in the IE "intra-frequency cell info list" in System Information Block type 12 (or System Information Block type 11);
  - 2> if the IE "intra-frequency measurement reporting criteria" was included in System Information Block type 12 (or System Information Block type 11):

3> send the MEASUREMENT REPORT message when reporting criteria in IE "Reporting information for state CELL\_DCH" are fulfilled.

...

Upon cell reselection while in CELL\_FACH/CELL\_PCH/URA/PCH state and the cell reselection has occurred after the measurement control information was stored, the UE shall:

- 1> delete all measurements of type intra-frequency, inter-frequency, and inter-RAT associated with the variable MEASUREMENT\_IDENTITY;

1> delete the traffic volume measurements that have not been set up or modified through a MEASUREMENT CONTROL message.

...

Upon reception of a MEASUREMENT CONTROL message the UE shall perform actions specified in subclause 8.6 unless otherwise specified below.

The UE shall:

- 1> read the IE "Measurement command";
- 1> if the IE "Measurement command" has the value "setup":

- 2> store this measurement in the variable MEASUREMENT\_IDENTITY according to the IE "measurement identity", first releasing any previously stored measurement with that identity if that exists;
- 2> for measurement types "inter-RAT measurement" or "inter-frequency measurement":
  - ...
- 2> for measurement type "UE positioning measurement":
  - ...
- 2> for any other measurement type:
  - 3> if the measurement is valid in the current RRC state of the UE:
    - 4> begin measurements according to the stored control information for this measurement identity.
- 1> if the IE "Measurement command" has the value "modify":
  - 2> for all IEs present in the MEASUREMENT CONTROL message:
    - 3> if a measurement was stored in the variable MEASUREMENT\_IDENTITY associated to the identity by the IE "measurement identity":
      - 4> for measurement types "inter-frequency measurement" that require measurements on a frequency other than the actually used frequency, or that require measurements on another RAT:
        - ...
      - 4> for any other measurement type:
        - 5> replace the corresponding information stored in variable MEASUREMENT\_IDENTITY associated to the identity indicated by the IE "measurement identity" with the one received in the MEASUREMENT CONTROL message;
        - 5> resume the measurements according to the new stored measurement control information.
    - 3> otherwise:
      - ...
  - 2> for all optional IEs that are not present in the MEASUREMENT CONTROL message:
    - 3> leave the currently stored information elements unchanged in the variable MEASUREMENT\_IDENTITY if not stated otherwise for that IE.
- 1> if the IE "measurement command" has the value "release":
  - 2> terminate the measurement associated with the identity given in the IE "measurement identity";
  - 2> clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT\_IDENTITY.

## Reference

3GPP TS 25.331, clause 8.4.1.3, 8.4.1.6a and 8.4.1.7.1

### 8.4.1.7.3 Test Purpose

- To confirm that UE retrieves stored measurement control information for intra-frequency measurement measurement type with "measurement validity" assigned to "CELL\_DCH", after it enters CELL\_DCH state from CELL\_FACH state.
- To confirm that the UE continues to monitor the neighbouring cells listed "intra-frequency cell info" IE in the System Information Block type 11 or 12 messages, if no intra-frequency measurements applicable to CELL\_DCH are stored.

- To confirm that the UE transmits MEASUREMENT REPORT messages if reporting criteria stated in IE "intra-frequency measurement reporting criteria" in System Information Block type 11 or 12 messages are fulfilled.
- To confirm that a MEASUREMENT CONTROL message received in CELL\_DCH state overrides the measurement and associated reporting contexts maintained in the UE by virtue of System Information Block type 11 or 12 messages.

#### 8.4.1.7.4 Method of test

##### Initial Condition

System Simulator: 3 cells – Cell 1, cell 2 and cell 3 are active.

UE: PS-DCCCH+DTCH\_FACH (state 6-11).

##### Test Procedure

Table 8.4.1.7-1 illustrates the downlink power to be applied for the 3 cells at various time instants of the test execution. Column marked "T0" denotes the initial conditions, while columns marked "T1" are to be applied subsequently. The exact instants on which these values shall be applied are described in the text in this clause.

**Table 8.4.1.7-1**

Para-meter	Unit	Cell 1		Cell 2		Cell 3	
		T0	T1	T0	T1	T0	T1
UTRA RF Channel Number		Ch. 1		Ch. 1		Ch. 1	
CPICH Ec	dBm /3.84 MHz	-60	-122	-70	-60	-75	-75

The UE is brought to CELL\_FACH state in cell 1. (step 1) SS sends SYSTEM INFORMATION CHANGE INDICATION message to UE to inform UE of the modification in the system information.

SS send a RADIO BEARER RECONFIGURATION message to UE (step2), and configures dedicated physical channels on both uplink and downlink directions. The UE shall move to CELL\_DCH state and then return RADIO BEARER RECONFIGURATION COMPLETE message (step3). The UE shall send a MEASUREMENT REPORT message containing IE "Measured results" to report cell 2's CPICH RSCP value and IE "event results" to report triggering of event type "1e" (step 4). After receiving the MEASUREMENT REPORT message, SS transmits a MEASUREMENT CONTROL message with only cell 3 included in the IE "intra-frequency cell info" (step 5). After receiving such a message, the UE shall transmit another set of MEASUREMENT REPORT message for measurement 11. SS verifies that only measurement readings for cell 3 's CPICH RSCP are report in IE "cell measured results" in these message (step 6). Cell 3 shall also trigger event 1e for the measurement that the UE had stored from system information, so a MEASUREMENT REPORT message shall be received for measurement 10 too (step 6a). The order of steps 6 and 6a is not important and could be reversed.

Next, SS sends PHYSICAL CHANNEL RECONFIGURATION message (step 7). SS configures common physical channels for both the uplink and the downlink directions. The UE shall transit to CELL\_FACH state and then reply with a PHYSICAL CHANNEL RECONFIGURATION COMPLETE (step 8). SS waits and checks the uplink RACH to confirm that no MEASUREMENT REPORT messages are received (step 9).

SS transmits then a RADIO BEARER RECONFIGURATION message to the UE, to move it to CELL\_DCH (step 9a). The UE shall move to that state, and transmit a RADIO BEARER RECONFIGURATION COMPLETE message to SS (step 9b). Shortly after, a MEASUREMENT REPORT message shall be received that has been triggered by cell 2, i.e. the UE shall have deleted the measurement measurement configured through the MEASUREMENT CONTROL message of step 5, and instead apply the measurement configured in SIB12: a MEASUREMENT REPORT message with measurement identity 10 shall be received while no such message with measurement identity 11 shall be sent by the UE (step 9c).

SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE to move it to CELL\_FACH once again (step 9d). The UE shall move to that state and transmit a PHYSICAL CHANNEL RECONFIGURATION

COMPLETE message to SS (step 9e). SS transmits MEASUREMENT CONTROL message on the downlink DCCH, to configure intra-frequency measurements with validity CELL\_DCH (step 10). SS waits, and verifies that no MEASUREMENT REPORT messages are detected on the uplink DCCH (step 11).

SS sends RADIO BEARER RECONFIGURATION message and configures dedicated physical channels (step 12). The UE shall return to CELL\_DCH state, transmit a RADIO BEARER RECONFIGURATION COMPLETE message (step 13). The UE shall also send a MEASUREMENT REPORT message to the SS triggered by cell 2 (step 14).

SS transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE to move it to CELL\_FACH (step 14a). The UE shall move to that state and transmit a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message to SS (step 14b). SS shall wait and check that no MEASUREMENT REPORT messages are detected on the uplink DCCH (step 14c).

SS transmits a RADIO BEARER RECONFIGURATION message to the UE, to move it to CELL\_DCH (step 14d). The UE shall move to that state, and transmit a RADIO BEARER RECONFIGURATION COMPLETE message to SS (step 14e). Shortly after, a MEASUREMENT REPORT message shall be received that has been triggered by cell 2, i.e the UE shall have retrieved the measurement configured through the MEASUREMENT CONTROL message of step 10, instead of the ones that are broadcast in SIB12 (step 14f).

Following the reception of the MEASUREMENT REPORT message, SS commands the UE using MEASUREMENT CONTROL message to release measurement control information stored in "measurement identity" = 12 (step 15). Thereafter, SS verifies that no MEASUREMENT REPORT messages are detected on the uplink DCCH (step 16). After this requirement is satisfied, SS sends MEASUREMENT CONTROL on the downlink DCCH once more (step 17). This message is identical to the one sent in step 10 (see specific message content). A MEASUREMENT REPORT message shall be received from the UE triggered by cell 2 (step 17a).

SS transmits a PHYSICAL CHANNEL RECONFIGURATION message on the downlink DCCH and configures common physical channel (step 18). The UE shall transit to CELL\_FACH state and then respond with a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message (step 19). SS monitors the uplink DCCH once more to verify that no MEASUREMENT REPORT messages are detected (step 20). SS modifies the downlink transmission power of the respect cells according to the settings in columns "T1" in table 8.4.1.7-1. System information block type 11 for cell 2 shall be different from the default setting according to what is defined in the specific message content part of this section (step 21). The UE shall initiate a cell re-selection procedure. This is verified in the SS when a CELL UPDATE message is received on the uplink CCCH with the "cell update cause" IE set to "cell reselection" (step 22). SS transmits a CELL UPDATE CONFIRM message, which includes "New C-RNTI", on the DCCH (step 23). Then the UE shall reply with UTRAN MOBILITY INFORMATION CONFIRM message (step 23a). Next, SS sends a RADIO BEARER RECONFIGURATION message on the downlink DCCH, assigning dedicated physical channels in both uplink and downlink directions (step 24). The UE shall respond with a RADIO BEARER RECONFIGURATION COMPLETE message and then return to CELL\_DCH state (step 25). UE shall then send MEASUREMENT REPORT messages reporting cell 1 and 3's CPICH RSCP according to the content in System Information Block type 12 messages broadcasted in cell 2 (step 26).

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	System Information Block type 12	UE is initially in PS-DCCH+DTCH_FACH (state 6-11) in cell 1. System Information Block type 12 messages are changed with respect to the default contents according to the descriptions in "Specific Message Contents" clause.
1a		←	SYSTEM INFORMATION CHANGE INDICATION	
2		←	RADIO BEARER RECONFIGURATION	SS configures dedicated physical channels.
3		→	RADIO BEARER RECONFIGURATION COMPLETE	UE shall move to CELL_DCH state.
4		→	MEASUREMENT REPORT	Reports cell 2's CPICH RSCP measurement value.
5		←	MEASUREMENT CONTROL	Cell 3 is added to the list of monitored set of the UE.
6		→	MEASUREMENT REPORT	Cell 3 shall trigger the event 1e configured in the measurement identity 11.
6a		→	MEASUREMENT REPORT	Cell 3 shall also trigger the event 1e configured in the measurement identity 10. The order of steps 6 and 6a could be reversed.
7		←	PHYSICAL CHANNEL RECONFIGURATION	SS configures PRACH and S-CCPCH physical channels.
8		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall move to CELL_FACH state.
9				SS waits and checks that no MEASUREMENT REPORT messages are sent by UE.
9a		←	RADIO BEARER RECONFIGURATION	SS configures dedicated physical channels.
9b		→	RADIO BEARER RECONFIGURATION COMPLETE	UE shall move to CELL_DCH state
9c		→	MEASUREMENT REPORT	UE shall report cell 2's CPICH RSCP measurement value
9d		←	PHYSICAL CHANNEL RECONFIGURATION	SS configures PRACH and S-CCPCH physical channels
9e		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall move to CELL_FACH state
10		←	MEASUREMENT CONTROL	SS instructs the UE to setup intra-frequency measurement and reporting for cell 2. Measurement validity" IE is set to CELL_DCH state.
11				SS waits and verifies that no MEASUREMENT REPORT messages are sent by UE.
12		←	RADIO BEARER RECONFIGURATION	SS configures dedicated physical channels.
13		→	RADIO BEARER RECONFIGURATION COMPLETE	UE shall return to CELL_DCH state.
14		→	MEASUREMENT REPORT	UE reports cell 2's measured results for CPICH RSCP.
14a		←	PHYSICAL CHANNEL RECONFIGURATION	SS configures PRACH and S-CCPCH physical channels
14b		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall move to CELL_FACH state

Step	Direction		Message	Comment
	UE	SS		
14c				SS waits and check that no MEASUREMENT REPORT messages are sent by the UE.
14d		←	RADIO BEARER RECONFIGURATION	SS configures dedicated physical channels
14e		→	RADIO BEARER RECONFIGURATION COMPLETE	UE shall move to CELL_DCH state
14f		→	MEASUREMENT REPORT	UE shall have retrieved and resumed the measurement set up through the MEASUREMENT CONTROL of step 10.
15		←	MEASUREMENT CONTROL	Terminate all the intra-frequency measurement and reporting activities related to "measurement identity" = 12.
16				SS waits and verifies that UE stop transmitting MEASUREMENT REPORT messages.
17		←	MEASUREMENT CONTROL	This message is the same as in step 10
17a		→	MEASUREMENT REPORT	UE shall transmit a MEASUREMENT REPORT message triggered by cell 2.
18		←	PHYSICAL CHANNEL RECONFIGURATION	Allocates common physical channels.
19		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	UE shall move to CELL_FACH state.
20				SS checks that no MEASUREMENT REPORT messages are received.
21				SS reconfigures the downlink transmission power settings for cells 1 to 3 according to column "T1" in table 8.4.1.7.
22		→	CELL UPDATE	UE shall re-selects to cell 2 and then perform a cell update procedure.
23		←	CELL UPDATE CONFIRM	UE shall stay in CELL_FACH state.
23a		→	UTRAN MOBILITY INFORMATION CONFIRM	
24		←	RADIO BEARER RECONFIGURATION	Dedicated physical channels are assigned to the UE in this message.
25		→	RADIO BEARER RECONFIGURATION COMPLETE	UE shall return to CELL_DCH state.
26		→	MEASUREMENT REPORT	UE begins to report cell 1 and 3's measured results for CPICH RSCP.

## Specific Message Content

## Master Information Block (Step 1)

Information Element	Value/Remarks
MIB Value Tag	3

## System Information Block type 11 for cell 1 (Step 1)

Information Element	Value/Remark
SIB12 indicator	TRUE
FACH measurement occasion info	Not Present
Measurement control system information	
- Use of HCS	Not used
- Cell selection and reselection quality measure	CPICH Ec/No
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	Not present
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cell
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	Not present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Primary scrambling code of cell 1
- Primary CPICH Tx power	Not present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	Not present
- Cells for measurement	Not present
- Intra-frequency measurement quantity	Not present
- Intra-frequency reporting quantity for RACH reporting	Not present
- Maximum number of reported cells on RACH	Not present
- Reporting information for state CELL_DCH	Not present
- Inter-frequency measurement system information	Not present
- Inter-RAT measurement system information	Not present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

## System Information Block type 12 for cell 1 (Step 1)

Information Element	Value/remark
FACH measurement occasion info	Not Present
Measurement control system information	
- Use of HCS	Not used
- Cell selection and reselection quality measure	CPICH Ec/No
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	10
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 2
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection info	Not Present
- Cells for measurement	Not Present
- Intra-frequency measurement quantity	0
- Filter Coefficient	CPICH RSCP
- Measurement quantity	Not Present
- Intra-frequency measurement for RACH reporting	No report
- Maximum number of reported cells on RACH	
- Reporting information for state CELL_DCH	
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	No report
- SFN-SFN observed time difference reporting indicator	FALSE
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	
- Reporting quantities for monitored set cells	No report
- SFN-SFN observed time difference reporting indicator	FALSE
- Cell synchronisation information reporting indicator	TRUE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	TRUE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	Not present
- Reporting quantities for detected cells	Intra-frequency measurement reporting criteria
- CHOICE report criteria	
- Parameter required for each event	1e
- Intra-frequency event identity	Not Present
- Triggering condition 1	Monitored set cells
- Triggering condition 2	Not present
- Reporting range	Not present
- Cells forbidden to affect reporting	FDD
- CHOICE Mode	
- Primary CPICH Info	
- Primary scrambling code	Set to the scrambling code of cell 2
- W	Not present
- Hysteresis	0 dB
- Threshold used frequency	-80 dBm
- Reporting deactivation threshold	Not present
- Replacement activation threshold	Not present
- Time to trigger	0
- Amount of reporting	Not Present
- Reporting Interval	Not Present

<ul style="list-style-type: none"> <li>- Reporting cell status</li> <li>- CHOICE reported cells</li> </ul>	Report cells within monitored set cells on used frequency
<ul style="list-style-type: none"> <li>- Maximum number of reported cells</li> </ul>	1
- Inter-frequency measurement system information	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

## SYSTEM INFORMATION CHANGE INDICATION (Step 1a)

Information Element	Value/Remarks
BCCH modification info	
- MIB Value Tag	3
- BCCH modification time	Not Present

## SYSTEM INFORMATION CHANGE INDICATION (Step 21a)

Information Element	Value/Remarks
BCCH modification info	
- MIB Value Tag	2
- BCCH modification time	Not Present

## RADIO BEARER RECONFIGURATION (Step 2, Step 9a, Step 12, Step 14d and Step 24)

Use the same message type found in Annex A, with condition set to A4.

## MEASUREMENT REPORT (Steps 4 and 9c)

Information Element	Value/remark
Measurement identity	Check to see if set to 10
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measurement results	
- Cell measured results	
- Cell Identity	Check to see if this IE is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 2
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is absent
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event Results	
- CHOICE event result	Check to see if it's set to 'Intra-frequency measurement event results'
- Intra-frequency event identity	Check to see if this IE is set to '1e'
- Cell measurement event results	
- Primary CPICH info	
- Primary scrambling code	Check to see if it's the same code for cell 2

## MEASUREMENT CONTROL (Step 5)

Information Element	Value/remark
Measurement Identity	11
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Event Trigger
Additional measurements list	Not Present
CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency info list	
- Intra-frequency cell id	3
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 3
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cells selection and Re-selection info	Not Present
- Cells for measurement	
- Intra-frequency cell id	3
- Intra-frequency measurement quantity	
- Filter Coefficient	0
- Measurement quantity	CPICH RSCP
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	TRUE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected cells	Not present
- Reporting cell status	Not present
- Measurement validity	Not present
- CHOICE report criteria	Intra-frequency measurement criteria
- Parameters required for each event	
- Intra-frequency event identity	1e
- Triggering condition 1	Not Present
- Triggering condition 2	Monitored set cells
- Reporting Range	Not Present
- Cells forbidden to affect Reporting range	Not Present
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to the same scrambling code for cell 3
- W	Not Present
- Hysteresis	0 dB
- Reporting deactivation threshold	Not Present
- Replacement activation threshold	Not Present
- Threshold used frequency	-90 dBm
- Time to Trigger	0
- Amount of reporting	Not Present

- Reporting interval - Reporting cell status - CHOICE reported cells	Not Present
- Maximum number of reported cells	Report cells within monitored set cells on used frequency 1
DPCH compressed mode status info	Not Present

## MEASUREMENT REPORT (Step 6)

Information Element	Value/remark
Measurement identity	Check to see if set to 11
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measurement results	
- Cell measured results	Check to see if this IE is absent
- Cell Identity	Check to see if this IE is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	
- Primary CPICH Info	Check to see if it's the same code for cell 3
- Primary Scrambling Code	Check to see if this IE is absent
- CPICH Ec/No	Check to see if this IE is present
- CPICH RSCP	Check to see if this IE is absent
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if it's set to 'Intra-frequency measurement event results'
Event Results	
- CHOICE event result	Check to see if this IE is set to '1e'
- Intra-frequency event identity	
- Cell measurement event results	Check to see if it's the same code for cell 3
- Primary CPICH info	
- Primary scrambling code	

## MEASUREMENT REPORT (Step 6a)

Information Element	Value/remark
Measurement identity	Check to see if set to 10
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measurement results	
- Cell measured results	Check to see if this IE is absent
- Cell Identity	Check to see if this IE is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	
- Primary CPICH Info	Check to see if it's the same code for cell 3
- Primary Scrambling Code	Check to see if this IE is absent
- CPICH Ec/No	Check to see if this IE is present
- CPICH RSCP	Check to see if this IE is absent
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event Results	Check to see if it's set to 'Intra-frequency measurement event results'
- CHOICE event result	Check to see if this IE is set to '1e'
- Intra-frequency event identity	
- Cell measurement event results	
- Primary CPICH info	
- Primary scrambling code	Check to see if it's the same code for cell 3

PHYSICAL CHANNEL RECONFIGURATION (Steps 7, 9d, 14a and 18)

Use the same message sub-type found in Annex A, which is entitled "Packet to CELL\_FACH from CELL\_DCH in PS".

## MEASUREMENT CONTROL (Steps 10 and 17)

Information Element	Value/remark
Measurement Identity	12
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Event Trigger
Additional measurements list	Not Present
CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	
- CHOICE intra- frequency cell removal	Remove no intra-frequency cells
- New intra-frequency info list	
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 2
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection info	Not Present
- Cells for measurement	Not Present
- Intra-frequency measurement quantity	
- Filter Coefficient	0
- Measurement quantity	CPICH RSCP
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	TRUE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected cells	Not present
- Reporting cell status	Not present
- Measurement validity	
- UE state	CELL_DCH
- CHOICE report criteria	Intra-frequency measurement criteria
- Parameters required for each event	
- Intra-frequency event identity	1e
- Triggering condition 1	Not Present
- Triggering condition 2	Monitored set cells
- Reporting Range	Not Present
- Cells forbidden to affect Reporting range	Not Present
- Primary CPICH Info	
- Primary Scrambling Code	Set to the same scrambling code for cell 2
- W	Not Present
- Hysteresis	0 dB
- Reporting deactivation threshold	Not Present
- Replacement activation threshold	Not Present
- Threshold Used Frequency	-80 dBm
- Time to Trigger	0
- Amount of reporting	Not Present
- Reporting interval	Not Present

<ul style="list-style-type: none"> <li>- Reporting cell status</li> <li>- CHOICE reported cell</li>   <li>- Maximum number of reported cells</li> </ul>	Report cells within monitored set cells on used frequency 1 Not Present
DPCH compressed mode status info	

## MEASUREMENT REPORT (Steps 14, 14f and 17a)

Information Element	Value/remark
Measurement identity	Check to see if set to 12
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measurement results	
- Cell measured results	Check to see if this IE is absent
- Cell Identity	Check to see if this IE is absent
- SFN-SFN observed time difference	
- Cell synchronisation information	Check to see if it's the same code for cell 2
- Primary CPICH Info	Check to see if this IE is absent
- Primary Scrambling Code	Check to see if this IE is present
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is absent
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	
Additional measured results	Check to see if it's set to 'Intra-frequency measurement event results'
Event Results	
- CHOICE event result	Check to see if this IE is set to '1e'
- Intra-frequency event identity	
- Cell measurement event results	Check to see if it's the same code for cell 2
- Primary CPICH info	
- Primary scrambling code	

## MEASUREMENT CONTROL (Step 15)

Information Element	Value/remark
Measurement Identity	12
Measurement Command	Release
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE Measurement type	Not Present
DPCH compressed mode status info	Not Present

## System Information Block type 11 for cell 2 (Step 21)

Information Element	Value/Remark
SIB12 indicator	FALSE
FACH measurement occasion info	Not Present
Measurement control system information	
- Use of HCS	Not used
- Cell selection and reselection quality measure	CPICH Ec/No
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	Not present
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cell
- New intra-frequency cells	
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	Not present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Primary scrambling code of cell 2
- Primary CPICH Tx power	Not present
- TX Diversity indicator	FALSE
- Cell Selection and Re-selection info	Not present
- Cells for measurement	Not present
- Intra-frequency measurement quantity	Not present
- Intra-frequency reporting quantity for RACH reporting	Not present
- Maximum number of reported cells on RACH	Not present
- Reporting information for state CELL_DCH	Not present
- Inter-frequency measurement system information	Not present
- Inter-RAT measurement system information	Not present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

## CELL UPDATE (Step 22)

Information Element	Value/remark
U-RNTI	
- SRNC Identity	Check to see if set to '0000 0000 0001'
- S-RNTI	Check to see if set to '0000 0000 0000 0000 0001'
Cell Update Cause	Check to see if set to 'Cell Re-selection'
Protocol error indicator	Check to see if it is absent or set to 'FALSE'
Measured results on RACH	Check to see if it is absent
Protocol error information	Check to see if it is absent

## CELL UPDATE CONFIRM (Step 23)

Use the default message content of the same message type in Annex A, with the following exceptions.

Information Element	Value/Remarks
New C-RNTI	'1010 1010 1010 1010'

## UTRAN MOBILITY INFORMATION CONFIRM (Step 23a)

Only the message type is checked.

## MEASUREMENT REPORT (Step 26)

Information Element	Value/Remarks
Measurement identity	Check to see if set to 1
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measurement results	
- Cell measured results	
- Cell Identity	Check to see if this IE is present
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is present
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 1
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event Results	
- CHOICE event result	Check to see if it's set to 'Intra-frequency measurement event results'
- Intra-frequency event identity	Check to see if this IE is set to '1b'
- Cell measurement event results	
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Check to see if it's the same code for cell 1
- Primary CPICH info	
- Primary scrambling code	Check to see if it's the same code for cell 3

## 8.4.1.7.5 Test Requirement

After step 3 the UE shall report cell 2's CPICH RSCP value by transmitting MEASUREMENT REPORT messages.

After step 5 the UE shall transmit two MEASUREMENT REPORT messages which contain measured results of cell 3's CPICH RSCP value only, one for measurement identity 10 and one for measurement identity 11.

After step 9 and step 11 the UE shall not transmit MEASUREMENT REPORT messages, which pertain to intra-frequency type measurement reporting.

After step 9b, the UE shall transmit a MEASUREMENT REPORT according to what is broadcast in SIB 11 and 12 of cell 1, and MEASUREMENT REPORT message pertaining to the MEASUREMENT CONTROL message that it had received in step 5.

After steps 13 and 14e, the UE shall resume the measurement and reporting activities as specified in MEASUREMENT CONTROL message received in step 10. The UE shall transmit MEASUREMENT REPORT messages, containing measured results of cell 2's CPICH RSCP value.

After step 15 the UE shall stop measurement activities pertaining to periodic reporting of cell 2's CPICH RSCP, no MEASUREMENT REPORT messages shall be detectable by the SS on the uplink DCCH.

After step 17, the UE shall transmit a MEASUREMENT REPORT message to the SS as specified in the MEASUREMENT CONTROL message received in step 17.

After step 21 the UE shall re-select to cell 2 and initiate a cell update procedure. SS shall receive a CELL UPDATE message on the uplink CCCH of cell 2, with the "cell update cause" IE stated as "cell re-selection".

After step 23, the UE shall transmit UTRAN MOBILITY INFORMATION CONFIRM message on the uplink DCCH AM RLC.

After step 25 the UE shall report cell 1 and 3's CPICH RSCP value by transmitting MEASUREMENT REPORT messages.

### 8.4.1.8 Measurement Control and Report: Inter-frequency measurement for transition from CELL\_FACH to CELL\_DCH state

#### 8.4.1.8.1 Definition

#### 8.4.1.8.2 Conformance requirement

Upon transition from CELL\_FACH to CELL\_DCH state, the UE shall:

- 1> stop monitoring the list of cells assigned in the IE "inter-frequency cell info list" in System Information Block type 12 (or System Information Block type 11);
- 1> retrieve each set of measurement control information of measurement type "inter-frequency" stored in the variable MEASUREMENT\_IDENTITY; and
- 1> if the IE "measurement validity" for a measurement has been assigned the value "CELL\_DCH":
  - 2> resume the measurement reporting.

If the IE "DPCH compressed mode info" is included, and if the IE group "transmission gap pattern sequence configuration parameters" is included, the UE shall for each transmission gap pattern sequence perform the following consistency checks:

- 1> if UE, according to its measurement capabilities, and for the measurement purpose indicated by IE "TGMP", requires UL compressed mode for measurements on any of the cells to be measured according to UE variable CELL\_INFO\_LIST, and CHOICE 'UL/DL mode' indicates 'DL only':
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.
- 1> if UE, according to its measurement capabilities, and for the measurement purpose indicated by IE "TGMP", requires DL compressed mode for measurements on any of the cells to be measured according to UE variable CELL\_INFO\_LIST, and CHOICE 'UL/DL mode' indicates 'UL only':
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.
- 1> if UE already has an active transmission gap pattern sequence that, according to IE "TGMP", has the same measurement purpose, and both patterns will be active after the new configuration has been taken into use:
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.

If variable INVALID\_CONFIGURATION has value FALSE after UE has performed the checks above, the UE shall:

- 1> if pattern sequence corresponding to IE "TGPSI" is already active (according to "TGPS Status Flag"):
  - 2> deactivate this pattern sequence at the beginning of the frame, indicated by IE "Activation time" received in this message, when the new configuration received in this message is taken into use.
- 1> update each pattern sequence to the variable TGPS\_IDENTITY according to the IE "TGPSI";
- 1> update into the variable TGPS\_IDENTITY the configuration information defined by IE group "transmission gap pattern sequence configuration parameters";
- 1> after the new configuration has been taken into use:
  - 2> activate the stored pattern sequence corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "activate" at the time indicated by IE "TGCFN"; and
  - 2> begin the inter-frequency corresponding to the pattern sequence measurement purpose of each activated pattern sequence;
  - 2> if the new configuration is taken into use at the same CFN as indicated by IE "TGCFN":
    - 3> start the concerned pattern sequence immediately at that CFN.

- 1> monitor if the parallel transmission gap pattern sequences create an illegal overlap, and in case of overlap, take actions as specified in TS 25.331 subclause 8.2.11.2.

## Reference

3GPP TS 25.331 clause 8.4.1.7.2, 8.4.1.3

### 8.4.1.8.3 Test Purpose

1. To confirm that the UE stops monitoring the list of cells assigned in the IE "inter-frequency cell info" in System Information Block type 11 or 12 when it transits from CELL\_FACH state to CELL\_DCH state.
2. To confirm that the UE resumes inter-frequency measurements and reporting stored for which the measurement control information has IE "measurement validity" assigned to the value "CELL\_DCH", after it re-enters CELL\_DCH state from CELL\_FACH state.
3. To confirm that the UE resumes inter-frequency measurement and reporting activities after it has received a MEASUREMENT CONTROL message specifying that a stored compressed mode pattern sequence be re-activated.

Note that this test assumes that the UE requires compressed mode to perform inter-frequency measurements.

### 8.4.1.8.4 Method of test

#### Initial Condition

System Simulator: 3 cells – Cells 1, cell 4 and cell 5 are active.

UE: PS-DCCH+DTCH\_DCH (State 6-10) in cell 1 as specified in clause 7.4 of TS 34.108.

#### Related ICS/IXIT statements

- Compressed mode required            yes/no

In case the UE supports both PS and CS CN domains, this test shall be run twice, once starting from the initial condition CS-DCCH+DTCH\_DCH, and once starting from the initial condition PS-DCCH+DTCH\_DCH.

#### Test Procedure

Table 8.4.1.8-1 illustrates the downlink power to be applied for the 3 cells in this test.

**Table 8.4.1.8-1**

Para-meter	Unit	Cell 1	Cell 4	Cell 5
UTRA RF Channel Number		Ch. 1	Ch. 2	Ch. 2
CPICH Ec	dBm/3.84 MHz	-60	-75	-75

#### Test procedure when the initial condition is that the UE is connected to the PS domain:

The UE is in CELL\_DCH state in cell 1 (step 1). SS transmits MEASUREMENT CONTROL message to add cell 5 into the IE "inter-frequency cell info" (step 2). If UE requires compressed mode, SS checks that no MEASUREMENT REPORT messages are detected on the uplink DCCH after it has transmitted the MEASUREMENT CONTROL message. (step 3). If UE does not require compressed mode, SS checks that UE sends MEASUREMENT REPORT message on the uplink DCCH.

SS sends a PHYSICAL CHANNEL RECONFIGURATION message on the downlink DCCH and configures PRACH and S-CCPCH physical channels (step 4). The UE shall reconfigure itself to receive and transmit using the new common physical channels assigned, and send PHYSICAL CHANNEL RECONFIGURATION COMPLETE on the uplink DCCH (step 5). SS modifies the content of Master Information Block and System Information Block type 12

messages, such that cell 4 is added in the list of cells assigned in the IE "inter-frequency cell info" (step 6). SS transmits SYSTEM INFORMATION CHANGE INDICATION message to UE. Once again, SS verifies that the UE does not transmit MEASUREMENT REPORT messages in the uplink direction (step 7).

SS sends PHYSICAL CHANNEL RECONFIGURATION message, and configures dedicated physical. If UE requires compressed mode, in this message, SS commands the UE to start applying compressed mode mechanism for DPCH. The UE shall move to CELL\_DCH state and then reply with PHYSICAL CHANNEL RECONFIGURATION COMPLETE message (step 9). SS waits for 10 seconds. The UE shall transmit 1 MEASUREMENT REPORT message, containing the selected frequency quality estimate (in this case CPICH RSCP) of cell 4. The UE shall also report the triggering of event '2c' in the IE "Event results" of MEASUREMENT REPORT message (step 10).

SS transmits a MEASUREMENT CONTROL message on the downlink DCCH using AM-RLC (step 11). The UE shall transmit MEASUREMENT REPORT messages at 2 seconds interval (step 12).

If UE requires compressed mode, SS transmits a PHYSICAL CHANNEL RECONFIGURATION message and deactivates the compressed mode pattern sequence with "TGPSI" IE set to 1 (step 13). The UE shall respond by sending PHYSICAL CHANNEL RECONFIGURATION COMPLETE message and also stop the periodic reporting activities (step 14).

Following this if UE requires compressed mode, SS sends a MEASUREMENT CONTROL message and re-activates the compressed mode pattern sequence by using the "DPCH compressed mode status" IE (step 15). SS confirms that the UE has reconfigured itself to start measurement reporting again. The SS shall receive MEASUREMENT REPORT messages continuously at 2 seconds interval (step 16). The SS then sends a MEASUREMENT CONTROL ordering the UE to release the measurement corresponding to identity 14, and to stop compressed mode (step 17). At reception of that message, the UE shall stop compressed mode and delete the measurement corresponding to that identity (step 18). The SS then transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE to order the UE to start compressed mode once again (step 19). The UE answers with a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message, and starts compressed mode (step 20). SS checks then that it does not receive any MEASUREMENT REPORT message from the UE after that point (step 21).

Test procedure when the initial condition is that the UE is connected to the CS domain:

The UE is in CELL\_DCH state in cell 1 (step 1). SS transmits MEASUREMENT CONTROL message to add cell 5 into the IE "inter-frequency cell info" (step 2). SS checks that no MEASUREMENT REPORT messages are detected on the uplink DCCH after it has transmitted the MEASUREMENT CONTROL message (step 3).

SS sends PHYSICAL CHANNEL RECONFIGURATION message (step 8). In that message, SS commands the UE to start applying compressed mode. The UE shall then reply with PHYSICAL CHANNEL RECONFIGURATION COMPLETE message (step 9).

The UE shall transmit 1 MEASUREMENT REPORT message, containing the selected frequency quality estimate (in this case CPICH RSCP) of cell 5. The UE shall also report the triggering of event '2c' in the IE "Event results" of MEASUREMENT REPORT message (step 10).

SS transmits a MEASUREMENT CONTROL message on the downlink DCCH using AM-RLC (step 11). The UE shall transmit MEASUREMENT REPORT messages at 2 seconds interval (step 12). SS transmits a PHYSICAL CHANNEL RECONFIGURATION message and deactivates the compressed mode pattern sequence with "TGPSI" IE set to 1 (step 13). The UE shall respond by sending PHYSICAL CHANNEL RECONFIGURATION COMPLETE message and also stop the periodic reporting activities (step 14). Following this, SS sends a MEASUREMENT CONTROL message and re-activates the compressed mode pattern sequence by using the "DPCH compressed mode status" IE (step 15). SS confirms that the UE has reconfigured itself to start measurement reporting again. The SS shall receive MEASUREMENT REPORT messages continuously at 2 seconds interval (step 16). The SS then sends a MEASUREMENT CONTROL ordering the UE to release the measurement corresponding to identity 14, and to stop compressed mode (step 17). At reception of that message, the UE shall stop compressed mode and delete the measurement corresponding to that identity (step 18). The SS then transmits a PHYSICAL CHANNEL RECONFIGURATION message to the UE to order the UE to start compressed mode once again (step 19). The UE answers with a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message, and starts compressed mode (step 20). SS checks then that it does not receive any MEASUREMENT REPORT message from the UE after that point (step 21).

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				(Valid for both the PS and CS cases) The initial state of UE is in CELL_DCH state of cell 1.
2		←	MEASUREMENT CONTROL	(Valid for both the PS and CS cases) SS specifies inter-frequency measurement and reporting parameters for cell 5, with "measurement validity" IE present and "UE state" set to "CELL_DCH".

Step	Direction		Message	Comment
	UE	SS		
3		→	MEASUREMENT REPORT	(Valid for both the PS and CS cases) If compressed mode is not required (refer ICS/IXIT), SS checks that UE transmit this message, or else SS checks that no MEASUREMENT REPORT messages are detected on the uplink DCCH.
4		←	PHYSICAL CHANNEL RECONFIGURATION	(Only in the PS case) SS configures PRACH and S-CCPCH physical resources.
5		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	(Only in the PS case) UE shall move to CELL_FACH state.
6		←	Master Information Block System Information Block type 12	(Only in the PS case) SS modifies MIB and SIB 12 in order to include cell 4 into the list of cells in IE "inter-frequency cell info".
7		←	SYSTEM INFORMATION CHANGE INDICATION	(Only in the PS case) After SS transmits this message, SS confirms that there are no transmissions of MEASUREMENT REPORT message in the uplink direction.
8		←	PHYSICAL CHANNEL RECONFIGURATION	(Valid for both the PS and CS cases) See specific message content below.
9		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	(Valid for both the PS and CS cases) UE shall move to CELL_DCH state.
10		→	MEASUREMENT REPORT	(Valid for both the PS and CS cases) UE shall resume inter-frequency measurement task for cell 5 and report the measured CPICH RSCP value for cell 5.
11		←	MEASUREMENT CONTROL	(Valid for both the PS and CS cases) SS changes the reporting criteria for cell 5 to 'periodic reporting'
12		→	MEASUREMENT REPORT	(Valid for both the PS and CS cases) UE shall begin to transmit this message at 2 seconds interval. If compressed mode is not required (refer ICS/IXIT), the test ends here.
13		←	PHYSICAL CHANNEL RECONFIGURATION	(Valid for both the PS and CS cases) SS deactivates the currently used pattern sequence for compressed mode operation.
14		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	(Valid for both the PS and CS cases) UE stays in CELL_DCH state. SS verifies that no MEASUREMENT REPORT messages are received.
15		←	MEASUREMENT CONTROL	(Valid for both the PS and CS cases) SS activates the pattern sequence stored by the UE.

Step	Direction		Message	Comment
	UE	SS		
16		→	MEASUREMENT REPORT	(Valid for both the PS and CS cases) SS checks that MEASUREMENT REPORT messages are received at 2 seconds interval.
17		←	MEASUREMENT CONTROL	(Valid for both the PS and CS cases) SS orders the UE to release the measurement with identity 14, and to stop compressed mode
18				(Valid for both the PS and CS cases) SS checks that the UE has stopped compressed mode.
19		←	PHYSICAL CHANNEL RECONFIGURATION	(Valid for both the PS and CS cases) SS orders the UE to start compressed mode again.
20		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	(Valid for both the PS and CS cases) The UE transmits the response message and starts compressed mode
21				(Valid for both the PS and CS cases) SS checks that the UE does not send any MEASUREMENT REPORT

#### Specific Message Content

Unless explicitly stated, the messages below shall be used for both the CS case and the PS case.

## MEASUREMENT CONTROL (Step 2)

Information Element	Value/remark
Measurement Identity	14
Measurement Command	Setup
Measurement Reporting Mode	Acknowledged Mode RLC
- Measurement Reporting Transfer Mode	Event Trigger
- Periodic Reporting / Event Trigger Reporting Mode	Not Present
Additional measurements list	Inter-frequency measurement
CHOICE measurement type	No inter-frequency cells removed
- Inter-frequency cell info list	5
- CHOICE inter-frequency cell removal	UARFCN of the uplink frequency for cell 5
- New inter-frequency info list	UARFCN of the downlink frequency for cell 5
- Inter-frequency cell id	0 dB
- Frequency info	0 chips
- UARFCN uplink (Nu)	FALSE
- UARFCN downlink (Nd)	FDD
- Cell info	Set to same code as used for cell 5
- Cell individual offset	Not Present
- Reference time difference to cell	FALSE
- Read SFN Indicator	Not Present
- CHOICE Mode	FALSE
- Primary CPICH Info	Not Present
- Primary Scrambling Code	Set to same code as used for cell 5
- Primary CPICH TX power	FALSE
- TX Diversity Indicator	Not Present
- Cells for measurement	Inter-frequency reporting criteria
- Inter-frequency measurement quantity	0
- CHOICE reporting criteria	CPICH RSCP
- Filter Coefficient	
- Measurement quantity for frequency quality estimate	
- Inter-frequency reporting quantity	FALSE
- UTRA Carrier RSSI	FALSE
- Frequency quality estimate	FALSE
- Non frequency related cell reporting quantities	No report
- SFN-SFN observed time difference reporting	
indicator	FALSE
- Cell synchronisation information reporting indicator	FALSE
indicator	TRUE
- Cell Identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	TRUE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	Not present
- Reporting cell status	CELL_DCH
- Measurement validity	
- UE State	On with no reporting
- Inter-frequency set update	Not Present
-UE autonomous update	Inter-frequency measurement reporting criteria
- Non autonomous update mode	
- CHOICE report criteria	2c
- Parameters required for each event	Not Present
- Inter-frequency event identity	Not Present
- Threshold used frequency	Not Present
- W used frequency	1.0 dB
- Hysteresis	10 seconds
- Time to trigger	
- Reporting cell status	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- CHOICE reported cell	2
- Maximum number of reported cells	
- Parameters required for each non-used frequency	
frequency	-85 dBm
- Threshold non used frequency	0.0
- W non-used frequency	Not Present
DPCH compressed mode status info	

## PHYSICAL CHANNEL RECONFIGURATION (Step 4)

Use the same message sub-type found in Annex A titled "(Packet to CELL\_FACH from CELL\_DCH in PS)".

## Master Information Block (Step 6)

Information Element	Value/Remark
Value Tag	2

## System Information Block type 12 (Step 6)

Information Element	Value/remark
FACH measurement occasion info	
- FACH Measurement occasion cycle length coefficient	2
- Inter-frequency FDD measurement indicator	TRUE
- Inter-frequency TDD measurement indicator	FALSE
- Inter-RAT measurement indicators	Not Present
Measurement control system information	
-Use of HCS	Not used
-Cell selection and reselection quality measure	CPICH Ec/No
- Intra-frequency measurement system information	Not Present
- Inter-frequency measurement system information	
- Inter-frequency cell info list	
- CHOICE inter-frequency cells removal	No inter-frequency cells removed
- New inter-frequency info list	
- Inter-frequency cell id	Set to id of cell 4
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 4
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection info	Not Present – use default values
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

## PHYSICAL CHANNEL RECONFIGURATION (Step 8 for the PS case)

If UE do not require compressed mode, use the same message sub-type found in [9] TS 34.108 clause 9, which is entitled "(Packet to CELL\_DCH from CELL\_FACH in PS)".

If UE requires compressed mode, use the same message sub-type found in Annex A, which is entitled "(Packet to CELL\_DCH from CELL\_FACH in PS)", with the following exceptions in the IE(s) concerned:

Information Element	Value/remark
Downlink information common for all radio links <ul style="list-style-type: none"> <li>- Downlink DPCH info common for all RL</li> <li>- DPCH compressed mode info</li> <li>- TGPSI</li> <li>- TGPS Status Flag</li> <li>- TGCFN</li> <li>- Transmission gap pattern sequence configuration parameters</li> <li>- TGMP</li> <li>- TGPRC</li> <li>- TGSN</li> <li>- TGL1</li> <li>- TGL2</li> <li>- TGD</li> <li>- TGPL1</li> <li>- TGPL2</li> <li>- RPP</li> <li>- ITP</li> <li>- CHOICE UL/DL Mode</li> <li>- Downlink compressed mode method</li> <li>- Uplink compressed mode method</li> <li>- Downlink frame type</li> <li>- DeltaSIR1</li> <li>- DeltaSIRAfter1</li> <li>- DeltaSIR2</li> <li>- DeltaSIRAfter2</li> <li>- N identify abort</li> <li>- T Reconfirm abort</li> <li>- TX Diversity Mode</li> <li>- SSDT information</li> <li>- Default DPCH Offset Value</li> </ul>	Not Present  1 Activate (Current CFN+(256 – TTI/10msec)) mod 256  FDD Measurement Infinity 4 7 Not Present 0 3 Not Present Mode 0 Mode 0 UL and DL UL only or DL only depending on UE capability SF/2 (or not sent, depending on the UE capability) SF/2 (or not sent, depending on UE capability) B 2.0 1.0 Not Present Not Present Not Present Not Present None Not Present 0

## PHYSICAL CHANNEL RECONFIGURATION (Step 8 for the CS case)

Information Element	Value/Remark
Activation time	(256+CFN-(CFN MOD 8 + 8))MOD 256
New U-RNTI	Not Present
New C-RNTI	Not Present
New DSCH-RNTI	Not Present
RRC State indicator	CELL_DCH
UTRAN DRX cycle length coefficient	Not Present
CN information info	Not Present
URA identity	Not Present
Downlink counter synchronisation info	Not Present
Frequency info	Not Present
Maximum allowed UL TX power	Not Present
CHOICE <i>channel requirement</i>	Not Present
CHOICE <i>mode</i>	FDD
- Downlink PDSCH information	Not Present
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	Not Present
- DPCH compressed mode info	
- TGPSI	1
- TGPS Status Flag	Activate
- TGCFN	(Current CFN+(256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence configuration parameters	
- TGMP	FDD Measurement
- TGPRC	Infinity
- TGSN	4
- TGL1	7
- TGL2	Not Present
- TGD	0
- TGPL1	3
- TGPL2	Not Present
- RPP	Mode 0
- ITP	Mode 0
- CHOICE UL/DL Mode	UL and DL, UL only or DL only (depending on the UE capability)
- Downlink compressed mode method	SF/2 (or not sent, depending on the UE capability)
- Uplink compressed mode method	SF/2 (or not sent, depending on the UE capability)
- Downlink frame type	B
- DeltaSIR1	2.0
- DeltaSIRAfter1	1.0
- DeltaSIR2	Not Present
- DeltaSIRAfter2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	Not Present
- TX Diversity mode	Not Present
- SSdT information	Not Present
- Default DPCH Offset Value	Not Present
Downlink information for each radio link	
- CHOICE mode	FDD
- Primary CPICH info	Set to scrambling code of cell 1
- Cell ID	Not present
- PDSCH with SHO DCH info	Not present
- PDSCH code mapping	Not present
- Downlink DPCH info for each RL	
- CHOICE mode	FDD
- Primary CPICH usage for channel estimation	Primary CPICH may be used
- DPCH frame offset	0
- Secondary CPICH info	Not present
- DL channelisation code	
- Secondary scrambling code	Not present
- Spreading factor	Reference to TS34.108 clause 6.10
	Parameter Set
- Code number	Same as the code currently allocated to the

<ul style="list-style-type: none"> <li>- Scrambling code change</li> <li>- TPC combination index</li> <li>- SSDT cell identity</li> <li>- Closed loop timing adjustment mode</li> </ul>	UE Code change 0 Not present Not present
---	--

## MEASUREMENT REPORT (Step 3 and 10)

Information Element	Value/remark
Measurement identity	Check to see if set to 14
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-frequency measured results list"
- Inter-frequency measurement results	
- Frequency info	
- UARFCN (uplink)	Check to see if set to the UARFCN of the uplink frequency for cell 5
- UARFCN (downlink)	Check to see if set to the UARFCN of the downlink frequency for cell 5
- UTRA carrier RSSI	Check to see if it is absent
- Inter-frequency cell measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if it is absent
- Cell synchronisation information	Check to see if it is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if set to the same code for cell 5
- CPICH Ec/No	Check to see if it is absent
- CPICH RSCP	Check to see if it is present
- Pathloss	Check to see if it is absent
Measured Results on RACH	Check to see if it is absent
Event Results	
- CHOICE event result	Inter-frequency event results
- Inter-frequency event identity	Check to see if it's set to '2c'
- Inter-frequency cells	
- Frequency Info	
- UARFCN (uplink)	Check to see if set to the UARFCN of the uplink frequency for cell 4
- UARFCN (downlink)	Check to see if set to the UARFCN of the downlink frequency for cell 4
- Non frequency related measurement event results	
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if set to the same code for cell 4

## MEASUREMENT CONTROL (Step 11)

Information Element	Value/remark
Measurement Identity	14
Measurement Command	Set up
Measurement Reporting Mode	Acknowledged Mode RLC
- Measurement Reporting Transfer Mode	Periodical reporting
- Periodic Reporting / Event Trigger Reporting Mode	Not Present
Additional measurements list	Inter-frequency measurement
CHOICE measurement type	No inter-frequency cells removed
- Inter-frequency cell info list	5
- CHOICE inter-frequency cell removal	UARFCN of the uplink frequency for cell 5
- New inter-frequency info list	UARFCN of the downlink frequency for cell 5
- Inter-frequency cell id	0 dB
- Frequency info	0 chips
- UARFCN uplink (Nu)	FALSE
- UARFCN downlink (Nd)	FDD
- Cell info	Set to same code as used for cell 5
- Cell individual offset	Not Present
- Reference time difference to cell	FALSE
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	Set to same code as used for cell 5
- Primary Scrambling Code	Not Present
- Primary CPICH TX power	FALSE
- TX Diversity Indicator	FALSE
- Cells for measurement	5
- Inter-frequency cell id	Inter-frequency reporting criteria
- Inter-frequency measurement quantity	0
- CHOICE reporting criteria	CPICH RSCP
- Filter Coefficient	estimate
- Measurement quantity for frequency quality	- Inter-frequency reporting quantity
estimate	- UTRA Carrier RSSI
- Inter-frequency reporting quantity	FALSE
- UTRA Carrier RSSI	FALSE
- Frequency quality estimate	FALSE
- Non frequency related cell reporting quantities	No report
- SFN-SFN observed time difference reporting	indicator
indicator	- Cell synchronisation information reporting
- Cell synchronisation information reporting	FALSE
indicator	indicator
- Cell Identity reporting indicator	TRUE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting cell status	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- CHOICE reported cell	2
- Maximum number of reported cells	Not Present
- Measurement validity	Not Present
- Inter-frequency set update	Not Present
- CHOICE report criteria	Periodic reporting criteria
- Amount of reporting	Infinity
- Reporting interval	2000 milliseconds
DPCH compressed mode status info	Not Present

## MEASUREMENT REPORT (Step 12, 16)

Information Element	Value/remark
Measurement identity	Check to see if set to 14
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-frequency measured results list"
- Inter-frequency measurement results	
- Frequency info	
- UARFCN (uplink)	Check to see if set to the UARFCN of the uplink frequency for cell 5
- UARFCN (downlink)	Check to see if set to the UARFCN of the downlink frequency for cell 5
- UTRA carrier RSSI	Check to see if it is absent
- Inter-frequency cell measurement results	
- Cell measured results	
- Cell Identity	Check to see if is absent
- SFN-SFN observed time difference	Check to see if it is absent
- Cell synchronisation information	Check to see if it is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if set to the same code for cell 5
- CPICH Ec/No	Check to see if it is absent
- CPICH RSCP	Check to see if it is present
- Pathloss	Check to see if it is absent
- CFN-SFN observed time difference	Check to see if it is absent
Measured Results on RACH	Check to see if it is absent
Event Results	Check to see if it is absent

## PHYSICAL CHANNEL RECONFIGURATION (Step 13)

Use the same message transmitted in step 8 with the following modifications:

Information Element	Value/Remark
Activation time	$(256 + \text{CFN} - (\text{CFN} \bmod 8 + 8)) \bmod 256$
New U-RNTI	Not Present
New C-RNTI	Not Present
New DSCH-RNTI	Not Present
RRC State indicator	CELL_DCH
UTRAN DRX cycle length coefficient	Not Present
CN information info	Not Present
URA identity	Not Present
Downlink counter synchronisation info	Not Present
Frequency info	Not Present
Maximum allowed UL TX power	Not Present
CHOICE <i>channel requirement</i>	Not Present
CHOICE <i>mode</i>	FDD
>Downlink PDSCH information	Not Present
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	Not Present
- DPCH compressed mode info	
- TGPSI	1
- TGPS Status Flag	deactivate
- TGCFN	Not Present
- Transmission gap pattern sequence	Not Present
configuration parameters	
- TX Diversity mode	Not Present
- SSDT information	Not Present
- Default DPCH Offset Value	Not Present
Downlink information for each radio link	Not Present

## MEASUREMENT CONTROL (Step 15)

Information Element	Value/remark
Measurement Identity	14
Measurement Command	Modify
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Not Present
DPCH compressed mode status info	
- TGPS reconfiguration CFN	$(\text{Current CFN} + (256 - \text{TTI}/10\text{msec})) \bmod 256$
- Transmission gap pattern sequence	
- TGPSI	1
- TGPS Status Flag	Activate
- TGCFN	$(\text{Current CFN} + (256 - \text{TTI}/10\text{msec})) \bmod 256$

## MEASUREMENT CONTROL (Step 17)

Information Element	Value/Remark
Measurement Identity	14
Measurement Command	Release
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Not Present
DPCH compressed mode status info	
- TGPS reconfiguration CFN	(Current CFN+(256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence	
- TGPSI	1
- TGPS Flag	Deactivate
- TGCFN	Not present

## PHYSICAL CHANNEL RECONFIGURATION (Step 19 for the PS case)

Information Element	Value/Remark
Activation time	Not Present
New U-RNTI	Not Present
New C-RNTI	Not Present
New DSCH-RNTI	Not Present
RRC State indicator	CELL_DCH
UTRAN DRX cycle length coefficient	Not Present
CN information info	Not Present
URA identity	Not Present
Downlink counter synchronisation info	Not Present
Frequency info	Not Present
Maximum allowed UL TX power	Not Present
CHOICE <i>channel requirement</i>	Not Present
CHOICE <i>mode</i>	FDD
- Downlink PDSCH information	Not Present
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	Not Present
- DPCH compressed mode info	
- TGPSI	1
- TGPS Status Flag	Activate
- TGCFN	(Current CFN+(256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence configuration parameters	
- TGMP	FDD Measurement
- TGPRC	Infinity
- TGSN	4
- TGL1	7
- TGL2	Not Present
- TGD	0
- TGPL1	3
- TGPL2	Not Present
- RPP	Mode 0
- ITP	Mode 0
- CHOICE UL/DL Mode	UL and DL, UL only or DL only (depending on the UE capability)
- Downlink compressed mode method	SF/2(or not sent, depending on the UE capability)
- Uplink compressed mode method	SF/2(or not sent, depending on the UE capability)
	B
	2.0
- Downlink frame type	1.0
- DeltaSIR1	Not Present
- DeltaSIRAfter1	Not Present
- DeltaSIR2	Not Present
- DeltaSIRAfter2	Not Present
- N identify abort	
- T Reconfirm abort	
- TX Diversity mode	Not Present
- SSDT information	Not Present
- Default DPCH Offset Value	Not Present
Downlink information for each radio link	Not Present

## PHYSICAL CHANNEL RECONFIGURATION (Step 19 for the CS case)

Information Element	Value/Remark
Activation time	Not Present
New U-RNTI	Not Present
New C-RNTI	Not Present
New DSCH-RNTI	Not Present
RRC State indicator	CELL_DCH
UTRAN DRX cycle length coefficient	Not Present
CN information info	Not Present
URA identity	Not Present
Downlink counter synchronisation info	Not Present
Frequency info	Not Present
Maximum allowed UL TX power	Not Present
CHOICE <i>channel requirement</i>	Not Present
CHOICE <i>mode</i>	FDD
- Downlink PDSCH information	Not Present
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	Not Present
- DPCH compressed mode info	
- TGPSI	1
- TGPS Status Flag	Activate
- TGCFN	(Current CFN+(256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence configuration parameters	
- TGMP	FDD Measurement
- TGPRC	Infinity
- TGSN	4
- TGL1	7
- TGL2	Not Present
- TGD	0
- TGPL1	3
- TGPL2	Not Present
- RPP	Mode 0
- ITP	Mode 0
- CHOICE UL/DL Mode	UL and DL, UL only or DL only (depending on the UE capability)
- Downlink compressed mode method	SF/2(or not sent, depending on the UE capability)
- Uplink compressed mode method	SF/2(or not sent, depending on the UE capability)
- Downlink frame type	B
- DeltaSIR1	2.0
- DeltaSIRAfter1	1.0
- DeltaSIR2	Not Present
- DeltaSIRAfter2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	Not Present
- TX Diversity mode	Not Present
- SSDT information	Not Present
- Default DPCH Offset Value	Not Present
Downlink information for each radio link	
- CHOICE mode	FDD
- Primary CPICH info	Set to scrambling code of cell 1
- Cell ID	Not present
- PDSCH with SHO DCH info	Not present
- PDSCH code mapping	Not present
- Downlink DPCH info for each RL	
- CHOICE mode	FDD
- Primary CPICH usage for channel estimation	Primary CPICH may be used
- DPCH frame offset	0
- Secondary CPICH info	Not present
- DL channelisation code	
- Secondary scrambling code	Not present
- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
- Code number	Same as the code currently allocated to the UE

- Scrambling code change	Code change
- TPC combination index	0
- SSDT cell identity	Not present
- Closed loop timing adjustment mode	Not present

#### 8.4.1.8.5 Test Requirement

After step 2, if UE requires compressed mode the UE shall not send any MEASUREMENT REPORT messages on the uplink DCCH of cell 1. If UE do not require compressed mode, the UE shall send a MEASUREMENT REPORT message on the uplink DCCH of cell 1.

After step 4 and 8, UE shall transmit PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC.

After step 8, the UE shall start compressed mode using the method specified in the PHYSICAL CHANNEL RECONFIGURATION message sent in step 8.

After step 9 the UE shall transmit a MEASUREMENT REPORT message, containing the IE "measured results" reporting cell 5's CPICH RSCP value. The UE shall also report the triggering of event '2c' by including IE "Event results" in the MEASUREMENT REPORT message.

After step 11 the UE shall send MEASUREMENT REPORT messages, containing cell 5's CPICH RSCP measured value in IE "Measured results" at 2 seconds interval. The "Event results" IE shall be omitted in these messages.

If UE requires compressed mode, after step 14, the UE shall not transmit any MEASUREMENT REPORT messages.

If UE requires compressed mode, after step 15, the UE shall start compressed mode and resume the transmission of MEASUREMENT REPORT messages with identical contents as in those received after step 11.

After step 17, the UE shall deactivate compressed mode.

After step 20, the UE shall not transmit any MEASUREMENT REPORT message to SS.

#### 8.4.1.9 Measurement Control and Report: Unsupported measurement in the UE

##### 8.4.1.9.1 Definition

##### 8.4.1.9.2 Conformance requirement

If UTRAN instructs the UE to perform a measurement that is not supported by the UE, the UE shall:

- 1> retain the measurement configuration that was valid before the MEASUREMENT CONTROL message was received;
- 1> set the IE "RRC transaction identifier" in the MEASUREMENT CONTROL FAILURE message to the value of "RRC transaction identifier" in the entry for the MEASUREMENT CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS; and
- 1> clear that entry.
- 1> set the cause value in IE "failure cause" to "unsupported measurement";
- 1> submit the MEASUREMENT CONTROL FAILURE message to lower layers for transmission on the DCCH using AM RLC;
- 1> continue with any ongoing processes and procedures as if the invalid MEASUREMENT CONTROL message has not been received;
- 1> and the procedure ends.

## Reference

3GPP TS 25.331 clause 8.4.1.4

## 8.4.1.9.3 Test purpose

1. To confirm that the UE transmits a MEASUREMENT CONTROL FAILURE message, with the value "unsupported measurement" in IE "failure cause" when the SS instructs the UE to perform an unsupported measurement by sending a MEASUREMENT CONTROL message. To confirm that the UE retains its existing valid measurement configuration, after receiving a MEASUREMENT CONTROL message containing an unsupported measurement.

## 8.4.1.9.4 Method of test

## Initial Condition

System Simulator: 1cell

UE: CS-DCCH+DTCH\_DCH (State 6-9) or PS-DCCH+DTCH\_DCH (State 6-10) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

[Editor's note: It is assumed in this test that the UE under test does not possess any inter-RAT measurement capability. The mandatory type(s) of measurement capability that shall be implemented by the UE is to be discussed]

## Test Procedure

The UE is in the CELL\_DCH state. SS sends MEASUREMENT CONTROL message to command the UE to perform internal measurement and reporting for UE transmitted power. The UE shall transmit MEASUREMENT REPORT messages on DCCH at 1 second interval. The SS transmits a MEASUREMENT CONTROL message to configure inter-RAT measurements. The UE shall transmit a MEASUREMENT CONTROL FAILURE message on the uplink DCCH using AM RLC. SS verifies that the UE continues to transmit MEASUREMENT REPORT messages on uplink DCCH.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is in the CELL_DCH state.
2		←	MEASUREMENT CONTROL	UE internal measurement and reporting is requested.
3		→	MEASUREMENT REPORT	Contains estimated reading for UE transmitted power.
4		←	MEASUREMENT CONTROL	Inter-RAT measurements are requested in this message
5		→	MEASUREMENT CONTROL FAILURE	The value "unsupported measurement" is set in IE "failure cause".
6		→	MEASUREMENT REPORT	SS verifies that UE continue to send this message on uplink DCCH.

## Specific Message Content

## MEASUREMENT CONTROL (Step 2)

Information Element	Value/remark
Measurement Identity	1
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurements list	
CHOICE measurement type	Not Present
- UE internal measurement quantity	UE internal measurement
- CHOICE mode	
- Measurement quantity	FDD
- Filter Coefficient	UE Transmitted Power
- UE internal reporting quantity	0
- UE Transmitted Power	
- CHOICE mode	TRUE
- UE Rx-Tx time difference	FDD
- CHOICE report criteria	FALSE
- Amount of reporting	Periodical reporting criteria
- Reporting interval	Infinity
DPCH compressed mode status	1000 msec

## MEASUREMENT REPORT (Step 3 and Step 6)

Information Element	Value/remark
Measurement Identity number	Check to see if it's set to '1'
Measured Results	
- CHOICE measurement	Check to see if it's set to "UE internal measured results"
- CHOICE mode	Check to see if it's set to "FDD"
- UE Transmitted Power	Check to see if the reported power is compatible with RF class
- UE Rx-Tx report entries	Check to see if it is absent
Measured Results on RACH	Check to see if it is absent
Additional Measured results	Check to see if it is absent
Event results	Check to see if it is absent

## MEASUREMENT CONTROL (Step 4)

Information Element	Value/remark
RRC transaction identifier	Select an arbitrary an integer between 0 and 3
Measurement Identity	2
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Inter-RAT measurement
- Inter-RAT cell info list	
- CHOICE inter-RAT cell removal	Remove no inter-RAT cells
- New inter-RAT cells	
- Inter-RAT cell id	1
- CHOICE <i>Radio Access Technology</i>	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not Present
- BSIC	Set to the BSIC code of cell 2
- BSIC ARFCN	Set to the ARFCN assigned to cell 2
- Output power	Not Present
- Cells for measurement	
- Inter-RAT cell id	2
- Inter-RAT measurement quantity	
- CHOICE system	GSM
- Measurement quantity	GSM Carrier RSSI
- Filter Coefficient	0
- BSIC verification required	Not required
- Inter-RAT reporting quantity	
- UTRAN estimate quantity	FALSE
- CHOICE system	GSM
- Pathloss	FALSE
- Observed time difference to GSM cell	FALSE
- GSM Carrier RSSI	TRUE
- Reporting cell status	Not Present
- CHOICE report criteria	No reporting
DPCH compressed mode status info	Not Present

## MEASUREMENT CONTROL FAILURE (Step 5)

Information Element	Value/remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 4.
Failure cause	Check if it is set to "Unsupported measurement"

## 8.4.1.9.5 Test requirement

After step 2 the UE shall transmit a MEASUREMENT REPORT messages at 1 second interval. In these messages, the IE "CHOICE measurement" shall be set to "UE internal measured results", and it shall contain the measured UL transmitted power reading in IE "UE Transmitted Power".

After step 4 the UE shall transmit a MEASUREMENT CONTROL FAILURE message. In this message, the value "unsupported measurement" shall be specified in IE "failure cause".

After step 5 the UE shall continue to transmit MEASUREMENT REPORT messages on the uplink DCCH, with the contents of the messages identical to that received by SS after step 2.

## 8.4.1.10 Measurement Control and Report: Failure (Invalid Message Reception)

### 8.4.1.10.1 Definition

### 8.4.1.10.2 Conformance requirement

If the MEASUREMENT CONTROL message contains a protocol error causing the variable PROTOCOL\_ERROR\_REJECT to be set to TRUE according to TS 25.331 clause 9, the UE shall perform procedure specific error handling as follows. The UE shall:

- 1> set the IE "RRC transaction identifier" in the MEASUREMENT CONTROL FAILURE message to the value of "RRC transaction identifier" in the entry for the MEASUREMENT CONTROL message in the table "Rejected transactions" in the variable TRANSACTIONS; and
- 1> clear that entry.
- 1> set the IE "failure cause" to the cause value "protocol error";
- 1> include the IE "Protocol error information" with contents set to the value of the variable PROTOCOL\_ERROR\_INFORMATION;
- 1> submit the MEASUREMENT CONTROL FAILURE message to lower layers for transmission on the DCCH using AM RLC;
- 1> continue with any ongoing processes and procedures as if the invalid MEASUREMENT CONTROL message has not been received;
- 1> and the procedure ends.

### Reference

3GPP TS 25.331 clauses 8.4.1.5 and 9.2

### 8.4.1.10.3 Test Purpose

1. To confirm that the UE continues its ongoing processes and procedures after it has received an invalid MEASUREMENT CONTROL message.
2. To confirm that the UE transmits MEASUREMENT CONTROL FAILURE message, after it has received an invalid MEASUREMENT CONTROL message.

### 8.4.1.10.4 Method of test

#### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (State 6-9) or PS-DCCH+DTCH\_DCH (State 6-10) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

#### Test Procedure

The UE is initially brought to CELL\_DCH. SS transmits a MEASUREMENT CONTROL message to the UE, commanding it to start transmitting report messages for the reporting quantity "UE Transmitted Power". SS waits for the UE to transmit MEASUREMENT RERORT message on the uplink DCCH. After the MEASUREMENT REPORT message is received, SS transmits an invalid MEASUREMENT CONTROL message again. The UE shall reply with MEASUREMENT CONTROL FAILURE message as it has detected a protocol error. It shall continue to report its UL transmission power level using MEASUREMENT REPORT messages.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is CELL_DCH state in cell 1.
2		←	MEASUREMENT CONTROL	SS transmits this message on downlink DCCH to instruct UE to start reporting the quantity "UE transmitted power".
3		→	MEASUREMENT REPORT	UE shall send this message periodically at 32 seconds interval
4		←	MEASUREMENT CONTROL	See message content.
5		→	MEASUREMENT CONTROL FAILURE	UE shall continue its current measurement and reporting processes and procedures after sending this message.
6		→	MEASUREMENT REPORT	UE shall continue to transmit this message to the SS at 32 seconds interval.

## Specific Message Content

## MEASUREMENT CONTROL (Step 2)

Information Element	Value/remark
Measurement Identity	3
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurements list	Not Present
CHOICE measurement type	UE internal measurement
- UE internal measurement quantity	
- Measurement quantity	UE Transmitted Power
- Filter coefficient	0
- UE internal reporting quantity	
- UE Transmitted Power	TRUE
- UE Rx-Tx time difference	FALSE
CHOICE report criteria	Periodical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	32 seconds
DPCH compressed mode status info	Not Present

## MEASUREMENT REPORT (Step 3 and Step 6)

Information Element	Value/remark
Measurement identity	Check to see if set to 3
Measured Results	
CHOICE measurement	Check to see if set to "UE internal measurement results"
- CHOICE mode	Check to see if it's set to "FDD"
- UE Transmitted Power	Check to see if the reported power is compatible with RF class
- UE Rx-Tx report entries	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Additional Measured results	Check to see if this IE is absent
Event Results	Check to see if this IE is absent

## MEASUREMENT CONTROL (Step 4)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Critical extensions	'01'H

## MEASUREMENT CONTROL FAILURE (Step 5)

Information Element	Value/remark
Failure cause	Check to see if set to "protocol error"
Protocol error information	Check to see if set to " Message extension not comprehended "

## 8.4.1.10.5 Test Requirement

After step 4 the UE shall transmit MEASUREMENT CONTROL FAILURE message, stating the IE "failure cause" as "protocol error" and IE "protocol error information" as "Message extension not comprehended".

After step 5 the UE shall continue to send MEASUREMENT REPORT, with the measurement identity number set to 3 and "measured results" IE containing measured readings of UE Tx power, at 32 seconds interval.

## 8.4.1.11 Measurement Control and Report: Compressed Mode Configuration Failure during radio bearer reconfiguration procedure

## 8.4.1.11.1 Definition

## 8.4.1.11.2 Conformance requirement

If the IE "DPCH compressed mode info" is included, and if the IE group "transmission gap pattern sequence configuration parameters" is included, the UE shall for each transmission gap pattern sequence perform the following consistency checks:

- 1> if UE, according to its measurement capabilities, and for the measurement purpose indicated by IE "TGMP", requires UL compressed mode for measurements on any of the cells to be measured according to UE variable CELL\_INFO\_LIST, and CHOICE 'UL/DL mode' indicates 'DL only':
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.
- 1> if UE, according to its measurement capabilities, and for the measurement purpose indicated by IE "TGMP", requires DL compressed mode for measurements on any of the cells to be measured according to UE variable CELL\_INFO\_LIST, and CHOICE 'UL/DL mode' indicates 'UL only':
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.

- 1> if UE already has an active transmission gap pattern sequence that, according to IE "TGMP", has the same measurement purpose, and both patterns will be active after the new configuration has been taken into use:
- 2> set the variable INVALID\_CONFIGURATION to TRUE.

If variable INVALID\_CONFIGURATION has value FALSE after UE has performed the checks above, the UE shall:

...

- 1> monitor if the parallel transmission gap pattern sequences create an illegal overlap, and in case of overlap, take actions as specified below.

When the UE has received from the UTRAN the configurations of several compressed mode transmission gap pattern sequences, and if several of these patterns are to be simultaneously active, the UE shall check to see if these simultaneously active transmission gap pattern sequences create transmission gaps in the same frame. An illegal overlap is created if two or more transmission gap pattern sequences create transmission gaps in the same frame, irrespective of the gaps are created in uplink or downlink.

If the parallel transmission gap pattern sequences create an illegal overlap, the UE shall:

- 1> delete the overlapping transmission gap pattern sequence configuration stored in the variable TGPS\_IDENTITY, which is associated with the highest value of IE "TGPSI";
- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the information elements as specified below:
  - 2> not include the IE "RRC transaction identifier";
  - 2> set the cause value in IE "failure cause" to value "compressed mode runtime error".
- 1> terminate the inter-frequency and/or inter-RAT measurements corresponding to the deleted transmission gap pattern sequence;
- 1> when the PHYSICAL CHANNEL RECONFIGURATION FAILURE message has been submitted to lower layers for transmission:
  - 2> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, clause 8.2.11.2, clause 8.6.6.15

### 8.4.1.11.3 Test purpose

1. To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the uplink DCCH using AM RLC, if it receives a RADIO BEARER RECONFIGURATION message which includes IE "DPCH compressed mode info" that causes an illegal overlap involving more than one parallel transmission gap pattern sequences.
2. To confirm that the UE terminate any inter-frequency measurements corresponding to the deleted transmission gap pattern sequence.

### 8.4.1.11.4 Method of test

#### Initial Condition

System Simulator: 2 cells – Cell 1 and cell 4 are active.

UE: CS-DCCH+DTCH\_DCH (State 6-9) or PS-DCCH+DTCH\_DCH (State 6-10) as specified in TS34.108 clause 7.4, depending on the CN domain supported.

#### Test Procedure

Table 8.4.1.11-1 illustrates the downlink power to be applied for the 2 cells in this test case.

Table 8.4.1.11-1

Parameter	Unit	Cell 1	Cell 4
UTRA RF Channel Number		Ch. 1	Ch. 2
CPICH Ec	dBm/ 3.84 MHz	-60	-70

The UE is in the CELL\_DCH state in cell 1. SS sends a MEASUREMENT CONTROL message on the downlink DCCH to request the UE to start inter-frequency measurement for cell 4's CPICH Ec/No value, and also to report the UTRA RSSI in the UARFCN in which cell 4 resides. Simultaneously, the stored transmission gap pattern sequence configuration associated with TGPSI=1 is indicated to be activated in this message. The UE shall transmit MEASUREMENT REPORT messages periodically at 16 seconds interval to report the RSSI value of UTRA carrier in which cell 4 resides. Next, SS sends a second MEASUREMENT CONTROL message. In this message, a new measurement task is to be established for the measurement and reporting of "GSM carrier RSSI" on a periodic basis. A deactivated transmission pattern gap sequence configuration (with TGPSI=2) is associated with this new measurement task.

The SS transmits a RADIO BEARER RECONFIGURATION message and commands the activation of transmission gap pattern sequence with TGPSI=2. The UE then shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM-RLC. In this message, the value of IE "failure cause" shall be set to "compressed mode runtime error". The UE shall terminate all inter-RAT measurement tasks associated with TGPSI=2. The UE shall continue to send MEASUREMENT REPORT messages to report the UTRA RSSI in the UARFCN in which cell 4 resides.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				UE is initially in CELL_DCH state.
2		←	MEASUREMENT CONTROL	SS starts inter-frequency measurements for cell 4's CPICH Ec/No using transmission gap pattern sequence with TGPSI=1. SS commands UE to report the UTRA RSSI in the UARFCN in which cell 4 resides.
3		→	MEASUREMENT REPORT	UE reports UTRA RSSI for the UARFCN of cell 4 periodically.
4		←	MEASUREMENT CONTROL	SS assigns inter-RAT measurements for "GSM carrier RSSI". This measurement task is associated with transmission gap pattern sequence with TGPSI=2. The IE "TGPS status flag" is set to "deactivate".
5		←	RADIO BEARER RECONFIGURATION	SS specifies the parameters for transmission gap pattern sequence with TGPSI=2 and activates it simultaneously
6				UE shall delete transmission gap pattern sequence configuration associated with TGPSI=2.
7		→	PHYSICAL CHANNEL RECONFIGURATION FAILURE	IE "Failure cause" shall be set to "Compressed mode runtime error"
8		→	MEASUREMENT REPORT	The contents shall be the same as that in step 3.

## Specific Message Contents

## MEASUREMENT CONTROL (Step 2)

Information Element	Value/remark
Measurement Identity	1
Measurement Command	Setup
Measurement Reporting Mode	Acknowledged Mode RLC
- Measurement Reporting Transfer Mode	Periodical Reporting
- Periodic Reporting / Event Trigger Reporting Mode	Not Present
Additional measurements list	Inter-frequency measurement
CHOICE measurement type	No inter-frequency cells removed
- Inter-frequency cell info list	4
- CHOICE inter-frequency cell removal	UARFCN of the uplink frequency for cell 4
- New inter-frequency info list	UARFCN of the downlink frequency for cell 4
- Inter-frequency cell id	0 dB
- Frequency info	0 chips
- UARFCN uplink (Nu)	FALSE
- UARFCN downlink (Nd)	FDD
- Cell info	Set to same code as used for cell 4
- Cell individual offset	Not Present
- Reference time difference to cell	FALSE
- Read SFN Indicator	FDD
- CHOICE Mode	Set to same code as used for cell 4
- Primary CPICH Info	Not Present
- Primary Scrambling Code	FALSE
- Primary CPICH TX power	FALSE
- TX Diversity Indicator	4
- Cells for measurement	Inter-frequency measurement quantity
- Inter-frequency cell id	CHOICE reporting criteria
- Inter-frequency measurement quantity	Filter Coefficient
- CHOICE reporting criteria	Measurement quantity for frequency quality estimate
- Filter Coefficient	Inter-frequency reporting quantity
- Measurement quantity for frequency quality estimate	UTRA Carrier RSSI
- Inter-frequency reporting quantity	Frequency quality estimate
- UTRA Carrier RSSI	Non frequency related cell reporting quantities
- Frequency quality estimate	SFN-SFN observed time difference reporting
- Non frequency related cell reporting quantities	No report
- SFN-SFN observed time difference reporting	indicator
indicator	- Cell synchronisation reporting indicator
- Cell synchronisation reporting indicator	FALSE
- Cell Identity reporting indicator	FALSE
- Cell Identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting cell status	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- CHOICE reported cell	2
- Maximum number of reported cells	Not present
- Measurement validity	Not present
- Inter-frequency set update	Not present
- CHOICE report criteria	Periodic reporting criteria
- Amount of reporting	Infinity
- Reporting interval	16 seconds
DPCH compressed mode status info	
- TGPS reconfiguration CFN	(Current CFN+(256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence	
- TGPSI	1
- TGPS Status Flag	Activate
- TGCFN	(Current CFN+(256 – TTI/10msec)) mod 256

## MEASUREMENT REPORT (Step 3 and Step 8)

Information Element	Value/remark
Measurement identity	Check to see if set to "1"
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-frequency measured results list"
- Inter-frequency measurement results	
- Frequency info	
- UARFCN (uplink)	Check to see if set to the UARFCN of the uplink frequency for cell 4
- UARFCN (downlink)	Check to see if set to the UARFCN of the downlink frequency for cell 4
- UTRA carrier RSSI	Check to see if it is present
- Inter-frequency cell measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if it is absent
- Cell synchronisation information	Check to see if it is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if set to the same code for cell 4
- CPICH Ec/No	Check to see if it is absent
- CPICH RSCP	Check to see if it is absent
- Pathloss	Check to see if it is absent
Measured Results on RACH	Check to see if it is absent
Event Results	Check to see if it is absent

## MEASUREMENT CONTROL (Step 4)

Information Element	Value/remark
Measurement Identity	2
Measurement Command	Setup
Measurement Reporting Mode	Acknowledged Mode RLC
- Measurement Reporting Transfer Mode	Periodical reporting
- Periodic Reporting / Event Trigger Reporting Mode	
Additional measurements list	Not Present
CHOICE measurement type	
- inter-RAT measurement	
- inter-RAT measurement object list	
CHOICE Inter-RAT Cell Removal	Remove no inter-RAT cells
- inter-RAT cell id	7
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC1
- Band indicator	DCS 1800 band used
- BCCH ARFCN	1
- Cell for measurement	Not present
- inter-RAT measurement quantity	
- Measurement quantity for UTRAN quality estimate	Not present
CHOICE system	GSM
- Measurement quantity	GSM carrier RSSI
- Filter coefficient	0
- BSIC verification required	not required
- inter-RAT reporting quantity	
CHOICE system	GSM
- Observed time difference to to GSM cell reporting indicator	FALSE
- GSM carrier RSSI reporting indicator	TRUE
- Reporting cell status	
CHOICE reported cell	
- Reported cells within active set or within virtual active set or of the other RAT	
- Maximum number of reported cells	6
CHOICE report criteria	
- Periodical reporting criteria	
- Amount of reporting	infinity
- Reporting interval	1000
Physical channel information elements	
- DPCH compressed mode status info	
- TGPS reconfiguration CFN	(Current CFN + (256 – TTI/10msec))mod 256
- Transmission gap pattern sequence	
- TGPSI	2
- TGPS status flag	Deactivate
- TGCFN	Not present

## RADIO BEARER RECONFIGURATION (Step 5)

The contents of RADIO BEARER RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_DCH in PS" or "Non-speech in CS" or "Speech in CS" found in Annex A with the following exceptions:

Information Element	Value/remark
- DPCH compressed mode info	2
- TGPSI	Activate
- TGPS Status Flag	(Current CFN + (256 – TTI/10msec)) mod 256
- TGCFN	
- Transmission gap pattern sequence configuration parameters	
- TGMP	GSM Carrier RSSI Measurement
- TGPRC	62
- TGSN	4
- TGL1	7
- TGL2	5
- TGD	0
- TGPL1	3
- TGPL2	5
- RPP	Mode 0
- ITP	Mode 0
- CHOICE UL/DL Mode	UL and DL
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2
- Downlink frame type	B
- DeltaSIR1	2.0
- DeltaSIRafter1	1.0
- DeltaSIR2	Not Present
- DeltaSIRafter2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	Not Present

## PHYSICAL CHANNEL RECONFIGURATION FAILURE (Step 7)

Information Element	Value/remark
Failure cause	Checked to see if set to "compressed mode runtime error"
- Protocol error information	Checked to see if it is absent
- Deleted TGPSI	Checked to see if it is set to "2"

## 8.4.1.11.5 Test requirement

After step 6 the UE shall keep transmission gap pattern sequence configuration associated with TGPSI=1. It shall delete the transmission gap pattern sequence configuration associated with TGPSI=2, and delete the inter-RAT measurements corresponding to it. It shall transmit PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the uplink DCCH, with the IE "Failure cause" set to "Compressed mode runtime error".

After step 7 the UE shall continue to send MEASUREMENT REPORT messages periodically, to report the UTRA RSSI value for the UARFCN in which cell 4 resides. The MEASUREMENT REPORT messages sent by the UE shall not contain CPICH RSCP readings for cell 4.

## 8.4.1.12 Measurement Control and Report: Compressed Mode Configuration Failure during transport channel reconfiguration procedure

### 8.4.1.12.1 Definition

### 8.4.1.12.2 Conformance requirement

If the IE "DPCH compressed mode info" is included, and if the IE group "transmission gap pattern sequence configuration parameters" is included, the UE shall for each transmission gap pattern sequence perform the following consistency checks:

- 1> if UE, according to its measurement capabilities, and for the measurement purpose indicated by IE "TGMP", requires UL compressed mode for measurements on any of the cells to be measured according to UE variable CELL\_INFO\_LIST, and CHOICE 'UL/DL mode' indicates 'DL only':
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.
- 1> if UE, according to its measurement capabilities, and for the measurement purpose indicated by IE "TGMP", requires DL compressed mode for measurements on any of the cells to be measured according to UE variable CELL\_INFO\_LIST, and CHOICE 'UL/DL mode' indicates 'UL only':
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.
- 1> if UE already has an active transmission gap pattern sequence that, according to IE "TGMP", has the same measurement purpose, and both patterns will be active after the new configuration has been taken into use:
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.

If variable INVALID\_CONFIGURATION has value FALSE after UE has performed the checks above, the UE shall:

...

- 1> monitor if the parallel transmission gap pattern sequences create an illegal overlap, and in case of overlap, take actions as specified below.

When the UE has received from the UTRAN the configurations of several compressed mode transmission gap pattern sequences, and if several of these patterns are to be simultaneously active, the UE shall check to see if these simultaneously active transmission gap pattern sequences create transmission gaps in the same frame. An illegal overlap is created if two or more transmission gap pattern sequences create transmission gaps in the same frame, irrespective of the gaps are created in uplink or downlink.

If the parallel transmission gap pattern sequences create an illegal overlap, the UE shall:

- 1> delete the overlapping transmission gap pattern sequence configuration stored in the variable TGPS\_IDENTITY, which is associated with the highest value of IE "TGPSI";
- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the information elements as specified below:
  - 2> not include the IE "RRC transaction identifier";
  - 2> set the cause value in IE "failure cause" to value "compressed mode runtime error".
- 1> terminate the inter-frequency and/or inter-RAT measurements corresponding to the deleted transmission gap pattern sequence;
- 1> when the PHYSICAL CHANNEL RECONFIGURATION FAILURE message has been submitted to lower layers for transmission:
  - 2> the procedure ends.

### Reference

3GPP TS 25.331 clause 8.2.2, clause 8.2.11.2, clause 8.6.6.15

#### 8.4.1.12.3 Test purpose

1. To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the uplink DCCH using AM RLC, if it receives a TRANSPORT CHANNEL RECONFIGURATION message which includes IE "DPCH compressed mode info" that causes an illegal overlap involving more than one parallel transmission gap pattern sequences.
2. To confirm that the UE terminate any measurements corresponding to the deleted transmission gap pattern sequence.

#### 8.4.1.12.4 Method of test

##### Initial Condition

System Simulator: 2 cells – Cell 1 and cell 4 are active.

UE: CS-DCCH+DTCH\_DCH (State 6-9) or PS-DCCH+DTCH\_DCH (State 6-10) as specified in TS34.108 clause 7.4, depending on the CN domain supported.

##### Test Procedure

For this test case, the downlink transmission power settings shall follow that specified in table 8.4.1.11-1 in clause 8.4.1.11.4.

The UE is in the CELL\_DCH state in cell 1. SS sends a MEASUREMENT CONTROL message on the downlink DCCH to request the UE to start inter-frequency measurement for cell 4's CPICH Ec/No value, and also to report the UTRA RSSI in the UARFCN in which cell 4 resides. Simultaneously, the stored transmission gap pattern sequence configuration associated with TGPSI=1 is indicated to be activated in this message. The UE shall transmit MEASUREMENT REPORT messages periodically at 16 seconds interval to report the RSSI value of UTRA carrier in which cell 4 resides. Next, SS sends a second MEASUREMENT CONTROL message. In this message, a new measurement task is to be established for the measurement and reporting of "GSM carrier RSSI" on a periodic basis. A deactivated transmission pattern gap sequence configuration (with TGPSI=2) is associated with this new measurement task.

The SS transmits a TRANSPORT CHANNEL RECONFIGURATION message and commands the activation of transmission gap pattern sequence with TGPSI=2. The UE then shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM-RLC. In this message, the value of IE "failure cause" shall be set to "compressed mode runtime error". The UE shall terminate all inter-RAT measurement tasks associated with TGPSI=2. The UE shall continue to send MEASUREMENT REPORT messages to report the UTRA RSSI in the UARFCN in which cell 4 resides.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				UE is initially in CELL_DCH state.
2		←	MEASUREMENT CONTROL	SS starts inter-frequency measurements for cell 4's CPICH Ec/No using transmission gap pattern sequence with TGPSI=1. Report the UTRA RSSI in the UARFCN in which cell 4 resides.
3		→	MEASUREMENT REPORT	UE reports UTRA RSSI for the UARFCN of cell 4 periodically.
4		←	MEASUREMENT CONTROL	SS assigns inter-RAT measurements for "GSM carrier RSSI". This measurement task is associated with transmission gap pattern sequence with TGPSI=2. The IE "TGPS status flag" is set to "Deactivate".
5		←	TRANSPORT CHANNEL RECONFIGURATION	SS specifies the parameters for transmission gap pattern sequence with TGPSI=2 and activates it simultaneously
6				UE shall delete transmission gap pattern sequence configuration associated with TGPSI=2.
7		→	PHYSICAL CHANNEL RECONFIGURATION FAILURE	IE "Failure cause" shall be set to "Compressed mode runtime error"
8		→	MEASUREMENT REPORT	The contents shall be the same as that in step 3.

## Specific Message Contents

## MEASUREMENT CONTROL (Step 2)

Information Element	Value/remark
Measurement Identity	1
Measurement Command	Setup
Measurement Reporting Mode	Acknowledged Mode RLC
- Measurement Reporting Transfer Mode	Periodical Reporting
- Periodic Reporting / Event Trigger Reporting Mode	Not Present
Additional measurements list	Inter-frequency measurement
CHOICE measurement type	No inter-frequency cells removed
- Inter-frequency cell info list	4
- CHOICE inter-frequency cell removal	UARFCN of the uplink frequency for cell 4
- New inter-frequency info list	UARFCN of the downlink frequency for cell 4
- Inter-frequency cell id	0 dB
- Frequency info	0 chips
- UARFCN uplink (Nu)	FALSE
- UARFCN downlink (Nd)	FDD
- Cell info	Set to same code as used for cell 4
- Cell individual offset	Not Present
- Reference time difference to cell	FALSE
- Read SFN Indicator	FDD
- CHOICE Mode	Set to same code as used for cell 4
- Primary CPICH Info	Not Present
- Primary Scrambling Code	FALSE
- Primary CPICH TX power	FALSE
- TX Diversity Indicator	4
- Cells for measurement	Inter-frequency measurement quantity
- Inter-frequency cell id	CHOICE reporting criteria
- Inter-frequency measurement quantity	Filter Coefficient
- CHOICE reporting criteria	Measurement quantity for frequency quality estimate
- Filter Coefficient	Inter-frequency reporting quantity
- Measurement quantity for frequency quality estimate	UTRA Carrier RSSI
- Inter-frequency reporting quantity	Frequency quality estimate
- UTRA Carrier RSSI	Non frequency related cell reporting quantities
- Frequency quality estimate	SFN-SFN observed time difference reporting
- Non frequency related cell reporting quantities	No report
- SFN-SFN observed time difference reporting	indicator
indicator	- Cell synchronisation information reporting
- Cell synchronisation information reporting	FALSE
indicator	indicator
- Cell Identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting cell status	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- CHOICE reported cell	2
- Maximum number of reported cells	Not present
- Measurement validity	Not present
- Inter-frequency set update	Not present
- CHOICE report criteria	Periodic reporting criteria
- Amount of reporting	Infinity
- Reporting interval	16 seconds
DPCH compressed mode status info	
- TGPS reconfiguration CFN	(Current CFN+(256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence	
- TGPSI	1
- TGPS Status Flag	Activate
- TGCFN	(Current CFN+(256 – TTI/10msec)) mod 256

## MEASUREMENT REPORT (Step 3 and Step 8)

Information Element	Value/remark
Measurement identity	Check to see if set to "1"
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-frequency measured results list"
- Inter-frequency measurement results	
- Frequency info	
- UARFCN (uplink)	Check to see if set to the UARFCN of the uplink frequency for cell 4
- UARFCN (downlink)	Check to see if set to the UARFCN of the downlink frequency for cell 4
- UTRA carrier RSSI	Check to see if it is present
- Inter-frequency cell measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if it is absent
- Cell synchronisation information	Check to see if it is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if set to the same code for cell 4
- CPICH Ec/No	Check to see if it is absent
- CPICH RSCP	Check to see if it is absent
- Pathloss	Check to see if it is absent
Measured Results on RACH	Check to see if it is absent
Event Results	Check to see if it is absent

## MEASUREMENT CONTROL (Step 4)

Information Element	Value/remark
Measurement Identity	2
Measurement Command	Setup
Measurement Reporting Mode	Acknowledged Mode RLC
- Measurement Reporting Transfer Mode	Periodical reporting
- Periodic Reporting / Event Trigger Reporting Mode	Not Present
Additional measurements list	
CHOICE measurement type	
- inter-RAT measurement	
- inter-RAT measurement object list	
CHOISE Inter-RAT Cell Removal	Remove no inter-RAT cells
- inter-RAT cell id	7
CHOISE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC1
- Band indicator	DCS 1800 band used
- BCCH ARFCN	1
- Cell for measurement	Not present
- inter-RAT measurement quantity	
- Measurement quantity for UTRAN quality estimate	Not present
CHOISE system	GSM
- Measurement quantity	GSM carrier RSSI
- Filter coefficient	0
- BSIC verification required	not required
- inter-RAT reporting quantity	
CHOISE system	GSM
- Observed time difference to to GSM cell reporting indicator	FALSE
- GSM carrier RSSI reporting indicator	TRUE
- Reporting cell status	
CHOISE reported cell	
- Reported cells within active set or within virtual active set or of the other RAT	
- Maximum number of reported cells	6
CHOISE report criteria	
- Periodical reporting criteria	
- Amount of reporting	infinity
- Reporting interval	1000
Physical channel information elements	
- DPCH compressed mode status info	
- TGPS reconfiguration CFN	(Current CFN + (256 – TTI/10msec))mod 256
- Transmission gap pattern sequence	
- TGPSI	2
- TGPS status flag	Deactivate
- TGCFN	Not present

## TRANSPORT CHANNEL RECONFIGURATION (Step 5)

The contents of TRANSPORT CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_DCH in PS" or "Non-speech in CS" or "Speech in CS" found in Annex A with the following exceptions:

Information Element	Value/remark
- DPCH compressed mode info	
- TGPSI	2
- TGPS Status Flag	Activate
- TGCFN	(Current CFN + (256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence configuration parameters	
- TGMP	GSM Carrier RSSI Measurement
- TGPRC	62
- TGSN	4
- TGL1	7
- TGL2	5
- TGD	0
- TGPL1	3
- TGPL2	5
- RPP	Mode 0
- ITP	Mode 0
- CHOICE UL/DL Mode	UL and DL
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2
- Downlink frame type	B
- DeltaSIR1	2.0
- DeltaSIRafter1	1.0
- DeltaSIR2	Not Present
- DeltaSIRafter2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	Not Present

#### PHYSICAL CHANNEL RECONFIGURATION FAILURE (Step 7)

Information Element	Value/remark
Failure cause	Checked to see if set to "compressed mode runtime error"
- Protocol error information	Checked to see if it is absent
- Deleted TGPSI	Checked to see if it is set to "2"

#### 8.4.1.12.5 Test requirement

After step 6 the UE shall keep transmission gap pattern sequence configuration associated with TGPSI=1. It shall delete the transmission gap pattern sequence configuration associated with TGPSI=2, and delete the inter-RAT measurements corresponding to it. It shall transmit PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the uplink DCCH, with the IE "Failure cause" set to "Compressed mode runtime error".

After step 7 the UE shall continue to send MEASUREMENT REPORT messages periodically, to report the UTRA RSSI value for the UARFCN in which cell 4 resides. The, MEASUREMENT REPORT messages sent by the UE shall not contain CPICH RSCP readings for cell 4.

#### 8.4.1.13 Measurement Control and Report: Compressed Mode Configuration Failure during physical channel reconfiguration procedure

##### 8.4.1.13.1 Definition

##### 8.4.1.13.2 Conformance requirement

If the IE "DPCH compressed mode info" is included, and if the IE group "transmission gap pattern sequence configuration parameters" is included, the UE shall for each transmission gap pattern sequence perform the following consistency checks:

- 1> if UE, according to its measurement capabilities, and for the measurement purpose indicated by IE "TGMP", requires UL compressed mode for measurements on any of the cells to be measured according to UE variable CELL\_INFO\_LIST, and CHOICE 'UL/DL mode' indicates 'DL only':
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.
- 1> if UE, according to its measurement capabilities, and for the measurement purpose indicated by IE "TGMP", requires DL compressed mode for measurements on any of the cells to be measured according to UE variable CELL\_INFO\_LIST, and CHOICE 'UL/DL mode' indicates 'UL only':
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.
- 1> if UE already has an active transmission gap pattern sequence that, according to IE "TGMP", has the same measurement purpose, and both patterns will be active after the new configuration has been taken into use:
  - 2> set the variable INVALID\_CONFIGURATION to TRUE.

If variable INVALID\_CONFIGURATION has value FALSE after UE has performed the checks above, the UE shall:

...

- 1> monitor if the parallel transmission gap pattern sequences create an illegal overlap, and in case of overlap, take actions as specified below.

When the UE has received from the UTRAN the configurations of several compressed mode transmission gap pattern sequences, and if several of these patterns are to be simultaneously active, the UE shall check to see if these simultaneously active transmission gap pattern sequences create transmission gaps in the same frame. An illegal overlap is created if two or more transmission gap pattern sequences create transmission gaps in the same frame, irrespective of the gaps are created in uplink or downlink.

If the parallel transmission gap pattern sequences create an illegal overlap, the UE shall:

- 1> delete the overlapping transmission gap pattern sequence configuration stored in the variable TGPS\_IDENTITY, which is associated with the highest value of IE "TGPSI";
- 1> transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC, setting the information elements as specified below:
  - 2> not include the IE "RRC transaction identifier";
  - 2> set the cause value in IE "failure cause" to value "compressed mode runtime error".
- 1> terminate the inter-frequency and/or inter-RAT measurements corresponding to the deleted transmission gap pattern sequence;
- 1> when the PHYSICAL CHANNEL RECONFIGURATION FAILURE message has been submitted to lower layers for transmission:
  - 2> the procedure ends.

## Reference

3GPP TS 25.331 clause 8.2.2, clause 8.2.11.2, clause 8.6.6.14

### 8.4.1.13.3 Test purpose

1. To confirm that the UE transmits a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the uplink DCCH using AM RLC, if it receives a PHYSICAL CHANNEL RECONFIGURATION message which includes IE "DPCH compressed mode info" that causes an illegal overlap involving more than one parallel transmission gap pattern sequences.
2. To confirm that the UE terminate any inter-frequency measurements corresponding to the deleted transmission gap pattern sequence.

## 8.4.1.13.4 Method of test

## Initial Condition

System Simulator: 2 cells – Cell 1 and cell 4 are active.

UE: CS-DCCH+DTCH\_DCH (State 6-9) or PS-DCCH+DTCH\_DCH (State 6-10) as specified in TS34.108 clause 7.4, depending on the CN domain supported.

## Test Procedure

For this test case, the downlink transmission power settings shall follow that specified in table 8.4.1.11-1 in clause 8.4.1.11.4.

The UE is in the CELL\_DCH state in cell 1. SS sends a MEASUREMENT CONTROL message on the downlink DCCH to request the UE to start inter-frequency measurement for cell 4's CPICH Ec/No value, and also to report the UTRA RSSI in the UARFCN in which cell 4 resides. Simultaneously, the stored transmission gap pattern sequence configuration associated with TGPSI=1 is indicated to be activated in this message. The UE shall transmit MEASUREMENT REPORT messages periodically at 16 seconds interval to report the RSSI value of UTRA carrier in which cell 4 resides. Next, SS sends a second MEASUREMENT CONTROL message. In this message, a new measurement task is to be established for the measurement and reporting of "GSM carrier RSSI" value on a periodic basis. A deactivated transmission pattern gap sequence configuration (with TGPSI=2) is associated with this new measurement task.

The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message and commands the activation of transmission gap pattern sequence with TGPSI=2. The UE then shall transmit a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM-RLC. In this message, the value of IE "failure cause" shall be set to "compressed mode runtime error". The UE shall terminate all inter-RAT measurement tasks associated with TGPSI=2. The UE shall continue to send MEASUREMENT REPORT messages to report the UTRA RSSI in the UARFCN in which cell 4 resides.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				UE is initially in CELL_DCH state.
2		←	MEASUREMENT CONTROL	SS starts inter-frequency measurements for cell 4's CPICH Ec/No using transmission gap pattern sequence with TGPSI=1. SS commands UE to report the UTRA RSSI in the UARFCN in which cell 4 resides.
3		→	MEASUREMENT REPORT	UE reports UTRA RSSI for the UARFCN of cell 4 periodically.
4		←	MEASUREMENT CONTROL	SS assigns inter-frequency measurements for "GSM carrier RSSI". This measurement task is associated with transmission gap pattern sequence with TGPSI=2. The IE "TGPS status flag" is set to "Deactivate".
5		←	PHYSICAL CHANNEL RECONFIGURATION	SS specifies the parameters for transmission gap pattern sequence with TGPSI=2 and activates it simultaneously
6				UE shall delete transmission gap pattern sequence configuration associated with TGPSI=2.
7		→	PHYSICAL CHANNEL RECONFIGURATION FAILURE	IE "Failure cause" shall be set to "Compressed mode runtime error"
8		→	MEASUREMENT REPORT	The contents shall be the same as that in step 3.

## Specific Message Contents

## MEASUREMENT CONTROL (Step 2)

Information Element	Value/remark
Measurement Identity	1
Measurement Command	Setup
Measurement Reporting Mode	Acknowledged Mode RLC
- Measurement Reporting Transfer Mode	Periodical Reporting
- Periodic Reporting / Event Trigger Reporting Mode	Not Present
Additional measurements list	Inter-frequency measurement
CHOICE measurement type	No inter-frequency cells removed
- Inter-frequency cell info list	4
- CHOICE inter-frequency cell removal	UARFCN of the uplink frequency for cell 4
- New inter-frequency info list	UARFCN of the downlink frequency for cell 4
- Inter-frequency cell id	0 dB
- Frequency info	0 chips
- UARFCN uplink (Nu)	FALSE
- UARFCN downlink (Nd)	FDD
- Cell info	Set to same code as used for cell 4
- Cell individual offset	Not Present
- Reference time difference to cell	FALSE
- Read SFN Indicator	FDD
- CHOICE Mode	Set to same code as used for cell 4
- Primary CPICH Info	Not Present
- Primary Scrambling Code	FALSE
- Primary CPICH TX power	FALSE
- TX Diversity Indicator	4
- Cells for measurement	Inter-frequency measurement quantity
- Inter-frequency cell id	CHOICE reporting criteria
- Inter-frequency measurement quantity	Filter Coefficient
- CHOICE reporting criteria	Measurement quantity for frequency quality estimate
- Filter Coefficient	Inter-frequency reporting quantity
- Measurement quantity for frequency quality estimate	Inter-frequency reporting quantity
- Inter-frequency reporting quantity	UTRA Carrier RSSI
- UTRA Carrier RSSI	Frequency quality estimate
- Frequency quality estimate	Non frequency related cell reporting quantities
- Non frequency related cell reporting quantities	SFN-SFN observed time difference reporting
- SFN-SFN observed time difference reporting	indicator
indicator	Cell synchronisation information reporting
- Cell synchronisation information reporting	indicator
indicator	Cell Identity reporting indicator
- Cell Identity reporting indicator	CPICH Ec/No reporting indicator
- CPICH Ec/No reporting indicator	CPICH RSCP reporting indicator
- CPICH RSCP reporting indicator	Pathloss reporting indicator
- Pathloss reporting indicator	Reporting cell status
- Reporting cell status	CHOICE reported cell
- CHOICE reported cell	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- Maximum number of reported cells	2
- Measurement validity	Not present
- Inter-frequency set update	Not present
- CHOICE report criteria	Periodic reporting criteria
- Amount of reporting	Infinity
- Reporting interval	16 seconds
DPCH compressed mode status info	
- TGPS reconfiguration CFN	(Current CFN+(256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence	
- TGPSI	1
- TGPS Status Flag	Activate
- TGCFN	(Current CFN+(256 – TTI/10msec)) mod 256

## MEASUREMENT REPORT (Step 3 and Step 8)

Information Element	Value/remark
Measurement identity	Check to see if set to "1"
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-frequency measured results list"
- Inter-frequency measurement results	
- Frequency info	
- UARFCN (uplink)	Check to see if set to the UARFCN of the uplink frequency for cell 4
- UARFCN (downlink)	Check to see if set to the UARFCN of the downlink frequency for cell 4
- UTRA carrier RSSI	Check to see if it is present
- Inter-frequency cell measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if it is absent
- Cell synchronisation information	Check to see if it is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if set to the same code for cell 4
- CPICH Ec/No	Check to see if it is absent
- CPICH RSCP	Check to see if it is absent
- Pathloss	Check to see if it is absent
Measured Results on RACH	Check to see if it is absent
Event Results	Check to see if it is absent

## MEASUREMENT CONTROL (Step 4)

Information Element	Value/remark
Measurement Identity	2
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Periodical reporting
Additional measurements list	Not Present
CHOICE measurement type	
- inter-RAT measurement	
- inter-RAT measurement object list	
CHOISE Inter-RAT Cell Removal	Remove no inter-RAT cells
- inter-RAT cell id	7
CHOISE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC1
- Band indicator	DCS 1800 band used
- BCCH ARFCN	1
- Cell for measurement	Not present
- inter-RAT measurement quantity	
- Measurement quantity for UTRAN quality estimate	Not present
CHOISE system	GSM
- Measurement quantity	GSM carrier RSSI
- Filter coefficient	0
- BSIC verification required	not required
- inter-RAT reporting quantity	
CHOISE system	GSM
- Observed time difference to to GSM cell reporting indicator	FALSE
- GSM carrier RSSI reporting indicator	TRUE
- Reporting cell status	
CHOISE reported cell	
- Reported cells within active set or within virtual active set or of the other RAT	
- Maximum number of reported cells	6
CHOISE report criteria	
- Periodical reporting criteria	
- Amount of reporting	infinity
- Reporting interval	1000
Physical channel information elements	
- DPCH compressed mode status info	
- TGPS reconfiguration CFN	(Current CFN + (256 – TTI/10msec))mod 256
- Transmission gap pattern sequence	
- TGPSI	2
- TGPS status flag	Deactivate
- TGCFN	Not present

## PHYSICAL CHANNEL RECONFIGURATION (Step 5)

The contents of PHYSICAL CHANNEL RECONFIGURATION message in this test case is identical to the message sub-type title "Packet to CELL\_DCH from CELL\_DCH in PS" or "Non-speech in CS" or "Speech in CS" found in Annex A with the following exceptions:

Information Element	Value/remark
- DPCH compressed mode info	2
- TGPSI	Activate
- TGPS Status Flag	(Current CFN + (256 – TTI/10msec)) mod 256
- TGCFN	
- Transmission gap pattern sequence configuration parameters	FDD Measurement
- TGMP	62
- TGPRC	4
- TGSN	7
- TGL1	5
- TGL2	0
- TGD	3
- TGPL1	5
- TGPL2	Mode 0
- RPP	Mode 0
- ITP	UL and DL
- CHOICE UL/DL Mode	SF/2
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	B
- Downlink frame type	2.0
- DeltaSIR1	1.0
- DeltaSIRafter1	Not Present
- DeltaSIR2	Not Present
- DeltaSIRafter2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	Not Present

## PHYSICAL CHANNEL RECONFIGURATION FAILURE (Step 7)

Information Element	Value/remark
Failure cause	Checked to see if set to "compressed mode runtime error"
- Protocol error information	Checked to see if it is absent
- Deleted TGPSI	Checked to see if it is set to "2"

## 8.4.1.13.5 Test requirement

After step 6 the UE shall keep transmission gap pattern sequence configuration associated with TGPSI=1. It shall delete the transmission gap pattern sequence configuration associated with TGPSI=2, and delete the inter-RAT measurements corresponding to it. It shall transmit PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the uplink DCCH, with the IE "Failure cause" set to "Compressed mode runtime error".

After step 7 the UE shall continue to send MEASUREMENT REPORT messages periodically, to report the UTRA RSSI value for the UARFCN in which cell 4 resides. The MEASUREMENT REPORT messages sent by the UE shall not contain the CPICH RSCP readings for cell 4.

## 8.4.1.14 Measurement Control and Report: Cell forbidden to affect reporting range

## 8.4.1.14.1 Definition

## 8.4.1.14.2 Conformance requirement

The reporting range affects the reporting events 1A and 1B. The reporting range is defined as a function of all the Primary CPICHs in the active set. If the parameter W is set to 0, the reporting range is defined relative to the best

Primary CPICH. However, there could be cases where it is good to forbid a specific Primary CPICH to affect the reporting range. This mechanism could be effective if the operator knows by experience that the quality of a Primary CPICH is very unstable in a specific area and therefore should not affect the reporting of the other Primary CPICHs.

The UE shall ignore that a Primary CPICH is forbidden to affect the reporting range if all of the following conditions are fulfilled:

- the Primary CPICH is included in active set; and
- all cells in active set are defined as Primary CPICHs forbidden to affect the reporting range.

## Reference

3GPP TS 25.331 clause 14.1.2.1, 14.1.2.2, clause 14.1.5.4

### 8.4.1.14.3 Test Purpose

1. To confirm that the UE reports the triggering of event 1A to the SS, if a primary CPICH currently measured by the UE enters the reporting range.
2. To confirm that the UE reports the triggering of event 1B to the SS, if a primary CPICH currently measured by the UE leaves the reporting range.
3. To confirm that the UE use the forbidden cell indicated in the MEASUREMENT CONTROL message to affect the reporting range.
4. To confirm that the UE ignores that a primary CPICH is forbidden to affect the reporting range when (a) the primary CPICH concerned is included in active set and (b) all cells in the active set are defined as primary CPICHs forbidden to affect the reporting range.

### 8.4.1.14.4 Method of test

#### Initial Condition

System Simulator: 3 cells – Cell 1, cell 2 and cell 3 are active.

UE: CS-DCCH+DTCH\_DCH (State 6-9) or PS-DCCH+DTCH\_DCH (State 6-10) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

#### Test Procedure

Table 8.4.1.14-1 illustrates the downlink power to be applied for the 3 cells.

**Table 8.4.1.14-1**

Para-meter	Unit	Cell 1	Cell 2	Cell 3
UTRA RF Channel Number		Ch. 1	Ch. 1	Ch. 1
CPICH Ec	dBm/3.84 MHz	-60	-75	-70

The UE is initially in CELL\_DCH state of cell 1.

SS sends a MEASUREMENT CONTROL message with cell 1, cell 2 and cell 3 listed in IE "intra-frequency cell info list". In this message the IE "CHOICE reporting criteria" is set to "intra-frequency measurement report criteria", with the IE "intra-frequency event identity" set to "1A" and "1B". The IE "reporting range" is set to 12 dB for both events in the MEASUREMENT CONTROL message. The UE shall send a MEASUREMENT REPORT on the uplink DCCH, which contains the IE "Event results" to report that intra-frequency event 1A is triggered by cell 3.

SS executes the active set update procedure, requesting that cell 3 be added to the active set. The UE shall respond with ACTIVE SET UPDATE COMPLETE message on the uplink DCCH and then include cell 3 into its current active set. The UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH to report the triggering of intra-

frequency event 1A. In these messages, the IE "Events results" shall indicate that intra-frequency event 1A and 1B is triggered by cell 2. Upon reception of MEASUREMENT REPORT message.

SS sends a MEASUREMENT CONTROL message to command that cell 3 in the active set is forbidden to update the reporting range for event 1A and 1B. The UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH to report the triggering of intra-frequency event 1B. In these message, the IE "Events results" shall indicate that intra-frequency event 1B is triggered by cell 2. SS sends a MEASUREMENT CONTROL message to command that cell 1 in the active set is forbidden to update the reporting range for event 1A and 1B. The UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH to report the triggering of intra-frequency event 1A. In these message, the IE "Events results" shall indicate that intra-frequency event 1A is triggered by cell 2. SS sends a MEASUREMENT CONTROL message to command that all cells in the active set are forbidden to update the reporting range for event 1A and 1B. The UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH to report the triggering of intra-frequency event 1A. In these messages, the IE "Events results" shall indicate that intra-frequency event 1A and 1B is triggered by cell 2.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	MEASUREMENT CONTROL	UE is initially in CELL_DCH state in cell 1. Cell 1, cell 2 and cell 3 are listed in IE "Intra-frequency cell info list". The IE "CHOICE reporting criteria" is set to "Intra-frequency measurement reporting criteria" and IE "Intra-frequency event identity" is set to "1A" and "1B", with IE "reporting range" set to 12 dB for both events.
2		→	MEASUREMENT REPORT	
3		←	ACTIVE SET UPDATE	SS requests UE to add cell 3 into active set.
4		→	ACTIVE SET UPDATE COMPLETE	
5		←	Void	
6		→	MEASUREMENT REPORT	Measurement made on cell 2 should trigger event 1A and 1B
7		←	MEASUREMENT CONTROL	SS request UE to monitor cell 2 for event '1A' and '1B'. SS set cell 3 to be forbidden to affect reporting range.
8		→	MEASUREMENT REPORT	Measurement made on cell 2 should trigger event 1B.
9		←	MEASUREMENT CONTROL	SS request UE to monitor cell 2 for event '1A' and '1B'. SS set cell 1 to be forbidden to affect reporting range.
10		→	MEASUREMENT REPORT	Measurement made on cell 2 should trigger event 1A.
11		←	MEASUREMENT CONTROL	SS request UE to monitor cell 2 for event '1A' and '1B'. SS forbids all cells in active list to affect the reporting range
12		→	MEASUREMENT REPORT	Same as step 3.

#### Specific Message Contents

##### MEASUREMENT CONTROL (Step 1)

The contents of MEASUREMENT CONTROL message for this test step is identical to the same message found in [9] TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	1
Measurement Identity	1
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Event Trigger
Additional measurements list	Not Present
CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency
- New intra-frequency info list	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 1
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Intra-frequency cell id	2
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 2
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Intra-frequency cell id	3
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE Mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 3
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Intra-frequency cell id	1, 2 and 3
- Intra-frequency measurement quantity	
- Filter Coefficient	0
- Measurement quantity	CPICH RSCP
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected cells	Not present
- Reporting cell status	Not present

- Measurement validity	Not present
- CHOICE report criteria	Intra-frequency measurement reporting criteria
- Parameters required for each events	
- Intra-frequency event identity	1a
- Triggering conditions 1	Not Present
- Triggering conditions 2	monitored set cells
- Reporting range	12.0 dB
- Cells forbidden to affect reporting range	Not Present
- W	0
- Hysteresis	0 dB
- Threshold used frequency	Not Present
- Reporting deactivation threshold	3
- Replacement activation threshold	Not Present
- Time to trigger	0 msec
- Amount of reporting	Infinity
- Reporting interval	4000
- Reporting cell status	
- CHOICE reported cells	Report cells within monitored set on used frequency
- Maximum number of reported cells	3
- Intra-frequency event identity	1b
- Triggering conditions 1	monitored set cells
- Triggering conditions 2	Not Present
- Reporting range	12.0 dB
- Cells forbidden to affect reporting range	Not Present
- W	0
- Hysteresis	0 dB
- Threshold used frequency	Not Present
- Reporting deactivation threshold	3
- Replacement activation threshold	Not Present
- Time to trigger	0 msec
- Amount of reporting	Infinity
- Reporting interval	4000
- Reporting cell status	
- CHOICE reported cells	Report cells within monitored set on used frequency
- Maximum number of reported cells	3
DPCH compressed mode status info	Not Present

MEASUREMENT REPORT (Step 2)

Information Element	Value/remark
RRC transaction identifier	Check to see if set to 1
Measurement identity	Check to see if set to 1
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 3
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 2
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Additional Measured Results	Check to see if this IE is absent
Event Results	Check to see if set to 'Intra-frequency measurement event results'
- Intra-frequency event identity	Check to see if set to '1a'
- Cell measurement event results	
- CHOICE Mode	Check to see if set to 'FDD'
- Primary CPICH info	
- Primary Scrambling Code	Check to see if set to the same code for cell 3
- Intra-frequency event identity	Check to see if set to '1b'
- Cell measurement event results	
- CHOICE Mode	Check to see if set to 'FDD'
- Primary CPICH info	
- Primary Scrambling Code	Check to see if set to the same code for cell 2

## ACTIVE SET UPDATE (Step 3)

The contents of ACTIVE SET UPDATE message for this test step is identical to the same message found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Radio link addition information	
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as assigned for cell 3
- Downlink DPCH info for each RL	
- CHOICE mode	FDD
- Primary CPICH usage for channel estimation	P-CPICH can be used.
- DPCH frame offset	0 chips
- Secondary CPICH info	Not Present
- DL channelisation code	This IE is repeated for all existing downlink DPCHs allocated to the UE
- Secondary scrambling code	Not Present
- Spreading factor	512
- Code Number	For each DPCH, assign the same code number in the current code given in cell 1.
- Scrambling code change	Not Present
- TPC Combination Index	0
- SSDT Cell Identity	Not Present
- Close loop timing adjustment mode	Not Present
- TFCI Combining Indicator	Not Present
- SCCPCH information for FACH	Not Present
Radio link removal information	Not Present

## ACTIVE SET UPDATE COMPLETE (Step 4)

Information Element	Value/remark
RRC transaction identifier	Check to see if it is set to 0

## MEASUREMENT REPORT (Step 6 and 12)

Information Element	Value/remark
RRC transaction identifier	Check to see if set to 1
Measurement identity	Check to see if set to 1
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 2
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Additional Measured Results	Check to see if this IE is absent
Event Results	Check to see if set to 'Intra-frequency measurement event results'
- Intra-frequency event identity	Check to see if set to '1a'
- Cell measurement event results	
- CHOICE Mode	Check to see if set to 'FDD'
- Primary CPICH info	
- Primary Scrambling Code	Check to see if set to the same code for cell 2
- Intra-frequency event identity	Check to see if set to '1b'
- Cell measurement event results	
- CHOICE Mode	Check to see if set to 'FDD'
- Primary CPICH info	
- Primary Scrambling Code	Check to see if set to the same code for cell 2

## MEASUREMENT CONTROL (Step 7)

The contents of MEASUREMENT CONTROL message for this test step is identical to the same message found in [9] TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	1
Measurement Identity	1
Measurement Command	Modify
Measurement Reporting Mode	Acknowledged Mode RLC
- Measurement Reporting Transfer Mode	Event Trigger
- Periodic Reporting / Event Trigger Reporting Mode	Not Present
Additional measurements list	Intra-frequency measurement
CHOICE measurement type	Not Present
- Intra-frequency cell info list	Not Present
- Intra-frequency measurement quantity	Not Present
- Intra-frequency reporting quantity	Not Present
- CHOICE report criteria	Intra-frequency measurement reporting criteria
- Parameters required for each events	1a
- Intra-frequency event identity	Not Present
- Triggering conditions 1	monitored set cells
- Triggering conditions 2	12.0 dB
- Reporting range	FDD
- Cells forbidden to affect reporting range	Set to the same code as in cell 3
- CHOICE Mode	0
- Primary CPICH info	0 dB
- Primary scrambling code	Not Present
- W	3
- Hysteresis	Not Present
- Threshold used frequency	0 msec
- Reporting deactivation threshold	Infinity
- Replacement activation threshold	4000
- Time to trigger	Report cells within monitored set on used frequency
- Amount of reporting	3
- Reporting interval	1b
- Reporting cell status	monitored set cells
- CHOICE reported cells	Not Present
- Maximum number of reported cells	12.0 dB
- Intra-frequency event identity	FDD
- Triggering conditions 1	Set to the same code as in cell 3
- Triggering conditions 2	0
- Reporting range	0 dB
- Cells forbidden to affect reporting range	Not Present
- CHOICE Mode	3
- Primary CPICH info	Not Present
- Primary scrambling code	0 msec
- W	Infinity
- Hysteresis	4000
- Threshold used frequency	Report cells within monitored set on used frequency
- Reporting deactivation threshold	3
- Replacement activation threshold	Not Present
- Time to trigger	0 msec
- Amount of reporting	Infinity
- Reporting interval	4000
- Reporting cell status	Report cells within monitored set on used frequency
- CHOICE reported cells	3
- Maximum number of reported cells	Not Present
DPCH compressed mode status info	Not Present

## MEASUREMENT REPORT (Step 8)

Information Element	Value/remark
RRC transaction identifier	Check to see if set to 1
Measurement identity	Check to see if set to 1
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measurement results	
- Cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 2
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Additional Measured Results	Check to see if this IE is absent
Event Results	Check to see if set to 'Intra-frequency measurement event results'
- Intra-frequency event identity	Check to see if set to '1b'
- Cell measurement event results	
- CHOICE Mode	Check to see if set to 'FDD'
- Primary CPICH info	
- Primary Scrambling Code	Check to see if set to the same code for cell 2

## MEASUREMENT CONTROL (Step 9)

The contents of MEASUREMENT CONTROL message for this test step is identical to the same message found in [9] TS 34.108 clause 9 with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	1
Measurement Identity	1
Measurement Command	Modify
Measurement Reporting Mode	Acknowledged Mode RLC
- Measurement Reporting Transfer Mode	Event Trigger
- Periodic Reporting / Event Trigger Reporting Mode	Not Present
Additional measurements list	Intra-frequency measurement
CHOICE measurement type	Not Present
- Intra-frequency cell info list	Not Present
- Intra-frequency measurement quantity	Not Present
- Intra-frequency reporting quantity	Not Present
- CHOICE report criteria	Intra-frequency measurement reporting criteria
- Parameters required for each events	1a
- Intra-frequency event identity	Not Present
- Triggering conditions 1	monitored set cells
- Triggering conditions 2	12.0 dB
- Reporting range	FDD
- Cells forbidden to affect reporting range	Set to the same code as in cell 1
- CHOICE Mode	0
- Primary CPICH info	0 dB
- Primary scrambling code	Not Present
- W	3
- Hysteresis	Not Present
- Threshold used frequency	0 msec
- Reporting deactivation threshold	Infinity
- Replacement activation threshold	4000
- Time to trigger	Report cells within monitored set on used frequency
- Amount of reporting	3
- Reporting interval	1b
- Reporting cell status	monitored set cells
- CHOICE reported cells	Not Present
- Maximum number of reported cells	12.0 dB
- Intra-frequency event identity	FDD
- Triggering conditions 1	Set to the same code as in cell 1
- Triggering conditions 2	0
- Reporting range	0 dB
- Cells forbidden to affect reporting range	Not Present
- CHOICE Mode	3
- Primary CPICH info	Not Present
- Primary scrambling code	0 msec
- W	Infinity
- Hysteresis	4000
- Threshold used frequency	Report cells within monitored set on used frequency
- Reporting deactivation threshold	3
- Replacement activation threshold	Not Present
- Time to trigger	0 msec
- Amount of reporting	Infinity
- Reporting interval	4000
- Reporting cell status	Report cells within monitored set on used frequency
- CHOICE reported cells	3
- Maximum number of reported cells	Not Present
DPCH compressed mode status info	Not Present

## MEASUREMENT REPORT (Step 10)

Information Element	Value/remark
RRC transaction identifier	Check to see if set to 1
Measurement identity	Check to see if set to 1
Measured Results	
- CHOICE measurement	Check to see if set to "Intra-frequency measured results list"
- Intra-frequency measurement results	Check to see if it is absent
- Cell measured results	Check to see if this IE is absent
- Cell Identity	Check to see if this IE is absent
- SFN-SFN observed time difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Primary CPICH Info	
- Primary Scrambling Code	Check to see if it's the same code for cell 2
- CPICH Ec/No	Check to see if this IE is absent
- CPICH RSCP	Check to see if this IE is present
- Pathloss	Check to see if this IE is absent
Measured Results on RACH	Check to see if this IE is absent
Additional Measured Results	Check to see if this IE is absent
Event Results	Check to see if set to 'Intra-frequency measurement event results'
- Intra-frequency event identity	Check to see if set to '1a'
- Cell measurement event results	
- CHOICE Mode	Check to see if set to 'FDD'
- Primary CPICH info	
- Primary Scrambling Code	Check to see if set to the same code for cell 2

## MEASUREMENT CONTROL (Step 11)

The contents of MEASUREMENT CONTROL message for this test step is identical to the same message found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	1
Measurement Identity	1
Measurement Command	Modify
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Event Trigger
Additional measurements list	Not Present
CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	Not Present
- Intra-frequency measurement quantity	Not Present
- Intra-frequency reporting quantity	Not Present
- CHOICE report criteria	Intra-frequency measurement reporting criteria
- Parameters required for each events	<i>Only 2 events are specified</i>
- Intra-frequency event identity	1a
- Triggering conditions 1	Not Present
- Triggering conditions 2	Monitored set cells
- Reporting range	12 dB
- Cells forbidden to affect reporting range	
- CHOICE Mode	FDD
- Primary CPICH info	
- Primary scrambling code	Set to the same code as in cell 1
- CHOICE Mode	FDD
- Primary CPICH info	
- Primary scrambling code	Set to the same code as in cell 2
- CHOICE Mode	FDD
- Primary CPICH info	
- Primary scrambling code	Set to the same code as in cell 3
- W	0
- Hysteresis	0 dB
- Threshold used frequency	Not Present
- Reporting deactivation threshold	3
- Replacement activation threshold	Not Present
- Time to trigger	0 msec
- Amount of reporting	1
- Reporting interval	0
- Reporting cell status	
- CHOICE reported cells	Report cells within monitored set
- Maximum number of reported cells	3
- Intra-frequency event identity	1b
- Triggering conditions 1	Monitored set cells
- Triggering conditions 2	Not Present
- Reporting range	12 dB
- Cells forbidden to affect reporting range	
- CHOICE Mode	FDD
- Primary CPICH info	
- Primary scrambling code	Set to the same code as in cell 1
- CHOICE Mode	FDD
- Primary CPICH info	
- Primary scrambling code	Set to the same code as in cell 2
- CHOICE Mode	FDD
- Primary CPICH info	
- Primary scrambling code	Set to the same code as in cell 3
- W	0
- Hysteresis	0 dB
- Threshold used frequency	Not Present
- Reporting deactivation threshold	3
- Replacement activation threshold	Not Present
- Time to trigger	0 msec
- Amount of reporting	1
- Reporting interval	0
- Reporting cell status	
- CHOICE reported cells	Report cells within monitored set

- Maximum number of reported cells DPCH compressed mode status info	3 Not Present
--	------------------

#### 8.4.1.14.5 Test requirement

After step 1, the UE shall send a MEASUREMENT REPORT message on the uplink DCCH. The message shall contain the IE "Event results" to report that cell 3 has triggered intra-frequency event 1A and cell 2 has triggered intra-frequency event 1B.

After step 3, the UE shall send a ACTIVE SET UPDATE COMPLETE message on the uplink DCCH.

After step 4, the UE shall transmit MEASUREMENT REPORT message on the uplink DCCH. The message shall contain IE "Event results" to report that cell 2 has triggered intra-frequency event 1A and 1B.

After step 7, the UE shall transmit MEASUREMENT REPORT message on the uplink DCCH. The message shall contain IE "Event results" to report that cell 2 has triggered intra-frequency event 1B.

After step 9, the UE shall transmit MEASUREMENT REPORT message on the uplink DCCH. The message shall contain IE "Event results" to report that cell 2 has triggered intra-frequency event 1A.

After step 11, the UE shall send a MEASUREMENT REPORT message on the uplink DCCH. The message shall contain IE "Event results" to report that cell 2 has triggered intra-frequency event 1A and 1B.

### 8.4.1.15 Measurement Control and Report: Configuration Incomplete

#### 8.4.1.15.1 Definition

#### 8.4.1.15.2 Conformance requirement

If IE "Traffic volume measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", but IE "Traffic volume measurement quantity" or IE "Traffic volume reporting quantity" is not received, the UE shall:

1> clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT\_IDENTITY;

1> set the variable CONFIGURATION\_INCOMPLETE to TRUE.

...

If IE "Measurement Reporting Mode" is not received by the UE in MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", the UE shall:

1> clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT\_IDENTITY;

1> set the variable CONFIGURATION\_INCOMPLETE to TRUE.

...

If IE "Inter-frequency measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", but IE "Inter-frequency measurement quantity", IE "Inter-frequency reporting quantity" or "CHOICE Report criteria" is not received, the UE shall:

1> clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT\_IDENTITY;

1> set the variable CONFIGURATION\_INCOMPLETE to TRUE;

...

If IE "Intra-frequency measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", but IE "Intra-frequency measurement quantity", IE "Intra-frequency reporting quantity" or "CHOICE Report criteria" is not received, the UE shall:

- 1> clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT\_IDENTITY;
- 1> set the variable CONFIGURATION\_INCOMPLETE to TRUE.

...

If IE "Quality measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", but IE "Quality reporting quantity" is not received, the UE shall:

- 1> clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT\_IDENTITY;
- 1> set the variable CONFIGURATION\_INCOMPLETE to TRUE.

...

If IE "UE internal measurement" is received by the UE in a MEASUREMENT CONTROL message, where IE "measurement command" has the value "setup", but IE "UE internal measurement quantity" or IE "UE internal reporting quantity" is not received, the UE shall:

- 1> clear all stored measurement control information related associated to this measurement identity in variable MEASUREMENT\_IDENTITY;
- 1> set the variable CONFIGURATION\_INCOMPLETE to TRUE.

...

If the variable CONFIGURATION\_INCOMPLETE is set to TRUE, the UE shall:

- 1> retain the measurement configuration that was valid before the MEASUREMENT CONTROL message was received;
- 1> set the IE "RRC transaction identifier" in the MEASUREMENT CONTROL FAILURE message to the value of "RRC transaction identifier" in the entry for the MEASUREMENT CONTROL message in the table "Accepted transactions" in the variable TRANSACTIONS and clear that entry;
- 1> clear the variable CONFIGURATION\_INCOMPLETE;
- 1> set the cause value in IE "failure cause" to "Configuration incomplete";
- 1> submit the MEASUREMENT CONTROL FAILURE message to lower layers for transmission on the DCCH using AM RLC;
- 1> continue with any ongoing processes and procedures as if the invalid MEASUREMENT CONTROL message has not been received;
- 1> and the procedure ends.

## Reference

3GPP TS 25.331 clause 8.4.1.4a, 8.6.7.10, 8.6.7.13, 8.6.7.14, 8.6.7.16, 8.6.7.17, 8.6.7.18

### 8.4.1.15.3 Test Purpose

1. To confirm that the UE sends a MEASUREMENT CONTROL FAILURE message, after receiving a MEASUREMENT CONTROL message with IE "Measurement command" set to "Setup" and the following contents:
  - "CHOICE measurement type" IE is set to "Intra-frequency measurement" and "Intra-frequency measurement quantity" is omitted; or

- "CHOICE measurement type" IE is set to "Inter-frequency measurement" and "Inter-frequency reporting quantity" is omitted; or
  - "Reporting mode" IE is omitted. or
  - "CHOICE measurement type" IE is set to "Quality measurement" and IE "Quality reporting quantity" is omitted or
  - "CHOICE measurement type" IE is set to "UE internal measurement" and IE "UE internal measurement quantity" is omitted or
  - "CHOICE measurement type" IE is set to "UE internal measurement" and IE "UE internal reporting quantity" is omitted or
  - "CHOICE measurement type" IE is set to "Traffic volume measurement" and IE "Traffic volume measurement quantity" is omitted or
  - "CHOICE measurement type" IE is set to "Traffic volume measurement" and IE "Traffic volume reporting quantity" is omitted
2. To confirm that the UE set the "failure cause" IE to value "incomplete configuration" in the uplink MEASUREMENT CONTROL FAILURE message.

#### 8.4.1.15.4 Method of test

##### Initial Condition

System Simulator: 1 cell.

UE: CS-DCCH+DTCH\_DCH (State 6-9) or PS-DCCH+DTCH\_DCH (State 6-10) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

##### Test Procedure

The UE is initially brought to CELL\_DCH. SS then send a MEASUREMENT CONTROL message to UE. The UE shall perform periodical traffic volume measurement according to this message and then transmit MEASUREMENT REPORT message back to SS.

SS transmits a MEASUREMENT CONTROL message to the UE, commanding it to start an intra-frequency measurement and reporting task. However, IE "Intra-frequency measurement quantity" is absent in the message. The UE shall not establish the intra-frequency measurement. It shall send a MEASUREMENT CONTROL FAILURE message to report that a "configuration incomplete" error has been detected.

Next, SS sends the MEASUREMENT CONTROL message once more. In this message, SS commands the establishment of an inter-frequency measurement and reporting task, but IE "Inter-frequency reporting quantity" is omitted in this message. The UE shall not establish the intra-frequency measurement. It shall send a MEASUREMENT CONTROL FAILURE message to report that a "configuration incomplete" error has been detected.

Next, SS sends a third MEASUREMENT CONTROL message. In this message, SS commands the establishment of an intra-frequency measurement and reporting task, but IE "Measurement reporting mode" is omitted in this message. The UE shall not establish the intra-frequency measurement. It shall send a MEASUREMENT CONTROL FAILURE message to report that a "configuration incomplete" error has been detected.

Next, SS sends a fourth MEASUREMENT CONTROL message. In this message, SS commands the establishment of a quality measurement and reporting task, but IE "Quality reporting quantity" is omitted in this message. The UE shall not establish the quality measurement. It shall send a MEASUREMENT CONTROL FAILURE message to report that a "configuration incomplete" error has been detected.

Next, SS sends a fifth MEASUREMENT CONTROL message. In this message, SS commands the establishment of UE internal measurement and reporting task, but IE "UE internal measurement quantity" is omitted in this message. The UE shall not establish the UE internal measurement. It shall send a MEASUREMENT CONTROL FAILURE message to report that a "configuration incomplete" error has been detected.

Next, SS sends a sixth MEASUREMENT CONTROL message. In this message, SS commands the establishment of UE internal measurement and reporting task, but IE "UE internal reporting quantity" is omitted in this message. The

UE shall not establish the UE internal measurement. It shall send a MEASUREMENT CONTROL FAILURE message to report that a "configuration incomplete" error has been detected.

Next, SS sends a seventh MEASUREMENT CONTROL message. In this message, SS commands the establishment of a traffic volume measurement and reporting task, but IE "Traffic volume measurement quantity" is omitted in this message. The UE shall not establish the traffic volume measurement. It shall send a MEASUREMENT CONTROL FAILURE message to report that a "configuration incomplete" error has been detected.

In the final sequence, SS sends an eight MEASUREMENT CONTROL message. In this message, SS commands the establishment of a traffic volume measurement and reporting task, but IE "Traffic volume reporting quantity" is omitted in this message. The UE shall not establish the traffic volume measurement. It shall send a MEASUREMENT CONTROL FAILURE message to report that a "configuration incomplete" error has been detected. UE shall continue its traffic volume measurement and send MEASUREMENT REPORT messages back to SS periodically. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

#### Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is CELL_DCH state in cell 1.
1a		←	MEASUREMENT CONTROL	SS requests UE to perform periodical traffic volume measurement.
1b		→	MEASUREMENT REPORT	
2		←	MEASUREMENT CONTROL	SS commands the start of an intra-frequency measurement and reporting task. IE "Intra-frequency measurement quantity" is absent.
3		→	MEASUREMENT CONTROL FAILURE	UE reports the occurrence of "incomplete configuration"
4		←	MEASUREMENT CONTROL	SS commands the start of an inter-frequency measurement and reporting task. IE "Inter-frequency reporting quantity" is absent.
5		→	MEASUREMENT CONTROL FAILURE	UE reports the occurrence of "incomplete configuration"
6		←	MEASUREMENT CONTROL	SS commands the start of an inter-frequency measurement and reporting task. IE "Measurement reporting mode" is absent.
7		→	MEASUREMENT CONTROL FAILURE	UE reports the occurrence of "incomplete configuration"

8	←	MEASUREMENT CONTROL	SS commands the start of a Quality measurement and reporting task. IE "Quality reporting quantity" is absent.
9	→	MEASUREMENT CONTROL FAILURE	UE reports the occurrence of "incomplete configuration"
10	←	MEASUREMENT CONTROL	SS commands the start of an UE internal measurement and reporting task. IE "UE internal measurement quantity" is absent.
11	→	MEASUREMENT CONTROL FAILURE	UE reports the occurrence of "incomplete configuration"
12	←	MEASUREMENT CONTROL	SS commands the start of an UE internal measurement and reporting task. IE "UE internal reporting quantity" is absent.
13	→	MEASUREMENT CONTROL FAILURE	UE reports the occurrence of "incomplete configuration"
14	←	MEASUREMENT CONTROL	SS commands the start of a Traffic volume measurement and reporting task. IE "Traffic volume measurement quantity" is absent.
15	→	MEASUREMENT CONTROL FAILURE	UE reports the occurrence of "incomplete configuration"
16	←	MEASUREMENT CONTROL	SS commands the start of a Traffic volume measurement and reporting task. IE "Traffic volume reporting quantity" is absent.
17	→	MEASUREMENT CONTROL FAILURE	UE reports the occurrence of "incomplete configuration"
18	←	MEASUREMENT REPORT	
19	↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

### Specific Message Content

#### MEASUREMENT CONTROL (Step 1a)

Use the MEASUREMENT CONTROL message as defined in [9] TS 34.108 clause 9, with the following exceptions:

Information Element	Value/Remark
Measurement Identity	1
Measurement Command	Modify
Measurement reporting mode	
- Measurement Report Transfer Mode	Acknowledged mode RLC
- Periodical Reporting / Event Trigger Reporting Mode	Periodical Reporting
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RB	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	
- UE state	All states
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	Infinity
- Reporting interval	8000
DPCH compressed mode status	Not Present

## MEASUREMENT REPORT (Step 1b and 18)

Check to see if the same message type found in [9] TS 34.108 Clause 9 is received, with the following exceptions:

Information Element	Value/Remarks
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

## MEASUREMENT CONTROL (Step 2)

Information Element	Value/remark
Measurement Identity	1
RRC transaction Identifier	Arbitrarily selected between 0 and 3
Measurement Command	Setup
Measurement Reporting Mode	Acknowledged mode RLC
- Measurement Report Transfer Mode	Periodical reporting
- Periodical Reporting/Event Trigger Reporting Mode	
Additional measurements list	Not Present
CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cell	Not Present
- Cell for measurement	
- Intra-frequency cell id	Set to id of cell 1
- Intra-frequency measurement quantity	Not Present
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronization information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CHOICE mode	FDD
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronization information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CHOICE mode	FDD
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting cell status	
- CHOICE reported cell	Report cells within active set
- Maximum number of reported cells	1
- Measurement validity	CELL_DCH
- CHOICE report criteria	Periodical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	32 seconds
DPCH compressed mode status info	Not Present

## MEASUREMENT CONTROL FAILURE (Step 3)

Information Element	Value/remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 2
Failure cause	Check to see if set to "incomplete configuration"

## MEASUREMENT CONTROL (Step 4) (Note 1)

Information Element	Value/remark
Measurement Identity	2
RRC transaction Identifier	Arbitrarily selected between 0 and 3
Measurement Command	Setup
Measurement Reporting Mode	Acknowledged mode RLC
- Measurement Report Transfer Mode	Periodical reporting
- Periodical Reporting/Event Trigger Reporting Mode	
Additional measurements list	Not Present
CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- CHOICE inter-frequency cell removal	No inter-frequency cells removed
- New inter-frequency cell	
- Inter-frequency cell id	Set to id of cell 4
- Frequency info	
- CHOICE Mode	FDD
- UARFCN uplink (Nu)	Set to the same UARFCN as cell 4 in clause 6.1 of TS 34.108
- UARFCN downlink (Nd)	Set to the same UARFCN as cell 4 in clause 6.1 of TS 34.108
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	0 chips
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 4
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and re-selection info	Not Present
- Cell for measurement	
- Inter-frequency cell id	Set to id of cell 4
- Inter-frequency measurement quantity	
- CHOICE reporting criteria	Inter-frequency reporting criteria
- Filter coefficients	0
- CHOICE mode	FDD
- Measurement quantity for frequency quality estimate	CPICH RSCP
- Inter-frequency reporting quantity	Not Present
- Reporting cell status	
- CHOICE reported cell	Report cells within monitored set on non-used frequency
- Maximum number of reported cells	1
- Measurement validity	CELL_DCH
- CHOICE report criteria	Periodical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	32 seconds
- Inter-frequency set update	Not Present
DPCH compressed mode status info	Not Present

## MEASUREMENT CONTROL FAILURE (Step 5)

Information Element	Value/remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 4
Failure cause	Check to see if set to "incomplete configuration"

## MEASUREMENT CONTROL (Step 6)

Information Element	Value/remark
Measurement Identity	3
RRC transaction Identifier	Arbitrarily selected between 0 and 3
Measurement Command	Setup
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cell	Not Present
- Cell for measurement	
- Intra-frequency cell id	Set to id of cell 1
- Intra-frequency measurement quantity	
- Filter coefficient	0
- CHOICE mode	FDD
- Measurement quantity	CPICH RSCP
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting	No report
indicator	
- Cell synchronization information reporting	FALSE
indicator	
- Cell identity reporting indicator	FALSE
- CHOICE mode	FDD
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting	No report
indicator	
- Cell synchronization information reporting	No report
indicator	
- Cell identity reporting indicator	FALSE
- CHOICE mode	FDD
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting cell status	
- CHOICE reported cell	Report cells within active set
- Maximum number of reported cells	1
- Measurement validity	CELL_DCH
- CHOICE report criteria	Periodical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	32 seconds
DPCH compressed mode status info	Not Present

## MEASUREMENT CONTROL FAILURE (Step 7)

Information Element	Value/remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 6
Failure cause	Check to see if set to "incomplete configuration"

## MEASUREMENT CONTROL (Step 8)

Information Element	Value/remark
Measurement identity	16
Measurement command	Setup
- CHOICE measurement type	Quality measurement
- Quality reporting quantity	Not present
- Reporting criteria	Periodical reporting criteria
- Reporting amount	Infinity
- Reporting interval	64 sec
Measurement reporting mode	
- Transfer Mode	Acknowledged mode
- Periodical or event trigger	Periodic
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

## MEASUREMENT CONTROL FAILURE (Step 9)

Information Element	Value/remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 8
Failure cause	Check to see if set to "incomplete configuration"

## MEASUREMENT CONTROL (Step 10)

Information Element	Value/remark
Measurement Identity	1
Measurement Command	Setup
CHOICE measurement type	UE internal measurement
- UE internal measurement quantity	Not present
- UE internal reporting quantity	
- UE Transmitted Power	TRUE
- CHOICE mode	FDD
- UE Rx-Tx time difference	FALSE
- CHOICE report criteria	Periodical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	1000 msec
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
DPCH compressed mode status	Not Present

## MEASUREMENT CONTROL FAILURE (Step 11)

Information Element	Value/remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 10
Failure cause	Check to see if set to "incomplete configuration"

## MEASUREMENT CONTROL (Step 12)

Information Element	Value/remark
Measurement Identity	1
Measurement Command	Setup
CHOICE measurement type	UE internal measurement
- UE internal measurement quantity	
- CHOICE mode	FDD
- Measurement quantity	UE Transmitted Power
- Filter Coefficient	0
- UE internal reporting quantity	Not present
- CHOICE report criteria	Periodical reporting criteria
- Amount of reporting	Infinity
- Reporting interval	1000 msec
Measurement Reporting Mode	Not Present
Additional measurements list	Not Present
DPCH compressed mode status	Not Present

## MEASUREMENT CONTROL FAILURE (Step 13)

Information Element	Value/remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 12
Failure cause	Check to see if set to "incomplete configuration"

## MEASUREMENT CONTROL (Step 14)

Information Element	Value/remark
Measurement Identity	1
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	Not Present
- Traffic volume measurement quantity	Not present
- Traffic volume reporting quantity	
- RB buffer payload	True
- RB buffer payload average	False
- RB buffer payload variance	False
- Measurement validity	Not Present
- Report criteria	Periodical Reporting Criteria
- Reporting amount	8
- Reporting interval	8 Sec
Measurement reporting mode	
- Transfer Mode	Acknowledged mode
- Periodical or event trigger	Periodic
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

## MEASUREMENT CONTROL FAILURE (Step 15)

Information Element	Value/remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 14
Failure cause	Check to see if set to "incomplete configuration"

## MEASUREMENT CONTROL (Step 16)

Information Element	Value/remark
Measurement Identity	1
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	Not Present
- Traffic volume measurement quantity	RLC Buffer Payload
- Traffic volume reporting quantity	Not present
- Measurement validity	Not Present
- Report criteria	Periodical Reporting Criteria
- Reporting amount	8
- Reporting interval	8 Sec
Measurement reporting mode	
- Transfer Mode	Acknowledged mode
- Periodical or event trigger	Periodic
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

## MEASUREMENT CONTROL FAILURE (Step 17)

Information Element	Value/remark
RRC transaction identifier	Check if it is set to the same value of the same IE in the MEASUREMENT CONTROL message sent in Step 16
Failure cause	Check to see if set to "incomplete configuration"

NOTE: For the MEASUREMENT CONTROL message in step 4, cell 4 is signalled to be added as a new cell into the UE's inter-frequency cell list. However, SS does not need to transmit cell 4 in the downlink, as the UE is not expected to perform measurement and reporting for this cell.

## 8.4.1.15.5 Test Requirement

After step 1a, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

After step 2, 4, 6, 8, 10, 12, 14 and step 16, the UE shall transmit MEASUREMENT CONTROL FAILURE message, stating the IE "failure cause" as "incomplete configuration". The UE shall not transmit any MEASUREMENT REPORT messages during the execution of this test case.

After step 17, the UE shall transmit a MEASUREMENT REPORT message on the uplink DCCH, reporting the RLC buffer payload of each RBs mapped on DCH at every 8s interval.

## 8.4.1.16 Measurement Control and Report: Traffic volume measurement for transition from idle mode to CELL\_FACH state

## 8.4.1.16.1 Definition

## 8.4.1.16.2 Conformance requirement

Upon transition from idle mode to CELL\_FACH state, the UE shall:

1> store the measurement control information from the IE "Traffic volume measurement system information" received in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11) in the variable MEASUREMENT\_IDENTITY;

1> begin traffic volume measurement reporting according to the assigned information.

Upon reception of a MEASUREMENT CONTROL message the UE shall perform actions specified in TS 25.331 subclause 8.6 unless otherwise specified below.

The UE shall:

- 1> read the IE "Measurement command";
- 1> if the IE "Measurement command" has the value "setup":
  - 2> store this measurement in the variable MEASUREMENT\_IDENTITY according to the IE "measurement identity", first releasing any previously stored measurement with that identity if that exists;
  - 2> for measurement types "inter-RAT measurement" or "inter-frequency measurement":  
...
  - 2> for measurement type "UE positioning measurement":  
...
  - 2> for any other measurement type:
    - 3> if the measurement is valid in the current RRC state of the UE:
      - 4> begin measurements according to the stored control information for this measurement identity.

## Reference

3GPP TS 25.331 clause 8.4.1.9.4, 3GPP TS 25.331 clause 8.4.1.3.

### 8.4.1.16.3 Test Purpose

1. To confirm that after a state transition from idle mode to CELL\_FACH state, the UE shall begin a traffic volume type measurement, as specified in System Information Block type 11 or 12 messages on BCCH.
2. To confirm that in CELL\_FACH state, the UE shall send a MEASUREMENT REPORT message when reporting criteria is satisfied. During CELL\_FACH state, if the UE receives a MEASUREMENT CONTROL message, it shall perform the measurement and reporting tasks based on the MEASUREMENT CONTROL message received.

### 8.4.1.16.4 Method of test

#### Initial Condition

System Simulator: 1cell

UE: "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

#### Test Procedure

The UE is initially in idle mode. The System Information Block type 11 message is modified with respect to the default settings to request UE to perform traffic volume measurements. Key measurement parameters are as follows: measurement quantity = "RLC Buffer Payload", report criteria = "periodic reporting criteria", reporting interval = "6 seconds", reporting amount = 'infinity'. The System Information type 12 message is not broadcasted.

SS prompts the operator to make an outgoing call for one of the traffic classes supported by the UE. SS and UE shall execute procedure P6. Next SS and UE shall execute procedure P10. Then SS and UE shall execute procedure P14.

UE shall begin traffic volume measurements, and shall send MEASUREMENT REPORT message after completing first measurement. UE shall send second MEASUREMENT REPORT message 6 seconds after first MEASUREMENT REPORT message.

SS sends MEASUREMENT CONTROL message to the UE. This message overwrites measurement information saved from System information type 11. Key measurement parameters are as follow: measurement type = "traffic volume measurement", measurement quantity = "RLC Buffer Payload", report criteria = "Event triggered, event 4B: Transport Channel Traffic Volume becomes smaller than an absolute threshold ", Time to trigger = "5 seconds", pending time

after trigger = "16 seconds", "reporting threshold = '4K'. Since there is no uplink traffic, UE shall send MEASUREMENT REPORT message after 5 seconds (time to trigger interval). SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

#### Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	System Information Block type 11	The UE is idle mode and camped onto cell 1. System Information Block type 11 to be transmitted is different from the default settings (see specific message contents)
2		↔	SS executes procedure P6 (clause 7.4.2.2.2) specified in TS 34.108.	SS prompts the test operator to make an outgoing call.
3		↔	SS executes procedure P10 (clause 7.4.2.4.2) specified in TS 34.108.	
4		↔	SS executes procedure P14 (clause 7.4.2.6.2) specified in TS 34.108.	
5		→	Void	
6		→	MEASUREMENT REPORT	
7		→	MEASUREMENT REPORT	Time difference between earlier and this MEASUREMENT REPORT message should be 6 Seconds.
8		←	MEASUREMENT CONTROL	Traffic volume measurement reporting is requested if measurement is below threshold.
9				SS monitors the uplink DCCH to confirm that no MEASUREMENT REPORT messages are received in 5 seconds.
10		→	MEASUREMENT REPORT	Measurement report because event 4b is triggered
11		↔	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

## Specific Message Content

## System Information Block type 11 (Step 1)

Information Element	Value/remark
SIB12 indicator	FALSE
FACH measurement occasion info	Not Present
Measurement control system information	
- Use of HCS	Not used
- Cell selection and reselection quality measure	CPICH RSCP
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	Not Present
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Set to same code as used for cell 1
- Primary CPICH Tx power	Not Present
- TX Diversity indicator	FALSE
- Cells for measurement	Not Present
- Intra-frequency measurement quantity	Not Present
- Intra-frequency reporting quantity for RACH reporting	Not Present
- Maximum number of reported cells on RACH	Not Present
- Reporting information for state CELL_DCH	Not Present
- Inter-frequency measurement system information	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	
- Traffic volume measurement ID	4
- Traffic volume measurement object list	Rach
- Traffic volume measurement quantity	RLC Buffer Payload
- Traffic volume reporting quantity	
- RB buffer payload	True
- RB buffer payload average	False
- RB buffer payload variance	False
- Traffic volume measurement reporting criteria	Not Present
- Measurement validity	All States except CELL_DCH
- Measurement reporting mode	
- Measurement report transfer mode	Acknowledged Mode
- Periodical or event trigger	Periodical
- Report criteria system Information	Periodical reporting criteria
- Reporting amount	Infinity
- Reporting interval	6 seconds
- UE internal measurement system information	Not Present

## MEASUREMENT REPORT (Step 6,7)

Information Element	Value/remark
Measurement identity	Check to see if set to 4
Measured Results	
- CHOICE measurement	Check to see if set to "traffic volume measured results list"
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

## MEASUREMENT CONTROL (Step 8)

Information Element	Value/remark
Measurement Identity	4
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	Not Present
- Traffic volume measurement quantity	RLC Buffer Payload
- Traffic volume reporting quantity	
- RB buffer payload	True
- RB buffer payload average	False
- RB buffer payload variance	False
- Measurement validity	Not Present
- Report criteria	Traffic Volume Reporting Criteria
- UL transport channel id	Rach
- Event specific parameters	
- Event id	4B
- Reporting threshold	4K
- Time to trigger	5000 ms
- Pending time after trigger	16000 ms
- Tx interruption after trigger	Not Present
Measurement reporting mode	
- Transfer Mode	Acknowledged mode
- Periodical or event trigger	Event trigger
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

## MEASUREMENT REPORT (Step 10)

Information Element	Value/remark
Measurement identity	4
Measured Results	Traffic volume measured results list
- CHOICE measurement	
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Traffic Volume Event Results
- UL transport channel causing event	Rach
- Traffic volume event identity	4B

## 8.4.1.16.5 Test Requirement

After step 5 the UE shall send MEASUREMENT REPORT messages on the uplink DCCH containing RLC buffer payload information for all SRBs. After 6 seconds UE shall send second MEASUREMENT REPORT messages containing RLC buffer payload information for all SRBs.

After step 8 the UE shall overwrite measurement information received from system information type 11 with measurement information in MEASUREMENT CONTROL message. The UE shall not send MEASUREMENT REPORT message within time to trigger interval. After step 9 the UE shall transmit MEASUREMENT REPORT messages with event identity 4B.

## 8.4.1.17 Measurement Control and Report: Traffic volume measurement for transition from idle mode to CELL\_DCH state

## 8.4.1.17.1 Definition

## 8.4.1.17.2 Conformance requirement

Upon transition from idle mode to CELL\_DCH state, the UE shall:

- 1> begin a traffic volume type measurement, assigned in System Information Block type 11 (or System Information Block type 12).

Upon reception of a MEASUREMENT CONTROL message the UE shall perform actions specified in TS 25.331 subclause 8.6 unless otherwise specified below.

The UE shall:

- 1> read the IE "Measurement command";
- 1> if the IE "Measurement command" has the value "setup":

- 2> store this measurement in the variable MEASUREMENT\_IDENTITY according to the IE "measurement identity", first releasing any previously stored measurement with that identity if that exists;
- 2> for measurement types "inter-RAT measurement" or "inter-frequency measurement":  
...
- 2> for measurement type "UE positioning measurement":  
...
- 2> for any other measurement type:
  - 3> if the measurement is valid in the current RRC state of the UE:
    - 4> begin measurements according to the stored control information for this measurement identity.

## Reference

3GPP TS 25.331 clause 8.4.1.8.4, 3GPP TS 25.331 clause 8.4.1.3.

### 8.4.1.17.3 Test Purpose

1. To confirm that after a state transition from idle mode to CELL\_DCH state, the UE begin a traffic volume type measurement, as specified in System Information Block type 11 or 12 messages on BCCH. When entering CELL\_DCH state, the UE shall send a MEASUREMENT REPORT message when reporting criteria is satisfied.
2. During CELL\_DCH state, if the UE receives a MEASUREMENT CONTROL message, it shall perform the measurement and reporting tasks based on the MEASUREMENT CONTROL message received.

### 8.4.1.17.4 Method of test

#### Initial Condition

System Simulator: 1cell

UE: "Registered idle mode on CS" (state 2) or "Registered idle mode on PS" (state 3) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE. If the UE supports both CS and PS domains, the initial UE state shall be "Registered idle mode on CS/PS" (state 7).

#### Test Procedure

The UE is initially in idle mode. The System Information Block type 11 message is modified with respect to the default settings to request UE to perform traffic volume measurements. Key measurement parameters are as follows: measurement quantity = "Average RLC Buffer Payload", report criteria = "Event triggered, event 4B", reporting threshold = "8K", report transfer mode = "Unacknowledged mode". The System Information type 12 message is not broadcasted.

SS prompts the operator to make an outgoing call of a supported traffic class. SS and UE shall execute procedure P3 (for CS service) or P5 (for PS service). Next SS and UE shall execute procedure P7 (for CS service) or P9 (for PS service). Then SS and UE shall execute procedure P11 (for CS service) or P13 (for PS service).

UE shall begin traffic volume measurements after entering in CELL\_DCH state. The UE shall send MEASUREMENT REPORT message because uplink traffic is below threshold.

SS sends MEASUREMENT CONTROL message to the UE. This message reconfigures measurement information saved from System information type 11. Key measurement parameters are as follow: measurement type = "traffic volume measurement", measurement quantity = "RLC Buffer Payload", report criteria = "Periodic reporting criteria", reporting interval = "8 seconds", reporting amount = "8". The UE shall periodically send MEASUREMENT REPORT message to report RLC Buffer Payload for each RB.

SS sends MEASUREMENT CONTROL message to release traffic volume measurement. UE shall not send measurement report after receiving this message. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	System Information Block type 11	The UE is idle mode and camped onto cell 1. System Information Block type 11 to be transmitted is different from the default settings (see specific message contents)
2		↔	SS executes procedure P3 (clause 7.4.2.1.2) or P5 (clause 7.4.2.2.2) specified in TS 34.108.	
3		↔	SS executes procedure P7 (clause 7.4.2.3.2) or P9 (clause 7.4.2.4.2) specified in TS 34.108.	
4		↔	SS executes procedure P11 (clause 7.4.2.5.2) or P13 (clause 7.4.2.6.2) specified in TS 34.108.	
5		→	Void	
6		→	MEASUREMENT REPORT	Event 4B is triggered. This message should come on RB1.
7		←	MEASUREMENT CONTROL	Periodic Traffic volume measurement reporting is requested.
8		→	MEASUREMENT REPORT	This message should come on RB2.
9		→	MEASUREMENT REPORT	Time difference between earlier and this MEASUREMENT REPORT message should be 8 Seconds.
10		←	MEASUREMENT CONTROL	Release traffic volume measurement.
11				Wait for 8 Seconds to confirm that UE does not send measurement report message.
12		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Content

## System Information Block type 11 (Step 1)

Information Element	Value/remark
SIB12 indicator	FALSE
FACH measurement occasion info	Not Present
Measurement control system information	
- Use of HCS	Not used
- Cell selection and reselection quality measure	CPICH RSCP
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	Not Present
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Set to same code as used for cell 1
- Primary CPICH Tx power	Not Present
- TX Diversity indicator	FALSE
- Cells for measurement	Not Present
- Intra-frequency measurement quantity	Not Present
- Intra-frequency reporting quantity for RACH reporting	Not Present
- Maximum number of reported cells on RACH	Not Present
- Reporting information for state CELL_DCH	Not Present
- Inter-frequency measurement system information	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	
- Traffic volume measurement ID	2
- Traffic volume measurement object list	Not Present
- Traffic volume measurement quantity	Average RLC Buffer Payload
- Time Interval to take an average	200 msec
- Traffic volume reporting quantity	
- RB buffer payload	False
- RB buffer payload average	True
- RB buffer payload variance	False
- Traffic volume measurement reporting criteria	Not Present
- Measurement validity	CELL_DCH
- Measurement reporting mode	
- Measurement report transfer mode	Unacknowledged Mode
- Periodical or event trigger	Event Trigger
- Report criteria system Information	Traffic Volume Reporting Criteria
- UL transport channel id	Not Present
- Event specific parameters	
- Event id	4B
- Reporting threshold	8K
- Time to trigger	Not Present
- Pending time after trigger	Not Present
- Tx interruption after trigger	Not Present
- UE internal measurement system information	Not Present

## MEASUREMENT REPORT (Step 6)

Information Element	Value/remark
Measurement identity	Check to see if set to 2
Measured Results	
- CHOICE measurement	Check to see if set to "traffic volume measured results list"
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is present
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is present
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is present
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is present
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	
- UL transport channel causing event	DCH 5
- Traffic volume event identity	4B

## MEASUREMENT CONTROL (Step 7)

Information Element	Value/remark
Measurement Identity	2
Measurement Command	Set up
Measurement reporting mode	
- Transfer Mode	Acknowledged mode
- Periodical or event trigger	Periodic
Additional measurement list	Not Present
CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- Uplink transport channel type	DCH
- UL Target Transport Channel ID	5
- Traffic volume measurement quantity	
- Measurement quantity	RLC Buffer Payload
- Time Interval to take an average or a variance	Not Present
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	True
- Average of RLC Buffer Payload for each RBe	False
- Variance of RLC Buffer Payload for each RB	False
- Measurement validity	Not Present
- CHOICE Reporting criteria	Periodical Reporting Criteria
- Amount of reporting	8
- Reporting interval	8 Sec
DPCH compressed mode status	Not Present

## MEASUREMENT REPORT (Step 8,9)

Information Element	Value/remark
Measurement identity	2
Measured Results	Traffic volume measured results list
- CHOICE measurement	
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

## MEASUREMENT CONTROL (Step 10)

Information Element	Value/remark
Measurement Identity	2
Measurement Command	Release
Measurement reporting mode	Not Present
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

## 8.4.1.17.5 Test Requirement

After step 5, due to triggering of event 4B, the UE shall send MEASUREMENT REPORT message using unacknowledged mode of RLC. After step 7, UE shall send MEASUREMENT REPORT message using Acknowledged mode of RLC. After 8 seconds UE shall send second MEASUREMENT REPORT message. After step 10, the UE shall not send MEASUREMENT REPORT message.

## 8.4.1.18 Measurement Control and Report: Traffic volume measurement for transition from CELL\_FACH state to CELL\_DCH state

## 8.4.1.18.1 Definition

## 8.4.1.18.2 Conformance requirement

Upon transition from CELL\_FACH to CELL\_DCH state, the UE shall:

- retrieve each set of measurement control information of measurement type "traffic volume" stored;
- if the optional IE "measurement validity" for this measurement has not been included:
  - delete the measurement;
- if the IE "measurement validity" for the measurement has been included, and the IE "UE state" has been assigned to value "all states except CELL\_DCH":
  - stop measurement reporting; and

- save the measurement to be used after the next transition to CELL\_FACH state;
- if the IE "measurement validity" for the measurement has been included, and the IE "UE state" has been assigned to value "all states":
  - continue measurement reporting;
- if the IE "measurement validity" has been included and the IE "UE state" has been assigned to value "CELL\_DCH":
  - resume this measurement and associated reporting;
- if no traffic volume type measurement has been assigned to the UE with a MEASUREMENT CONTROL message when transiting to CELL\_DCH state:
  - continue an ongoing traffic volume type measurement, assigned in System Information Block type 11 or System Information Block type 12.

## Reference

3GPP TS 25.331 clause 8.4.1.7.4

### 8.4.1.18.3 Test Purpose

1. To confirm that the UE performs traffic volume measurements and the associated reporting when it enters CELL\_DCH state from CELL\_FACH state, and that such measurement contexts (and optionally, the reporting context) valid for CELL\_DCH state have been previously stored.
2. To confirm that the UE shall continue to perform traffic volume measurement listed in the System Information Block type 11 or 12 messages, if no previously assigned measurements are present. The UE shall transmit MEASUREMENT REPORT messages if reporting conditions stated in System Information Block type 11 or 12 messages have been satisfied.

### 8.4.1.18.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH\_FACH (state 6-11) as specified in clause 7.4 of TS 34.108

#### Test Procedure

Initially the UE is in CELL\_FACH state. MEASUREMENT CONTROL message is sent to the UE to establish traffic volume measurement context with optional IE "measurement validity" is not present. The UE shall perform measurement and reporting as assigned in MEASUREMENT CONTROL message. RADIO BEARER RECONFIGURATION procedure is used to take the UE from CELL\_FACH state to CELL\_DCH state. While entering CELL\_DCH state from CELL\_FACH state, the UE shall delete traffic volume measurement contexts if optional IE "measurement validity" is not present. So, in CELL\_DCH state UE shall not perform traffic volume measurement and reporting. UE is taken to the CELL\_FACH state from CELL\_DCH state using RADIO BEARER RECONFIGURATION procedure. The UE shall not send MEASUREMENT REPORT message as measurement context is already deleted.

The behavior of the UE when moved from CELL\_FACH state to CELL\_DCH state and assigned traffic volume measurement context is present with IE "measurement validity" is set to "All But CELL\_DCH state" or "CELL\_DCH state" or "All states" is tested in a similar way.

When the UE is in CELL\_FACH state, System Information is modified to assign traffic volume measurement and reporting to the UE. No previously assigned traffic volume measurement contexts are present in the UE. A SYSTEM INFORMATION CHANGE INDICATION is sent on FACH to inform the UE about the change. The UE is taken to CELL\_DCH state from CELL\_FACH state using RADIO BEARER RECONFIGURATION procedure. In CELL\_DCH

state the UE shall continue traffic volume measurement and reporting as assigned in System Information. Traffic volume measurement and reporting is released by sending MEASUREMENT CONTROL message.

#### Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	MEASUREMENT CONTROL	Optional IE "measurement validity" is not included.
2		→	MEASUREMENT REPORT	
3		←	RADIO BEARER RECONFIGURATION	
4		→	RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_DCH state from CELL_FACH state UE shall delete measurement context setup by MEASUREMENT CONTROL message (Step 1).
5				SS waits for 8 seconds to confirm that there is no MEASUREMENT REPORT message from UE.
6		←	RADIO BEARER RECONFIGURATION	
7		→	RADIO BEARER RECONFIGURATION COMPLETE	UE is in CELL_FACH state.
8				SS waits for 8 seconds to confirm that there is no MEASUREMENT REPORT message from UE.
9		←	MEASUREMENT CONTROL	IE "measurement validity" is set to "All But CELL_DCH".
10		→	MEASUREMENT REPORT	.
11		←	RADIO BEARER RECONFIGURATION	
12		→	RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_DCH state from CELL_FACH state UE shall stop traffic volume measurement setup by MEASUREMENT CONTROL message (Step 9).
13				SS waits for 8 seconds to confirm that there is no MEASUREMENT REPORT message from UE.
14		←	MEASUREMENT CONTROL	UE shall release measurement context setup by MEASUREMENT CONTROL message (Step 9).
15		←	RADIO BEARER RECONFIGURATION	
16		→	RADIO BEARER RECONFIGURATION COMPLETE	UE is in CELL_FACH state.

17	←	MEASUREMENT CONTROL	IE "measurement validity" is set to "CELL_DCH".
18			SS waits for 8 seconds to confirm that there is no MEASUREMENT REPORT message from UE.
19	←	RADIO BEARER RECONFIGURATION	
20	→	RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_DCH state from CELL_FACH state UE shall start traffic volume measurement setup by MEASUREMENT CONTROL message (Step 17).
21	→	MEASUREMENT REPORT	
22	←	MEASUREMENT CONTROL	UE shall release measurement context setup by MEASUREMENT CONTROL message (Step 17)
23	←	RADIO BEARER RECONFIGURATION	
24	→	RADIO BEARER RECONFIGURATION COMPLETE	UE is in CELL_FACH state.
25	←	MEASUREMENT CONTROL	IE "measurement validity" is set to "All states".
26	→	MEASUREMENT REPORT	
27	←	RADIO BEARER RECONFIGURATION	
28	→	RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_DCH state from CELL_FACH state UE shall continue traffic volume measurement setup by MEASUREMENT CONTROL message (Step 25).
29	→	MEASUREMENT REPORT	
30	←	MEASUREMENT CONTROL	UE shall release measurement context setup by MEASUREMENT CONTROL message (Step 25)
31	←	RADIO BEARER RECONFIGURATION	
32	→	RADIO BEARER RECONFIGURATION COMPLETE	UE is in CELL_FACH state.

33	←	MIB and SIB11 modified	Traffic volume measurements and reporting is assigned to Ues
33a	←	SYSTEM INFORMATION CHANGE INDICATION	
34	→	MEASUREMENT REPORT	
35	←	RADIO BEARER RECONFIGURATION	
36	→	RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_DCH state from CELL_FACH state UE shall continue traffic volume measurement assigned in System Information (Step 33).
37	→	MEASUREMENT REPORT	
38	←	MEASUREMENT CONTROL	UE shall release measurement context assigned in System Information (Step 33).

## Specific Message Content

## MEASUREMENT CONTROL (Step 1)

Information Element	Value/remark
Measurement Identity	1
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	Not Present
- Traffic volume measurement quantity	RLC Buffer Payload
- Traffic volume reporting quantity	
- RB buffer payload	True
- RB buffer payload average	False
- RB buffer payload variance	False
- Measurement validity	Not Present
- Report criteria	Periodical Reporting Criteria
- Reporting amount	8
- Reporting interval	8 Sec
Measurement reporting mode	
- Transfer Mode	Acknowledged mode
- Periodical or event trigger	Periodic
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

## MEASUREMENT REPORT (Step 2)

Information Element	Value/remark
Measurement identity	1
Measured Results	Traffic volume measured results list
- CHOICE measurement	
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	20
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

## RADIO BEARER RECONFIGURATION (Step 3, 11, 19, 27, and 35)

Use the same message type found in Annex A with condition set to A4.

## RADIO BEARER RECONFIGURATION (Step 6, 15, 23, and 31)

Use the same message type found in Annex A with condition set to A5.

## MEASUREMENT CONTROL (Step 9)

The contents of this message are identical to MEASUREMENT CONTROL (Step 1) message with the following exceptions:

Information Element	Value/remark
Measurement Identity	2
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Measurement validity	All But CELL_DCH

## MEASUREMENT REPORT (Step 10)

The contents of this message are identical to MEASUREMENT REPORT (Step 2) message with the following exceptions:

Information Element	Value/Remarks
Measurement identity	2

## MEASUREMENT CONTROL (Step 14)

Information Element	Value/remark
Measurement Identity	2
Measurement Command	Release
Measurement reporting mode	Not Present
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

## MEASUREMENT CONTROL (Step 17)

The contents of this message are identical to MEASUREMENT CONTROL (Step 1) message with the following exceptions:

Information Element	Value/remark
Measurement Identity	3
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Measurement validity	CELL_DCH

## MEASUREMENT REPORT (Step 21)

The contents of this message are identical to MEASUREMENT REPORT (Step 2) message with the following exceptions:

Information Element	Value/Remarks
Measurement identity	3

## MEASUREMENT CONTROL (Step 22)

The contents of this message are identical to MEASUREMENT CONTROL (Step 14) message with the following exceptions:

Information Element	Value/Remark
Measurement Identity	3

## MEASUREMENT CONTROL (Step 25)

The contents of this message are identical to MEASUREMENT CONTROL (Step 1) message with the following exceptions:

Information Element	Value/remark
Measurement Identity	4
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- UL transport channel identity	RACH
- UL transport channel identity	DCH :1
- UL transport channel identity	DCH : 5
- Measurement validity	All States

## MEASUREMENT REPORT (Step 26, and 29)

The contents of this message are identical to MEASUREMENT REPORT (Step 2) message with the following exceptions:

Information Element	Value/Remarks
Measurement identity	4

## MEASUREMENT CONTROL (Step 30)

The contents of this message are identical to MEASUREMENT CONTROL (Step 14) message with the following exceptions:

Information Element	Value/Remark
Measurement Identity	4

## Master Information Block (Step 33)

Information Element	Value/Remarks
MIB Value Tag	2

## System Information Block type 11 (Step 33)

Information Element	Value/remark
SIB12 indicator	FALSE
FACH measurement occasion info	Not Present
Measurement control system information	
- Use of HCS	Not used
- Cell selection and reselection quality measure	CPICH RSCP
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	Not Present
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	1
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	Not Present
- Read SFN indicator	TRUE
- CHOICE mode	FDD
- Primary CPICH info	
- Primary scrambling code	Set to same code as used for cell 1
- Primary CPICH Tx power	Not Present
- TX Diversity indicator	FALSE
- Cells for measurement	Not Present
- Intra-frequency measurement quantity	Not Present
- Intra-frequency reporting quantity for RACH reporting	Not Present
- Maximum number of reported cells on RACH	Not Present
- Reporting information for state CELL_DCH	Not Present
- Inter-frequency measurement system information	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	
- Traffic volume measurement ID	5
- Traffic volume measurement object list	Not Present
- Traffic volume measurement quantity	RLC Buffer Payload
- Traffic volume reporting quantity	
- RB buffer payload	True
- RB buffer payload average	False
- RB buffer payload variance	False
- Traffic volume measurement reporting criteria	Not Present
- Measurement validity	All states
- Measurement reporting mode	
- Measurement report transfer mode	Acknowledged Mode
- Periodical or event trigger	Periodical
- Report criteria system Information	Periodical reporting criteria
- Reporting amount	Infinity
- Reporting interval	8 seconds
- UE internal measurement system information	Not Present

## SYSTEM INFORMATION CHANGE INDICATION (Step 33a)

Information Element	Value/Remarks
Paging record list	Not Present
BCCH modification info	
- MIB Value Tag	3
- BCCH modification time	Not Present

## MEASUREMENT REPORT (Step 34, and 37)

The contents of this message are identical to MEASUREMENT REPORT (Step 2) message with the following exceptions:

Information Element	Value/Remarks
Measurement identity	5

#### MEASUREMENT CONTROL (Step 38)

The contents of this message are identical to MEASUREMENT CONTROL (Step 14) message with the following exceptions:

Information Element	Value/Remark
Measurement Identity	5

#### 8.4.1.18.5 Test Requirement

The UE shall send MEASUREMENT REPORT message in steps 21, 29 and 37. The UE shall not send MEASUREMENT REPORT message in steps 5, 8, and 13.

#### 8.4.1.19 Measurement Control and Report: Traffic volume measurement for transition from CELL\_DCH to CELL\_FACH state

##### 8.4.1.19.1 Definition

##### 8.4.1.19.2 Conformance requirement

Upon transition from CELL\_DCH to CELL\_FACH or CELL\_PCH or URA\_PCH state, the UE shall:

- 1> retrieve each set of measurement control information of measurement type "traffic volume" stored in the variable MEASUREMENT\_IDENTITY; and
  - 2> if the optional IE "measurement validity" for this measurement has not been included:
    - 3> delete the measurement associated with the variable MEASUREMENT\_IDENTITY.
  - 2> if the IE "measurement validity" for the measurement has been included, and the IE "UE state" has been assigned to value "CELL\_DCH":
    - 3> stop measurement reporting;
    - 3> store the measurement associated with the variable MEASUREMENT\_IDENTITY to be used after the next transition to CELL\_DCH state.
  - 2> if the IE "measurement validity" for the measurement has been included, and the IE "UE state" has been assigned to value "all states":
    - 3> continue measurement reporting.
  - 2> if the IE "measurement validity" has been included and the IE "UE state" has been assigned to value "all states except CELL\_DCH":
    - 3> resume this measurement and associated reporting.
- 1> if no traffic volume type measurement has been assigned to the UE with a MEASUREMENT CONTROL message that is valid in CELL\_FACH or CELL\_PCH or URA\_PCH states (stored in the variable MEASUREMENT\_IDENTITY), which has the same identity as the one indicated in the IE "Traffic volume measurement system information":

2> store the measurement control information from the IE "Traffic volume measurement system information" received in System Information Block type 12 (or System Information Block type 11, according to subclause 8.1.1.6.11) in the variable MEASUREMENT\_IDENTITY;

2> begin traffic volume measurement reporting according to the assigned information.

#### Reference

3GPP TS 25.331 clauses 8.4.1.6.6.

#### 8.4.1.19.3 Test Purpose

1. The UE shall perform traffic volume measurements and the associated reporting when it enters CELL\_FACH state from CELL\_DCH state, and that such measurement contexts (and optionally, the reporting context) valid for CELL\_FACH state have been previously stored.
2. The UE shall perform traffic volume measurement listed in the System Information Block type 11 or 12 messages, if no previously assigned measurements are present. The UE shall transmit MEASUREMENT REPORT messages if reporting conditions has been satisfied.

#### Reference

3GPP TS 25.331 clause 8.4.1.6.6

#### 8.4.1.19.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

#### Test Procedure

Initially the UE is in CELL\_DCH state. MEASUREMENT CONTROL message is sent to the UE to establish traffic volume measurement context with optional IE "measurement validity" is not present. The UE shall perform measurement and reporting as assigned in MEASUREMENT CONTROL message. RADIO BEARER RECONFIGURATION procedure is used to take the UE from CELL\_DCH state to CELL\_FACH state. While entering CELL\_FACH state from CELL\_DCH state, the UE shall delete traffic volume measurement contexts if optional IE "measurement validity" is not present. So, in CELL\_FACH state UE shall not perform traffic volume measurement and reporting. UE is taken to the CELL\_DCH state from CELL\_FACH state using RADIO BEARER RECONFIGURATION procedure. The UE shall not send MEASUREMENT REPORT message as measurement context is already deleted.

The behavior of the UE when moved from CELL\_DCH state to CELL\_FACH state and assigned traffic volume measurement context is present with IE "measurement validity" is set to "All But CELL\_DCH state" or "CELL\_DCH state" or "All states" is tested in a similar way.

When the UE is in CELL\_DCH state, System Information is modified to assign traffic volume measurement and reporting to the UE. No previously assigned traffic volume measurement contexts are present in the UE. The UE is taken to CELL\_FACH state from CELL\_DCH state using RADIO BEARER RECONFIGURATION procedure. In CELL\_FACH state the UE shall perform traffic volume measurement and reporting as assigned in System Information. Traffic volume measurement and reporting is released by sending MEASUREMENT CONTROL message.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	MEASUREMENT CONTROL	Optional IE "measurement validity" is not included.
2		→	MEASUREMENT REPORT	
3		←	RADIO BEARER RECONFIGURATION	
4		→	RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_FACH state from CELL_DCH state UE shall delete measurement context setup by MEASUREMENT CONTROL message (Step 1).
5				SS waits for 8 seconds to confirm that there is no MEASUREMENT REPORT message from UE.
6		←	RADIO BEARER RECONFIGURATION	
7		→	RADIO BEARER RECONFIGURATION COMPLETE	UE is in CELL_DCH state.
8				SS waits for 8 seconds to confirm that there is no MEASUREMENT REPORT message from UE.
9		←	MEASUREMENT CONTROL	IE "measurement validity" is set to "All But CELL_DCH".
10				SS waits for 8 seconds to confirm that there is no MEASUREMENT REPORT message from UE.
11		←	RADIO BEARER RECONFIGURATION	
12		→	RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_FACH state from CELL_DCH state UE shall start traffic volume measurement setup by MEASUREMENT CONTROL message (Step 9).
13		→	MEASUREMENT REPORT	
14		←	MEASUREMENT CONTROL	UE shall release measurement context setup by MEASUREMENT CONTROL message (Step 9).
15		←	RADIO BEARER RECONFIGURATION	
16		→	RADIO BEARER RECONFIGURATION COMPLETE	UE is in CELL_DCH state.

17	←	MEASUREMENT CONTROL	IE "measurement validity" is set to "CELL_DCH".
18	→	MEASUREMENT REPORT	
19	←	RADIO BEARER RECONFIGURATION	
20	→	RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_FACH state from CELL_DCH state UE shall stop traffic volume measurement setup by MEASUREMENT CONTROL message (Step 17).
21			SS waits for 8 seconds to confirm that there is no
22	←	MEASUREMENT CONTROL	UE shall release measurement context setup by MEASUREMENT CONTROL message (Step 17)
23	←	RADIO BEARER RECONFIGURATION	
24	→	RADIO BEARER RECONFIGURATION COMPLETE	UE is in CELL_DCH state.
25	←	MEASUREMENT CONTROL	IE "measurement validity" is set to "All states".
26	→	MEASUREMENT REPORT	
27	←	RADIO BEARER RECONFIGURATION	
28	→	RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_FACH state from CELL_DCH state UE shall continue traffic volume measurement setup by MEASUREMENT CONTROL message (Step 25).
29	→	MEASUREMENT REPORT	
30	←	MEASUREMENT CONTROL	UE shall release measurement context setup by MEASUREMENT CONTROL message (Step 25)
31	←	RADIO BEARER RECONFIGURATION	
32	→	RADIO BEARER RECONFIGURATION COMPLETE	UE is in CELL_DCH state.

33	←	SIB12 modified	Traffic volume measurements and reporting is assigned to UEs
34	←	RADIO BEARER RECONFIGURATION	
35	→	RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_FACH state from CELL_DCH state UE shall start traffic volume measurement as assigned in System Information (Step 33).
36	→	MEASUREMENT REPORT	
37	←	MEASUREMENT CONTROL	UE shall release measurement context assigned in System Information (Step 33).

## Specific Message Content

## MEASUREMENT CONTROL (Step 1)

Information Element	Value/remark
Measurement Identity	1
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	Not Present
- Traffic volume measurement quantity	RLC Buffer Payload
- Traffic volume reporting quantity	
- RB buffer payload	True
- RB buffer payload average	False
- RB buffer payload variance	False
- Measurement validity	Not Present
- Report criteria	Periodical Reporting Criteria
- Reporting amount	8
- Reporting interval	8 Sec
Measurement reporting mode	
- Transfer Mode	Acknowledged mode
- Periodical or event trigger	Periodic
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

## MEASUREMENT REPORT (Step 2)

Information Element	Value/remark
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	2
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	3
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	4
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
- RB identity	20
- RLC buffer payload	Check to see if this IE is present
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

## RADIO BEARER RECONFIGURATION (Step 3, 11, 19, 27, and 34)

Use the same message type found in Annex A with condition set to A5.

## RADIO BEARER RECONFIGURATION (Step 6, 15, 23, and 31)

Use the same message type found in Annex A with condition set to A4.

## MEASUREMENT CONTROL (Step 9)

The contents of this message are identical to MEASUREMENT CONTROL (Step 1) message with the following exceptions:

Information Element	Value/remark
Measurement Identity	2
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Measurement validity	All But CELL_DCH

## MEASUREMENT REPORT (Step 13)

The contents of this message are identical to MEASUREMENT REPORT (Step 2) message with the following exceptions:

Information Element	Value/Remarks
Measurement identity	2

## MEASUREMENT CONTROL (Step 14)

Information Element	Value/remark
Measurement Identity	2
Measurement Command	Release
Measurement reporting mode	Not Present
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

## MEASUREMENT CONTROL (Step 17)

The contents of this message are identical to MEASUREMENT CONTROL (Step 1) message with the following exceptions:

Information Element	Value/remark
Measurement Identity	3
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Measurement validity	CELL_DCH

## MEASUREMENT REPORT (Step 18)

The contents of this message are identical to MEASUREMENT REPORT (Step 2) message with the following exceptions:

Information Element	Value/Remarks
Measurement identity	3

## MEASUREMENT CONTROL (Step 22)

The contents of this message are identical to MEASUREMENT CONTROL (Step 14) message with the following exceptions:

Information Element	Value/Remark
Measurement Identity	3

## MEASUREMENT CONTROL (Step 25)

The contents of this message are identical to MEASUREMENT CONTROL (Step 1) message with the following exceptions:

Information Element	Value/remark
Measurement Identity	4
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	
- UL transport channel identity	RACH
- UL transport channel identity	DCH :1
- UL transport channel identity	DCH : 5
- Measurement validity	All States

## MEASUREMENT REPORT (Step 26, and 29)

The contents of this message are identical to MEASUREMENT REPORT (Step 2) message with the following exceptions:

Information Element	Value/Remarks
Measurement identity	4

## MEASUREMENT CONTROL (Step 30)

The contents of this message are identical to MEASUREMENT CONTROL (Step 14) message with the following exceptions:

Information Element	Value/Remark
Measurement Identity	4

## System Information Block type 12 (Step 33)

Information Element	Value/remark
FACH measurement occasion info	Not Present
Measurement control system information	
- Use of HCS	Not used
- Cell_selection_and_reselection_quality	CPICH RSCP
- Intra-frequency measurement system information	Not Present
- Inter-frequency measurement system information	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	
- Traffic volume measurement ID	5
- Traffic volume measurement object list	Not Present
- Traffic volume measurement quantity	RLC Buffer Payload
- Traffic volume reporting quantity	
- RB buffer payload	True
- RB buffer payload average	False
- RB buffer payload variance	False
- Traffic volume measurement reporting criteria	Not Present
- Measurement validity	Not Present
- Measurement reporting mode	
- Measurement report transfer mode	Acknowledged Mode
- Periodical or event trigger	Periodical
- Report criteria system Information	Periodical reporting criteria
- Reporting amount	Infinity
- Reporting interval	8 seconds
- UE internal measurement system information	Not Present

## MEASUREMENT REPORT (Step 36)

The contents of this message are identical to MEASUREMENT REPORT (Step 2) message with the following exceptions:

Information Element	Value/Remarks
Measurement identity	5

## MEASUREMENT CONTROL (Step 37)

The contents of this message are identical to MEASUREMENT CONTROL (Step 14) message with the following exceptions:

Information Element	Value/Remark
Measurement Identity	5

#### 8.4.1.19.5 Test Requirement

The UE shall send MEASUREMENT REPORT message in steps 13, 29 and 36. The UE shall not send MEASUREMENT REPORT message in steps 5, 8, and 21.

### 8.4.1.20 Measurement Control and Report: Traffic volume measurement in CELL\_PCH state

#### 8.4.1.20.1 Definition

#### 8.4.1.20.2 Conformance requirement

Upon transition from CELL\_DCH to CELL\_FACH or CELL\_PCH or URA\_PCH state, the UE shall:

- 1> retrieve each set of measurement control information of measurement type "traffic volume" stored in the variable MEASUREMENT\_IDENTITY; and
  - 2> if the optional IE "measurement validity" for this measurement has not been included:
    - 3> delete the measurement associated with the variable MEASUREMENT\_IDENTITY.
  - 2> if the IE "measurement validity" for the measurement has been included, and the IE "UE state" has been assigned to value "CELL\_DCH":
    - 3> stop measurement reporting;
    - 3> store the measurement associated with the variable MEASUREMENT\_IDENTITY to be used after the next transition to CELL\_DCH state.
  - 2> if the IE "measurement validity" for the measurement has been included, and the IE "UE state" has been assigned to value "all states":
    - 3> continue measurement reporting.
  - 2> if the IE "measurement validity" has been included and the IE "UE state" has been assigned to value "all states except CELL\_DCH":
    - 3> resume this measurement and associated reporting.
- 1> if no traffic volume type measurements set up or modified through a MEASUREMENT CONTROL message and valid in CELL\_FACH or CELL\_PCH or URA\_PCH states are stored in the variable MEASUREMENT\_IDENTITY with the same identity as the one indicated in the IE "Traffic volume measurement system information":  
...

In CELL\_PCH or URA\_PCH state, the UE shall:

- 1> first perform the cell update procedure, using the cause "uplink data transmission", in order to transit to CELL\_FACH state; and then
- 1> transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable MEASUREMENT\_IDENTITY are fulfilled for any ongoing traffic volume measurement or UE positioning measurement which is being performed in the UE.

#### 8.4.1.20.3 Test Purpose

1. To confirm that in CELL\_PCH state, UE performs assigned traffic volume measurement. When reporting criteria for ongoing traffic volume measurement is fulfilled, the UE shall first perform cell update procedure and then transmit MEASUREMENT REPORT message.

## Reference

3GPP TS 25.331 clause 8.4.2.2, 3GPP TS 25.331 clause 8.4.1.6.6.

## 8.4.1.20.4 Method of test

## Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

## Test Procedure

Initially the UE is in CELL\_DCH state. System Information block type 12 message is modified to assign traffic volume measurement and reporting. RADIO BEARER RECONFIGURATION procedure is used to take UE from CELL\_DCH state to CELL\_PCH state. While entering in CELL\_PCH state from CELL\_DCH state UE should start traffic volume measurement as assigned in System Information. When reporting criteria for traffic volume measurement is satisfied the UE shall change state to CELL\_FACH and perform CELL UPDATE procedure. After successful completion of CELL UPDATE procedure, UE shall transmit MEASUREMENT REPORT message.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	SIB12 modified	Traffic volume measurements and reporting is assigned to UEs
2		←	RADIO BEARER RECONFIGURATION	IE "RRC State Indicator" is set to "CELL_PCH"
3		→	RADIO BEARER RECONFIGURATION COMPLETE	While entering in CELL_PCH state from CELL_DCH state UE shall start traffic volume measurement as assigned in System Information (Step 1).
4		→	CELL UPDATE	The UE shall move to CELL_FACH state with the message set to "uplink data transmission" in IE "Cell update cause".
5		←	CELL UPDATE CONFIRM	
5a		→	UTRAN MOBILITY INFORMATION CONFIRM	
6		→	MEASUREMENT REPORT	

## Specific Message Content

## System Information Block type 12 (Step 1)

Information Element	Value/remark
FACH measurement occasion info	Not Present
Measurement control system information	
- Use of HCS	Not used
- Cell_selection_and_reselection_quality	CPICH RSCP
- Intra-frequency measurement system information	Not Present
- Inter-frequency measurement system information	Not Present
- Inter-RAT measurement system information	Not Present
- Traffic volume measurement system information	
- Traffic volume measurement ID	1
- Traffic volume measurement object list	
- UL transport channel identity	RACH
- UL transport channel identity	DCH : 5
- Traffic volume measurement quantity	Variance of RLC Buffer Payload
- Time Interval to take an average	200 msec
- Traffic volume reporting quantity	
- RB buffer payload	False
- RB buffer payload average	False
- RB buffer payload variance	True
- Traffic volume measurement reporting criteria	Not Present
- Measurement validity	All States
- Measurement reporting mode	
- Measurement report transfer mode	Acknowledged Mode
- Periodical or event trigger	Periodical
- Report criteria system Information	Periodical reporting criteria
- Reporting amount	Infinity
- Reporting interval	8 seconds
- UE internal measurement system information	Not Present

## RADIO BEARER RECONFIGURATION (Step 2)

Use the same message type found in Annex A with condition set to A5 except following exceptions:

Information Element	Value/remark
RRC State Indicator	CELL_PCH
UTRAN DRX cycle length coefficient	3

## CELL UPDATE (Step 4)

Use the same message type found in Annex A with condition set to A5 except following exceptions:

Information Element	Value/remark
Cell Update Cause	Check to see if set to "Uplink data transmission"

## CELL UPDATE CONFIRM (Step 5)

Use the same message sub-type found in Annex A, with the following exceptions.

Information Element	Value/Remarks
New C-RNTI	'1010 1010 1010 1010'

## UTRAN MOBILITY INFORMATION CONFIRM (Step 5a)

Only the message type is checked.

## MEASUREMENT REPORT (Step 6)

Information Element	Value/remark
Measurement identity	1
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is present
- RB identity	2
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is present
- RB identity	3
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is present
- RB identity	4
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is present
- RB identity	20
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is present
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

## 8.4.1.20.5 Test Requirement

The UE shall send CELL UPDATE message with cause "Uplink data transfer" in step 4, UTRAN MOBILITY INFORMATION CONFIRM message in step 5a and MEASUREMENT REPORT message in step 6.

## 8.4.1.21 Measurement Control and Report: Traffic volume measurement in URA\_PCH state

## 8.4.1.21.1 Definition

## 8.4.1.21.2 Conformance requirement

Upon transition from CELL\_DCH to CELL\_FACH or CELL\_PCH or URA\_PCH state, the UE shall:

- 1> retrieve each set of measurement control information of measurement type "traffic volume" stored in the variable MEASUREMENT\_IDENTITY; and
  - 2> if the optional IE "measurement validity" for this measurement has not been included:
    - 3> delete the measurement associated with the variable MEASUREMENT\_IDENTITY.
  - 2> if the IE "measurement validity" for the measurement has been included, and the IE "UE state" has been assigned to value "CELL\_DCH":
    - 3> stop measurement reporting;
    - 3> store the measurement associated with the variable MEASUREMENT\_IDENTITY to be used after the next transition to CELL\_DCH state.
  - 2> if the IE "measurement validity" for the measurement has been included, and the IE "UE state" has been assigned to value "all states":
    - 3> continue measurement reporting.

2> if the IE "measurement validity" has been included and the IE "UE state" has been assigned to value "all states except CELL\_DCH":

3> resume this measurement and associated reporting.

1> if no traffic volume type measurements set up or modified through a MEASUREMENT CONTROL message and valid in CELL\_FACH or CELL\_PCH or URA\_PCH states are stored in the variable MEASUREMENT\_IDENTITY with the same identity as the one indicated in the IE "Traffic volume measurement system information":

...

In CELL\_PCH or URA\_PCH state, the UE shall:

1> first perform the cell update procedure, using the cause "uplink data transmission", in order to transit to CELL\_FACH state; and then

1> transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable MEASUREMENT\_IDENTITY are fulfilled for any ongoing traffic volume measurement or UE positioning measurement which is being performed in the UE.

#### 8.4.1.21.3 Test Purpose

1. To confirm that in URA\_PCH state, UE performs assigned traffic volume measurement. When reporting criteria for ongoing traffic volume measurement is fulfilled, the UE shall first perform cell update procedure and then transmit MEASUREMENT REPORT message.

#### Reference

3GPP TS 25.331 clause 8.4.2.2, 3GPP TS 25.331 clause 8.4.1.6.6.

#### 8.4.1.21.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: PS-DCCH+DTCH\_DCH (state 6-10) as specified in clause 7.4 of TS 34.108

#### Test Procedure

Initially the UE is in CELL\_DCH state. MEASUREMENT CONTROL message is sent to UE to assign traffic volume measurement and reporting to be performed in all states except CELL\_DCH. The UE is requested to perform periodic reporting of measurements with IE "Reporting amount" is set to 1. RADIO BEARER RECONFIGURATION procedure is used to take UE from CELL\_DCH state to URA\_PCH state. While entering in URA\_PCH state from CELL\_DCH state UE should start traffic volume measurement as assigned by MEASUREMENT CONTROL message. When reporting criteria for traffic volume measurement is satisfied the UE shall change state to CELL\_FACH and perform CELL UPDATE procedure. After successful completion of CELL UPDATE procedure, UE shall transmit MEASUREMENT REPORT message. The UE shall not send second MEASUREMENT REPORT message after reporting interval, because IE "Reporting amount" in MEASUREMENT CONTROL message is set to 1.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	MEASUREMENT CONTROL	IE "Reporting amount" is set to 1.
2		←	RADIO BEARER RECONFIGURATION	IE "RRC State Indicator" is set to "URA_PCH"
3		→	RADIO BEARER RECONFIGURATION COMPLETE	While entering in URA_PCH state from CELL_DCH state UE shall start traffic volume measurement as assigned in System Information (Step 1).
4		→	CELL UPDATE	The UE shall move to CELL FACH state with the message set to "uplink data transmission" in IE "Cell update cause".
5		←	CELL UPDATE CONFIRM	
5a		→	UTRAN MOBILITY INFORMATION CONFIRM	
6		→	MEASUREMENT REPORT	
7				SS waits for 8 Sec to confirm that UE does not send second MEASUREMENT REPORT message

## Specific Message Content

## MEASUREMENT CONTROL (Step 1)

Information Element	Value/remark
Measurement Identity	15
Measurement Command	Setup
- CHOICE measurement type	Traffic Volume Measurement
- Traffic volume measurement object list	RACH
- Traffic volume measurement quantity	Variance of RLC Buffer Payload
- Time Interval to take an average	200 msec
- Traffic volume reporting quantity	
- RB buffer payload	False
- RB buffer payload average	False
- RB buffer payload variance	True
- Measurement validity	All but CELL_DCH State
- Report criteria	Periodical Reporting Criteria
- Reporting amount	1
- Reporting interval	8 Sec
Measurement reporting mode	
- Transfer Mode	Acknowledged mode
- Periodical or event trigger	Periodic
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

## RADIO BEARER RECONFIGURATION (Step 2)

Use the same message type found in Annex A with condition set to A5 except following exceptions:

Information Element	Value/remark
RRC State Indicator	URA_PCH
UTRAN DRX cycle length coefficient	3

CELL UPDATE (Step 4)

Use the same message type found in Annex A with condition set to A5 except following exceptions:

Information Element	Value/remark
Cell Update Cause	Check to see if set to "Uplink data transmission"

CELL UPDATE CONFIRM (Step 5)

Use the same message sub-type found in Annex A, with the following exceptions.

Information Element	Value/Remarks
New C-RNTI	'1010 1010 1010 1010'

UTRAN MOBILITY INFORMATION CONFIRM (Step 5a)

Only the message type is checked.

MEASUREMENT REPORT (Step 6)

Information Element	Value/remark
Measurement identity	15
Measured Results	
- CHOICE measurement	Traffic volume measured results list
- Traffic volume measurement results	
- RB identity	1
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is present
- RB identity	2
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is present
- RB identity	3
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is present
- RB identity	4
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is present
- RB identity	20
- RLC buffer payload	Check to see if this IE is absent
- RLC buffer payload average	Check to see if this IE is absent
- RLC buffer payload variance	Check to see if this IE is present
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

8.4.1.21.5 Test Requirement

The UE shall send CELL UPDATE message with cause "Uplink data transfer" in step 4, UTRAN MOBILITY INFORMATION CONFIRM message in step 5a and MEASUREMENT REPORT message in step 6. The UE shall not send MEASUREMENT REPORT message in step 7.

## 8.4.1.22 Measurement Control and Report: Quality measurements

### 8.4.1.22.1 Definition

### 8.4.1.22.2 Conformance requirement

Upon reception of a MEASUREMENT CONTROL message the UE shall perform actions specified in TS 25.331 subclause 8.6 unless otherwise specified below.

The UE shall:

- 1> read the IE "Measurement command";
- 1> if the IE "Measurement command" has the value "setup":
  - 2> store this measurement in the variable MEASUREMENT\_IDENTITY according to the IE "measurement identity", first releasing any previously stored measurement with that identity if that exists;
  - 2> for measurement types "inter-RAT measurement" or "inter-frequency measurement":  
...
  - 2> for measurement type "UE positioning measurement":  
...
  - 2> for any other measurement type:
    - 3> if the measurement is valid in the current RRC state of the UE:
      - 4> begin measurements according to the stored control information for this measurement identity.

### Reference

3GPP TS 25.331 clause 8.4.1.3

### 8.4.1.22.3 Test Purpose

1. To confirm that the UE performs quality measurement as specified in MEASUREMENT CONTROL message received. In CELL\_DCH state, the UE shall send MEASUREMENT REPORT message when the reporting criteria is fulfilled for any ongoing quality measurement.

### 8.4.1.22.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: CS-DCCH+DTCH\_DCH (State 6-9) or PS-DCCH+DTCH\_DCH (State 6-10) as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

#### Test Procedure

The UE is in CELL\_DCH state. MEASUREMENT CONTROL message is sent to UE to assign quality measurement and reporting. As assigned in MEASUREMENT CONTROL message, the UE shall periodically send MEASUREMENT REPORT message reporting BLER of downlink transport channel(s). SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	MEASUREMENT CONTROL	The UE is requested to perform "Quality measurements"
2		→	MEASUREMENT REPORT	
3		→	MEASUREMENT REPORT	UE shall send second MEASUREMENT REPORT message after 64 seconds.
4		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Content

## MEASUREMENT CONTROL (Step 1)

Information Element	Value/remark
Measurement identity	16
Measurement command	Setup
- CHOICE measurement type	Quality measurement
- Quality reporting quantity	
- DL transport channel BLER	True
- Transport channel ID list	Not present
- Mode specific Info	fdd : Null
- Reporting criteria	Periodical reporting criteria
- Reporting amount	Infinity
- Reporting interval	64 sec
Measurement reporting mode	
- Transfer Mode	Acknowledged mode
- Periodical or event trigger	Periodic
Additional measurement list	Not Present
DPCH compressed mode status	Not Present

## MEASUREMENT REPORT (Step 2,3)

Information Element	Value/remark
Measurement identity	16
Measured Results	
- CHOICE measurement	Quality measurement
- BLER measurement results list	
- Transport channel identity	10
- DL transport channel BLER	Check to see if this IE is present
- Mode specific info	fdd: Null
Measured results on RACH	Check to see if this IE is absent
Additional measured results	Check to see if this IE is absent
Event results	Check to see if this IE is absent

## 8.4.1.22.5 Test Requirement

In step 2 and 3, the UE shall send MEASUREMENT REPORT message to report BLER for downlink DCH transport channel.

### 8.4.1.23 Measurement Control and Report: Intra-frequency measurement for events 1C and 1D

#### 8.4.1.23.1 Definition

#### 8.4.1.23.2 Conformance requirement

##### 1. When event 1C is configured in the UE, the UE shall:

- 1> if "Measurement quantity" is "pathloss" and Equation 1 below is fulfilled for one or more primary CPICHs, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 2 below is fulfilled for one or more primary CPICHs, for each of these primary CPICHs:
  - 2> if all required reporting quantities are available for that cell; and
  - 2> if the equations have been fulfilled for a time period indicated by "Time to trigger", and if the primary CPICH that is better is not included in the active set but the other primary CPICH is any of the primary CPICHs included in the active set, and if that first primary CPICH is not included in the "cells triggered" in the variable TRIGGERED\_1C\_EVENT:
    - 3> include that primary CPICH in the "cells recently triggered" in the variable TRIGGERED\_1C\_EVENT.
- 1> if the value of "Replacement activation threshold" for this event is less than or equal to the current number of cells in the active set or equal to 0 and if any primary CPICHs are stored in the "cells recently triggered" in the variable TRIGGERED\_1C\_EVENT:
  - 2> if "Reporting interval" for this event is not equal to 0:
    - 3> if the IE "Periodical reporting running" in the variable TRIGGERED\_1C\_EVENT is set to FALSE:
      - 4> start a timer for with the value of "Reporting interval" for this event and set the IE "Periodical reporting running" in the variable TRIGGERED\_1C\_EVENT to TRUE.
    - 3> set "sent reports" for that primary CPICH in the variable TRIGGERED\_1C\_EVENT to 1.
  - 2> send a measurement report with IEs set as below:
    - 3> set in "intra-frequency measurement event results": "Intrafrequency event identity" to "1c"; and
    - 3> include in "cell measurement event results" all entries of the "cells recently triggered" in the variable TRIGGERED\_1C\_EVENT not in the active set as well as the "primary CPICH info" of all the primary CPICHs in the active set for which the measured value is worse (i.e. greater for pathloss and less for the other measurement quantities) than the one of the entry in "cell recently triggered" that has the best measured value. The "primary CPICH info" for those cells shall be ordered according to their measured value taking into account their cell individual offset, beginning with the best cell to the worst one;
    - 3> set the IE "measured results" and the IE "additional measured results" according to subclause 8.4.2, not taking into account the cell individual offset for each cell.
  - 2> ....

##### 2. When event 1D is configured in the UE, the UE shall:

- 1> if "Measurement quantity" is "pathloss" and Equation 1 below is fulfilled for a primary CPICH that is not stored in "Best cell" in variable BEST\_CELL\_1D\_EVENT, or if "Measurement quantity" is "CPICH Ec/N0" or "CPICH RSCP", and Equation 2 below is fulfilled for a primary CPICH that is not stored in "Best cell" in variable BEST\_CELL\_1D\_EVENT:

NOTE: If the equations are simultaneously fulfilled for more than one primary CPICH, the UE should report only one event 1D, triggered by the best primary CPICH.

- 2> if all required reporting quantities are available for that cell, and if the equations have been fulfilled for a time period indicated by "Time to trigger":

- 3> set "best cell" in the variable BEST\_CELL\_1D\_EVENT to that primary CPICH that triggered the event;
- 3> send a measurement report with IEs set as below:
- 4> set in "intra-frequency measurement event results"; "Intrafrequency event identity" to "1d" and "cell measurement event results" to the CPICH info of the primary CPICH that triggered the report, not taking into account the cell individual offset for each cell.
- 4> set the IE "measured results" and the IE "additional measured results" according to subclause 8.4.2, not taking into account the cell individual offset for each cell.

NOTE: Event 1D can be triggered by an active or by a non-active CPICH.

## Reference

3GPP TS 25.331 clause 14.1.2.3, 14.1.2.4.

### 8.4.1.23.3 Test Purpose

- 1.A To confirm that the UE sends MEASUREMENT REPORT message if event 1C is configured, and number of cells in active set is greater than or equal to 'Replacement activation threshold' parameter, and if monitored or detected primary CPICH on same frequency becomes better than a primary CPICH in active set.
- 1.B To confirm that the UE does not send MEASUREMENT REPORT message indicating event 1C if number of cells in active set is less than 'Replacement activation threshold' parameter, and if monitored or detected primary CPICH on same frequency becomes better than a primary CPICH in active set.
- 1.C To confirm that the UE stops periodic reporting of event 1C if the cell that triggered event 1C is added into active set.
2. To confirm that the UE sends MEASUREMENT REPORT message if event 1D is configured and intra-frequency measurement indicates change in best cell.

### 8.4.1.23.4 Method of test

#### Initial Condition

System Simulator: 3 cells – The initial configurations of the 3 cells in the SS shall follow the values indicated in the column marked "T0" in table 8.4.1.23-1. The table is found in "Test Procedure" clause.

UE: CS-DCCH+DTCH\_DCH (State 6-9) or PS-DCCH+DTCH\_DCH (State 6-10) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

#### Test Procedure

Table 8.4.1.23-1 illustrates the downlink power to be applied for the 3 cells at various time instants of the test execution. Column marked "T0" denotes the initial conditions, while columns marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the text in this clause.

**Table 8.4.1.23-1**

Parameter	Unit	Cell 1			Cell 2			Cell 3		
		T0	T1	T2	T0	T1	T2	T0	T1	T2
UTRA RF Channel Number		Ch. 1			Ch. 1			Ch. 1		
CPICH Ec	dBm	-60	-60	-66	-70	-70	Switched off	Switched off	-70	-60

The UE is initially in CELL\_DCH state of cell 1 and has received the default broadcast information from SIB11/12 in Cell 1. SS then performs a soft handover procedure by sending ACTIVE SET UPDATE message on the downlink DCCH. The UE shall reply with an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH, and include cell 2 to the active set when the activation time specified has elapsed.

SS then ask the UE to perform Intra-frequency measurement and report event 1C and event 1D. In MEASUREMENT CONTROL message, IE 'Replacement activation threshold' is set to 3 and IE 'Cell individual offset' is set to +6 dBm for Cell 3. SS configures itself according to the values in columns "T1" shown above. Cell 3 becomes better than Cell 2 that is in active set of the UE, due to parameter 'Cell Individual offset' for Cell 3. However the UE shall not send MEASUREMENT REPORT message indicating event 1C because number of cells in active set is less than parameter 'Replacement Activation Threshold'.

SS then sends MEASUREMENT CONTROL message to the UE to modify earlier configured intra-frequency measurement. Now, IE 'Replacement activation threshold' is set to 1. MEASUREMENT CONTROL message contains only those IEs that are modified and the UE shall continue to use current values of parameters that are not modified. The UE sends MEASUREMENT REPORT message reporting event 1C, monitored Cell 3 is better than Cell 2 that is in active set. The UE sends second MEASUREMENT REPORT message reporting event 1C after 4 seconds, equals to parameter 'Reporting interval'.

SS then performs soft handover procedure by sending ACTIVE SET UPDATE message on the downlink DCCH. In this message SS commands UE to add Cell 3 and remove Cell 2 from active set. The UE shall reply with an ACTIVE SET UPDATE COMPLETE message. The UE shall also stop periodic reporting of event 1C because the Cell that triggered it is added into active set. SS then configures itself according to the values in columns "T2" shown above. This triggers event 1D and the UE sends MEASUREMENT REPORT message indicating Cell 3 as a best cell. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	ACTIVE SET UPDATE	SS command the UE to add Cell 2 in active set.
2		→	ACTIVE SET UPDATE COMPLETE	
3		←	MEASUREMENT CONTROL	Event 1C and 1D are configured. IE "Replacement activation threshold" is set to 3.
4				SS re-adjusts the downlink transmission power settings according to columns "T1" in table 8.4.1.23-1.
5				Check for 10 seconds, the UE shall not send MEASUREMENT REPORT message.
6		←	MEASUREMENT CONTROL	Measurement configured in step 3 is modified to set parameter 'replacement activation threshold' to 1.
7		→	MEASUREMENT REPORT	Event 1C is triggered. The UE shall report that Cell 3 is better than Cell 2.
8		→	MEASUREMENT REPORT	The UE shall send second report after 4 seconds (Reporting interval)
9		←	ACTIVE SET UPDATE	SS command the UE to replace Cell 2 in active set by Cell 3.
10		→	ACTIVE SET UPDATE COMPLETE	
11				Check for 10 seconds, the UE shall not send MEASUREMENT REPORT message.
12				SS re-adjusts the downlink transmission power settings according to columns "T2" in table 8.4.1.23-1.
13		→	MEASUREMENT REPORT	The UE shall report event 1D change of best cell
14		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

All messages indicated below shall use the same content as described in default message content, with the following exceptions:

## ACTIVE SET UPDATE (Step 1)

Information Element	Value/remark
Radio link addition information <ul style="list-style-type: none"> <li>- Primary CPICH Info</li> <li>- Primary scrambling code</li> <li>- Downlink DPCH info for each RL</li> <li>- CHOICE mode</li> <li>- Primary CPICH usage for channel estimation</li> <li>- DPCH frame offset</li> <li>- Secondary CPICH info</li> <li>- DL channelisation code</li>   <li>- Secondary scrambling code</li> <li>- Spreading factor</li> <li>- Code number</li>   <li>- Scrambling code change</li> <li>- TPC combination index</li> <li>- SSDT cell identity</li> <li>- Close loop timing adjustment mode</li> <li>- TFCI combining indicator</li> <li>- SCCPCH information for FACH</li> </ul>	Primary scrambling code of Cell 2  FDD P-CPICH may be used. Calculated value from Cell synchronisation information Not present This IE is repeated for all existing downlink DPCHs allocated to the UE Not present Refer to the parameter set in TS 34.108 For each DPCH, assign the same code number in the current code given in cell 1. Not present 0 Not present Not present TRUE Not present

## MEASUREMENT CONTROL (Step 3)

Information Element	Value/remark
Measurement identity	1
Measurement command	Setup
- CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	
- Intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency info list	
- Intra-frequency cell id	Id of Cell 3
- Cell info	
- Cell individual offset	6 dBm
- Reference time difference to cell	Not present
- Read SFN indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary scrambling code	Primary scrambling code of Cell 3
- Primary CPICH TX power	Not present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection Info	Not Present
- Cell for measurement	
- Intra-frequency cell id list	Set to id of cell 1, 2 and 3.
- Intra-frequency measurement quantity	
- Filter Coefficient	0
- Measurement quantity	CPICH RSCP
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting	No report
indicator	
- Cell synchronisation information reporting	FALSE
indicator	
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting	No report
indicator	
- Cell synchronisation information reporting	FALSE
indicator	
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected cells	Not present
- Reporting cell status	Not present
- Measurement validity	Not present
- CHOICE report criteria	Intra-frequency measurement reporting criteria
- Parameters required for each events	
- Intra-frequency event identity	1C
- Replacement activation threshold	3
- Reporting amount	16
- Reporting interval	4 seconds
- Hysteresis	4 dB
- Time to trigger	10 mSec
- Reporting cell status	Not present
- Intra-frequency event identity	1D
- Hysteresis	4
- Time to trigger	10 mSec
- Reporting cell status	Not present
Measurement reporting mode	
- Measurement reporting transfer mode	Acknowledged mode RLC
- Periodic reporting / Event trigger reporting mode	Event trigger
Additional measurement list	Not present
DPCH compressed mode status info	Not present

## MEASUREMENT CONTROL (Step 6)

Information Element	Value/remark
Measurement identity	1
Measurement command	Modify
- CHOICE measurement type	Intra-frequency measurement
- Intra-frequency cell info list	Not present
- Intra-frequency measurement quantity	Not present
- Intra-frequency reporting quantity	Not present
- Reporting cell status	Not present
- Measurement validity	Not present
- CHOICE report criteria	Intra-frequency measurement reporting criteria
- Parameters required for each events	
- Intra-frequency event identity	1C
- Replacement activation threshold	1
- Reporting amount	16
- Reporting interval	4 seconds
- Hysteresis	4 dB
- Time to trigger	10 mSec
- Reporting cell status	Not present
- Intra-frequency event identity	1D
- Hysteresis	4
- Time to trigger	10 mSec
- Reporting cell status	Not present
Measurement reporting mode	Not present
Additional measurement list	Not present
DPCH compressed mode status info	Not present

## MEASUREMENT REPORT (Step 7 and 8)

Information Element	Value/remark
Measurement identity	1
Measured results	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional Measured results	Check to see if this IE is absent
Event results	Checked to see if set to "Intra Frequency Event results"
- Event ID	Check to see if set to "1C"
- Cell measurement event results	
- Primary scrambling code	Check to see if set to Primary scrambling code of Cell 3
- Primary scrambling code	Check to see if set to Primary scrambling code of Cell 2

## ACTIVE SET UPDATE (Step 9)

Information Element	Value/remark
Radio link addition information	
- Primary CPICH Info	Primary scrambling code of Cell 3
- Primary scrambling code	
- Downlink DPCH info for each RL	FDD
- CHOICE mode	P-CPICH may be used.
- Primary CPICH usage for channel estimation	Calculated value from Cell synchronisation information
- DPCH frame offset	Not present
- Secondary CPICH info	This IE is repeated for all existing downlink DPCHs allocated to the UE
- DL channelisation code	Not present
- Secondary scrambling code	Refer to the parameter set in TS 34.108
- Spreading factor	For each DPCH, assign the same code number in the current code given in cell 1.
- Code Number	Not present
- Scrambling code change	0
- TPC Combination Index	Not present
- SSDT Cell Identity	Not present
- Close loop timing adjustment mode	Not present
- TFCI Combining Indicator	TRUE
- SCCPCH information for FACH	Not present
Radio link removal information	
- Primary CPICH Info	
- Primary scrambling code	Primary scrambling code of Cell 2

## MEASUREMENT REPORT (Step 13)

Information Element	Value/remark
Measurement identity	1
Measured results	Check to see if this IE is absent
Measured results on RACH	Check to see if this IE is absent
Additional Measured results	Check to see if this IE is absent
Event results	Check to see if set to "Intra-frequency event results"
- Event ID	Check to see if set to "1D"
- Cell measurement event results	
- Primary scrambling code	Check to see if set to "Primary scrambling code of Cell 3"

## 8.4.1.23.5 Test Requirement

- 1.A In steps 7 and 8 the UE shall send MEASUREMENT REPORT message indicating event 1C. IE 'Cell measurement event results' in MEASUREMENT REPORT message shall contain primary scrambling code of Cell 3 and Cell 2 in that order.
- 1.B In step 5 the UE shall not send MEASUREMENT REPORT message.
- 1.C In step 11 the UE shall not send MEASUREMENT REPORT message.
2. In step 13 the UE shall send MEASUREMENT REPORT message indicating event 1D. IE 'Cell measurement event results' in MEASUREMENT REPORT message shall contain primary scrambling code of Cell 3.

## 8.4.1.24 Measurement Control and Report: Inter-frequency measurement for event 2A

## 8.4.1.24.1 Definition

## 8.4.1.24.2 Conformance requirement

When event 2a is configured in the UE within a measurement, the UE shall:

- 1> when the measurement is initiated or resumed:
  - 2> store the used frequency in the variable BEST\_FREQUENCY\_2A\_EVENT.
- 1> if equation 1 below has been fulfilled for a time period indicated by "Time to trigger" for a frequency included for that event and which is not stored in the variable BEST\_FREQUENCY\_2A\_EVENT:
  - 2> send a measurement report with IEs set as below:
    - 3> set in "inter-frequency measurement event results":
      - 4> "inter-frequency event identity" to "2a"; and
      - 4> "Frequency info" to the frequency that triggered the event; and
      - 4> "Non frequency related measurement event results" to the "Primary CPICH info" of the best primary CPICH for FDD cells or "Primary CCPCH info" to the "Cells parameters ID" of the best primary CCPCH for TDD cells on that frequency.
    - 3> set the IE "measured results" and the IE "additional measured results" according to TS 25.331 subclause 8.4.2;
  - 2> update the variable BEST\_FREQUENCY\_2A\_EVENT with that frequency.

Equation 1:

$$Q_{NotBest} \geq Q_{Best} + H_{2a} / 2$$

The variables in the formula are defined as follows:

$Q_{NotBest}$  is the quality estimate of a frequency not stored the "best frequency" in the variable BEST\_FREQUENCY\_2A\_EVENT.

$Q_{Best}$  is the quality estimate of the frequency stored in "best frequency" in the variable BEST\_FREQUENCY\_2A\_EVENT.

$H_{2a}$  is the hysteresis parameter for the event 2a in that measurement.

## Reference

3GPP TS 25.331 clause 14.2.1.1

### 8.4.1.24.3 Test Purpose

- 1.A To confirm that the UE sends MEASUREMENT REPORT message if event 2A is configured, and if any of the non- used frequencies quality estimate becomes better than the currently used frequency quality estimate.
- 1.B To confirm that the UE does not send MEASUREMENT REPORT message indicating event 2A if hysteresis condition is not fulfilled.
- 1.C To confirm that the UE does not send MEASUREMENT REPORT message indicating event 2A if time to trigger condition is not fulfilled.

### 8.4.1.24.4 Method of test

#### Initial Condition

System Simulator: 2 cells – The initial configurations of the 2 cells in the SS shall follow the values indicated in the column marked "T0" in table 8.4.1.24-1. The table is found in "Test Procedure" clause.

UE: CS-DCCH+DTCH\_DCH (State 6-9) or PS-DCCH+DTCH\_DCH (State 6-10) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

## Related ICS/IXIT statements

- Compressed mode required yes/no

## Test Procedure

Table 8.4.1.24-1 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. Column marked "T0" denotes the initial conditions, while columns marked "T1", "T2", "T3", "T4" and "T5" are to be applied subsequently. The exact instants on which these values shall be applied are described in the text in this clause.

Table 8.4.1.24-1

Parameter	Unit	Cell 1						Cell 4					
		T0	T1	T2	T3	T4	T5	T0	T1	T2	T3	T4	T5
UTRA RF Channel Number		Ch. 1						Ch. 2					
CPICH Ec	dBm	-66	-66	-66	-66	-66	-66	-75	-60	-75	-60	-75	-60

The UE is initially in CELL\_DCH state of cell 1. SS commands the UE to perform measurements of transmitted power using MEASUREMENT CONTROL message. This measurement is setup to confirm that while sending MEASUREMENT REPORT message, the UE sets IE "Additional measured results" correctly. If UE requires compressed mode, SS performs PHYSICAL CHANNEL RECONFIGURATION procedure to activate compressed mode. SS then commands the UE to perform Inter-frequency measurements and report event 2A by sending MEASUREMENT CONTROL message. In MEASUREMENT CONTROL message, IE "Hysteresis" is set to 10 dB and IE "Additional measurement list" is set to id of "UE Internal measurements" configured earlier. SS then configures itself according to the values in columns "T1" shown above. Even though quality estimate for Cell 4 has become better than that of Cell 1, event 2A will not be triggered since hysteresis condition is not fulfilled. SS then configures itself according to the values in columns "T2" shown above.

SS sends MEASUREMENT CONTROL message to modify parameter "Hysteresis" of Inter-frequency measurements to 1 dB. SS then raises power level of Cell 4 according to columns "T3" for short duration (less than 5 seconds), and again configures itself according to columns "T4" shown above. The UE will not send MEASUREMENT REPORT message because time to trigger condition is not fulfilled. SS then configures itself according to the values in columns "T5" shown above. The UE sends MEASUREMENT REPORT message reporting event 2A as well as measurement of transmitted power.

**Important Note:** Duration between time instant "T3" and "T4" (between steps 9 and 10 of expected sequence) must be less than 5 seconds. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	MEASUREMENT CONTROL	To setup UE Internal measurement. If Compressed Mode not required (refer ICS/IXIT) go to step 4
2		←	PHYSICAL CHANNEL RECONFIGURATION	SS instructs UE to begin compressed mode operation.
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
4		←	MEASUREMENT CONTROL	SS commands the UE to perform Inter-frequency measurements and to report event 2A.
5				SS re-adjusts the downlink transmission power settings according to columns "T1" in table 8.4.1.24-1.
6				Check for 10 seconds, the UE shall not send MEASUREMENT REPORT message, as hysteresis condition is not fulfilled.
7				SS re-adjusts the downlink transmission power settings according to columns "T2" in table 8.4.1.24-1.
8		←	MEASUREMENT CONTROL	Modify hysteresis parameter for event 2A.
9				SS re-adjusts the downlink transmission power settings according to columns "T3" in table 8.4.1.24-1.
10				SS re-adjusts the downlink transmission power settings according to columns "T4" in table 8.4.1.24-1. This step should be completed within 5 seconds after completing step 9.
11				Check for 10 seconds, the UE shall not send MEASUREMENT REPORT message, as time to trigger condition is not fulfilled.
12				SS re-adjusts the downlink transmission power settings according to columns "T5" in table 8.4.1.24-1.
13		→	MEASUREMENT REPORT	This message should come at least 5 seconds later after changing power setting of Cell 4.
14		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

All messages indicated below shall use the same content as described in default message content, with the following exceptions:

## MEASUREMENT CONTROL (Step 1)

Information Element	Value/remark
Measurement identity	1
Measurement command	Setup
CHOICE measurement type	UE internal measurement
- UE internal measurement quantity	UE transmitted power
- Measurement quantity	4
- Filter Coefficient	TRUE
- UE internal reporting quantity	FDD
- UE Transmitted Power	FALSE
- CHOICE mode	No reporting
- UE Rx-Tx time difference	Not present
- CHOICE report criteria	Not present
Measurement reporting mode	Not present
Additional measurements list	Not present
DPCH compressed mode status	Not present

## PHYSICAL CHANNEL RECONFIGURATION (Step 2)

Use the same message sub-type found in Annex A, which is entitled "(Packet to CELL\_DCH from CELL\_DCH in PS)", with the following exceptions in the IE(s) concerned:

Information Element	Value/remark
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	Maintain
- Timing Indication	
- Downlink DPCH power control information	
- DPC mode	0 (Single)
- CHOICE Mode	FDD
- Power offset PPilot-DPCH	TBD
- DL rate matching restriction information	Not present
- Spreading factor	Refer to the parameter set in TS 34.108
- Fixed or flexible position	Flexible
- TFCI existence	FALSE
- Number of bits for Pilot bits (SF=128, 256)	Not present
- DPCH compressed mode info	
- TGPSI	1
- TGPS status flag	Activate
- TGCFN	(Current CFN+(256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence	
configuration parameters	
- TGMP	FDD Measurement
- TGPRC	Infinity
- TGSN	4
- TGL1	7
- TGL2	Not Present
- TGD	0
- TGPL1	3
- TGPL2	Not Present
- RPP	Mode 0
- ITP	Mode 10
- CHOICE UL/DL mode	UL and DL or DL only depending on UE capability
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2 or Not present depending on UE capability
- Downlink frame type	B
- DeltaSIR1	2.0
- DeltaSIRAfter1	1.0
- DeltaSIR2	Not present
- DeltaSIRAfter2	Not present
- N identify abort	Not present
- T Reconfirm abort	Not present
- TX diversity mode	None
- SSDT information	Not present
- Default DPCH offset value	0

## MEASUREMENT CONTROL (Step 4)

Information Element	Value/remark
Measurement identity	2
Measurement command	Setup
- CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- Inter-frequency cell removal	Not present
- New inter-frequency info list	
- Inter-frequency cell id	Id of Cell 4
- Frequency Information	Frequency of Cell 4
- Cell info	
- Cell individual offset	Not present
- Reference time difference to cell	Not present
- CHOICE mode	FDD
- Read SFN Indicator	FALSE
- Primary CPICH Info	
- Primary scrambling code	Primary scrambling code of Cell 4
- Primary CPICH TX power	Not present
- TX Diversity Indicator	FALSE
- Cell for measurement	Not present
- Inter-frequency measurement quantity	
- Filter Coefficient	0
- Frequency quality estimate quantity	CPICH RSCP
- Inter-frequency reporting quantity	
- UTRAN carrier RSSI	FALSE
- Frequency quality estimate	FALSE
- Non frequency related quantities	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Measurement validity	CELL_DCH state
- Inter-frequency SET UPDATE	
- UE autonomous update mode	On with no reporting
- CHOICE report criteria	Inter-frequency measurement reporting criteria
- Parameters required for each events	
- Inter-frequency event identity	2A
- Used frequency threshold	-72 dBm
- Used frequency W	0
- Hysteresis Inter-frequency	10 dB
- Time to trigger	5000 mSec
- Reporting cell status	Not present
- Non-used frequency parameter list	
- Non-used frequency threshold	-72 dBm
- Non-used frequency W	0
Measurement reporting mode	
- Measurement reporting transfer mode	Acknowledged mode RLC
- Periodic reporting / Event trigger reporting mode	Event trigger
Additional measurement list	
- Measurement identity	1
DPCH compressed mode status info	Not present

## MEASUREMENT CONTROL (Step 8)

Information Element	Value/remark
Measurement identity	2
Measurement command	Modify
- CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- Inter-frequency cell removal	Not present
- New inter-frequency info list	Not present
- Cell for measurement	Not present
- Intra-frequency measurement quantity	Not present
- Inter-frequency reporting quantity	Not present
- Measurement validity	Not present
- UE autonomous update mode	Not present
- CHOICE report criteria	Inter-frequency measurement reporting criteria
- Parameters required for each events	
- Inter-frequency event identity	2A
- Used frequency threshold	-72 dBm
- Used frequency W	0
- Hysteresis Inter Frequency	1 dB
- Time to trigger	5000 mSec
- Reporting cell status	Not present
- Non-used frequency parameter list	
- Non-used frequency threshold	-72 dBm
- Non-used frequency W	0
Measurement reporting mode	Not present
Additional measurement list	Not present
DPCH compressed mode status info	Not present

## MEASUREMENT REPORT (Step 13)

Information Element	Value/remark
Measurement identity	Check to see if set to 2
Measured results	Check to see if it is absent
Measured results on RACH	Check to see if it is absent
Additional measured results	
- Measured results	UE internal measured results
- UE transmitted power	Check to see if it is present
- UE RX TX report entry list	Check to see if it is absent
Event results	Inter frequency event results,
- Event ID	2A
- Cell measurement event results	
- Frequency info	Frequency of Cell 4
- Primary CPICH info	
- Primary scrambling code	Primary scrambling code of Cell 4

## 8.4.1.24.5 Test Requirement

1.A In step 13 the UE shall send MEASUREMENT REPORT message indicating event 2A. IE 'Cell measurement event results' in MEASUREMENT REPORT message shall contain frequency information and primary scrambling code of Cell 4.

1.B In step 6, the UE shall not send MEASUREMENT REPORT message.

1.C In step 11, the UE shall not send MEASUREMENT REPORT message.

## 8.4.1.25 Measurement Control and Report: Inter-frequency measurement for events 2B and 2E

## 8.4.1.25.1 Definition

## 8.4.1.25.2 Conformance requirement

When event 2b is configured in the UE within a measurement, the UE shall:

- 1> if equations 1 and 2 below have been fulfilled for a time period indicated by "Time to Trigger" from the same instant, respectively for one or several non-used frequencies included for that event and for the used frequency:
- 2> if any of those non-used frequency is not stored in the variable TRIGGERED\_2B\_EVENT:
  - 3> store the non-used frequencies that triggered the event and that were not previously stored in the variable TRIGGERED\_2B\_EVENT into that variable;
  - 3> send a measurement report with IEs set as below:
    - 4> set in "inter-frequency measurement event results":
      - 5> "inter-frequency event identity" to "2b"; and
      - 5> for each non-used frequency that triggered the event, beginning with the best frequency:
        - 6> "Frequency info" to that non-used frequency; and
        - 6> "Non frequency related measurement event results" to the "Primary CPICH info" of the best primary CPICH for FDD cells or "Primary CCPCH info" to the "Cell parameters ID" of the best primary CCPCH for TDD cells on that non-used frequency.
    - 4> set the IE "measured results" and the IE "additional measured results" according to TS 25.331 subclause 8.4.2.
- 1> if equation 3 below is fulfilled for a non-used frequency stored in the variable TRIGGERED\_2B\_EVENT:
  - 2> remove that non-used frequency from the variable TRIGGERED\_2B\_EVENT.
- 1> if equation 4 below is fulfilled for the used frequency:
  - 2> clear the variable TRIGGERED\_2B\_EVENT.

Triggering conditions:

Equation 1:

$$Q_{Non\ used} \geq T_{Non\ used\ 2b} + H_{2b} / 2$$

The variables in the formula are defined as follows:

$Q_{Non\ used}$  is the quality estimate of a non-used frequency that becomes better than an absolute threshold.

$T_{Non\ used\ 2b}$  is the absolute threshold that applies for this non-used frequency in that measurement.

$H_{2b}$  is the hysteresis parameter for the event 2b.

Equation 2:

$$Q_{Used} \leq T_{Used\ 2b} - H_{2b} / 2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used frequency.

$T_{Used\ 2b}$  is the absolute threshold that applies for the used frequency in that measurement.

$H_{2b}$  is the hysteresis parameter for the event 2b.

Leaving triggered state condition:

Equation 3:

$$Q_{Non\ used} < T_{Non\ used\ 2b} - H_{2b} / 2$$

The variables in the formula are defined as follows:

$Q_{Non\ used}$  is the quality estimate of a non-used frequency that is stored in the variable TRIGGERED\_2B\_EVENT.

$T_{Non\ used\ 2b}$  is the absolute threshold that applies for this non-used frequency in that measurement.

$H_{2b}$  is the hysteresis parameter for the event 2b.

Equation 4:

$$Q_{Used} > T_{Used\ 2b} + H_{2b} / 2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used frequency.

$T_{Used\ 2b}$  is the absolute threshold that applies for the used frequency in that measurement.

$H_{2b}$  is the hysteresis parameter for the event 2b.

...

When event 2e is configured in the UE within a measurement, the UE shall:

- 1> if equation 1 below has been fulfilled for one or several non-used frequencies included for that event during the time "Time to trigger":
  - 2> if any of those non-used frequencies is not stored in the variable TRIGGERED\_2E\_EVENT:
    - 3> store the non-used frequencies that triggered the event and that were not previously stored in the variable TRIGGERED\_2E\_EVENT into that variable;
    - 3> send a measurement report with IEs set as below:
      - 4> set in "inter-frequency measurement event results":
        - 5> "inter-frequency event identity" to "2e"; and
        - 5> for each non-used frequency that triggered the event, beginning with the best frequency:
          - 6> "Frequency info" to that non-used frequency; and
          - 6> "Non frequency related measurement event results" to the "Primary CPICH info" of the best primary CPICH for FDD cells or "Primary CCPCCH info" to the "Cell parameters ID" of the best primary CCPCCH for TDD cells on that non-used frequency.
      - 4> set the IE "measured results" and the IE "additional measured results" according to TS 25.331 subclause 8.4.2.
  - 1> if equation 2 below is fulfilled for a non-used frequency stored in the variable TRIGGERED\_2E\_EVENT:
    - 2> remove that non-used frequency from the variable TRIGGERED\_2E\_EVENT.

Triggering condition:

Equation 1:

$$Q_{Non\ used} \leq T_{Non\ used\ 2e} - H_{2e} / 2$$

The variables in the formula are defined as follows:

$Q_{Non\ used}$  is the quality estimate of a non-used frequency that becomes worse than an absolute threshold.

$T_{Non\ used\ 2e}$  is the absolute threshold that applies for that non-used frequency for that event.

$H_{2e}$  is the hysteresis parameter for the event 2e.

Leaving triggered state condition:

Equation 2:

$$Q_{Non\ used} > T_{Non\ used\ 2e} + H_{2e} / 2$$

The variables in the formula are defined as follows:

$Q_{Non\ used}$  is the quality estimate of a non-used frequency stored in the variable TRIGGERED\_2E\_EVENT.

$T_{Non\ used\ 2e}$  is the absolute threshold that applies for that non-used frequency for that event.

$H_{2e}$  is the hysteresis parameter for the event 2e.

## Reference

3GPP TS 25.331 clause 14.2.1.2, 14.2.1.5.

### 8.4.1.25.3 Test Purpose

1. To confirm that the UE sends MEASUREMENT REPORT message when event 2E is configured and the estimated quality of a non-used frequency is below the value of the IE "Threshold non-used frequency". This MEASUREMENT REPORT message shall contain at least the best primary CPICH on the non-used frequency that triggered the event.
2. To confirm that the UE sends MEASUREMENT REPORT message when event 2B is configured and estimated quality of the currently used frequency is below the value of the IE "Threshold used frequency" and the estimated quality of a non-used frequency is above the value of the IE "Threshold non-used frequency". This MEASUREMENT REPORT message shall contain at least the best primary CPICH on the non-used frequency that triggered the event.

### 8.4.1.25.4 Method of test

#### Initial Condition

System Simulator: 2 cells – The initial configurations of the 2 cells in the SS shall follow the values indicated in the column marked "T0" in table 8.4.1.24-1. The table is found in "Test Procedure" clause.

UE: CS-DCCH+DTCH\_DCH (State 6-9) or PS-DCCH+DTCH\_DCH (State 6-10) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

#### Related ICS/IXIT statements

- Compressed mode required            yes/no

#### Test Procedure

Table 8.4.1.25-1 illustrates the downlink power to be applied for the 2 cells at various time instants of the test execution. Column marked "T0" denotes the initial conditions, while columns marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the text in this clause.

**Table 8.4.1.25-1**

Parameter	Unit	Cell 1			Cell 4		
		T0	T1	T2	T0	T1	T2
UTRA RF Channel Number		Ch. 1			Ch. 2		
CPICH Ec	dBm	-60	-63	-74	-74	-60	-60

The UE is initially in CELL\_DCH state of cell 1. SS commands the UE to perform Inter-frequency measurements and report event 2B and event 2E by sending MEASUREMENT CONTROL message. If UE requires compressed mode, SS performs PHYSICAL CHANNEL RECONFIGURATION procedure to activate compressed mode. Since quality estimate of non-used frequency is below threshold, the UE sends MEASUREMENT REPORT message indicating event 2E. SS then configures itself according to the values in columns "T1" shown above. Now quality estimate of used and non-used frequency is above threshold and hence neither event 2B nor event 2E will be triggered. SS then configures itself according to the values in columns "T2" shown above. Quality estimate for used frequency is now below threshold, while that of non-used frequency is above threshold, the UE sends MEASUREMENT REPORT message to report event 2B. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

#### Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1		←	MEASUREMENT CONTROL	SS commands the UE to perform Inter-frequency measurements and to report event 2B and 2E. If Compressed Mode not required (refer ICS/IXIT) go to step 4
2		←	PHYSICAL CHANNEL RECONFIGURATION	SS instructs UE to begin compressed mode operation.
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
4		→	MEASUREMENT REPORT	The UE shall report event 2E. Time duration between activation of compressed mode and reception of this message should be at least 5 seconds.
5				SS re-adjusts the downlink transmission power settings according to columns "T1" in table 8.4.1.25-1.
6				Check for 10 seconds the UE shall not send measurement report message.
7				SS re-adjusts the downlink transmission power settings according to columns "T2" in table 8.4.1.25-1.
8		→	MEASUREMENT REPORT	The UE shall report event 2B. Time duration between changing power levels according to columns "T2" and reception of this message should be at least 5 seconds.
9		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

#### Specific Message Contents

All messages indicated below shall use the same content as described in default message content, with the following exceptions:

## MEASUREMENT CONTROL (Step 1)

Information Element	Value/remark
Measurement identity	4
Measurement command	Setup
- CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- Inter-frequency cell removal	Not present
- New inter-frequency info list	
- Inter-frequency cell id	Id of Cell 4
- Frequency Information	Frequency of Cell 4
- Cell info	
- Cell individual offset	Not present
- Reference time difference to cell	Not present
- CHOICE mode	FDD
- Read SFN Indicator	FALSE
- Primary CPICH Info	
- Primary scrambling code	Primary scrambling code of Cell 4
- Primary CPICH TX power	Not present
- TX Diversity Indicator	FALSE
- Cell for measurement	Not present
- Inter-frequency measurement quantity	
- Filter Coefficient	4
- Frequency quality estimate quantity	CPICH Ec/No
- Inter-frequency reporting quantity	
- UTRAN Carrier RSSI	FALSE
- Frequency quality estimate	FALSE
- Non frequency related quantities	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Measurement validity	Not present
- Inter-frequency SET UPDATE	
- UE autonomous update mode	On with no reporting
- CHOICE report criteria	Inter-frequency measurement reporting criteria
- Parameters required for each events	
- Inter-frequency event identity	2E
- Hysteresis Inter Frequency	1 dB
- Time to trigger	5000 mSec
- Reporting cell status	Not present
- Non used frequency parameter list	
- Non used frequency threshold	-15 dBm
- Non used frequency W	0
- Inter-frequency event identity	2B
- Used frequency threshold	-16 dBm
- Used frequency W	0.4
- Hysteresis Inter Frequency	1 dB
- Time to trigger	5000 mSec
- Reporting cell status	Within monitored set non used frequency
- Maximum number of reporting cells	1
- Non used frequency parameter list	
- Non used frequency threshold	-15 dBm
- Non used frequency W	0
Measurement reporting mode	
- Measurement reporting transfer mode	Unacknowledged Mode RLC
- Periodic reporting / Event trigger reporting mode	Event trigger
Additional measurement list	Not present
DPCH compressed mode status info	Not present

## PHYSICAL CHANNEL RECONFIGURATION (Step 2)

Use the same message sub-type found in Annex A, which is entitled "(Packet to CELL\_DCH from CELL\_DCH in PS)", with the following exceptions in the IE(s) concerned:

Information Element	Value/remark
Downlink information common for all radio links	
- Downlink DPCH info common for all RL	Maintain
- Timing Indication	
- Downlink DPCH power control information	
- DPC mode	0 (Single)
- CHOICE Mode	FDD
- Power offset PPilot-DPCH	TBD
- DL rate matching restriction information	Not present
- Spreading factor	Refer to the parameter set in TS 34.108
- Fixed or flexible position	Flexible
- TFCI existence	FALSE
- Number of bits for Pilot bits (SF=128, 256)	Not present
- DPCH compressed mode info	
- TGPSI	1
- TGPS status flag	Activate
- TGCFN	(Current CFN+(256 – TTI/10msec)) mod 256
- Transmission gap pattern sequence	
configuration parameters	
- TGMP	FDD Measurement
- TGPRC	Infinity
- TGSN	4
- TGL1	7
- TGL2	Not Present
- TGD	0
- TGPL1	3
- TGPL2	Not Present
- RPP	Mode 0
- ITP	Mode 0
- CHOICE UL/DL mode	UL and DL or DL only depending on UE capability
Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2 or Not present depending on UE capability
- Downlink frame type	A
- DeltaSIR1	2.0
- DeltaSIRAfter1	1.0
- DeltaSIR2	Not present
- DeltaSIRAfter2	Not present
- N identify abort	Not present
- T Reconfirm abort	Not present
- TX diversity mode	None
- SSDT information	Not present
- Default DPCH offset value	0

## MEASUREMENT REPORT (Step 4)

Information Element	Value/remark
Measurement identity	Check to see if set to 4
Measured results	Check to see if it is absent
Measured results on RACH	Check to see if it is absent
Additional measured results	Check to see if it is absent
Event results	Inter frequency event results,
- Event ID	2E
- Cell measurement event results	
- Frequency info	Frequency of Cell 4
- Primary CPICH info	
- Primary scrambling code	Primary scrambling code of Cell 4

## MEASUREMENT REPORT (Step 8)

Information Element	Value/remark
Measurement identity	4
Measured results	Inter-frequency measured results
- Frequency information	Frequency of Cell 4
- UTRA carrier RSSI	Check to see if it is absent
- Inter-frequency cell measured results	
- Cell Identity	Check to see if it is absent
- SFN-SFN Observed Time Difference	Check to see if this IE is absent
- Cell synchronisation information	Check to see if this IE is absent
- Mode Specific Info	FDD
- Primary CPICH Info	
- Primary scrambling code	Primary scrambling code for cell 4
- CPICH Ec/No	Check to see if it is present
- CPICH RSCP	Check to see if it is absent
- Pathloss	Check to see if it is absent
Measured results on RACH	Check to see if it is absent
Additional measured results	Check to see if it is absent
Event results	Inter frequency event results, 2B
- Event ID	
- Cell measurement event results	
- Frequency info	Frequency of Cell 4
- Primary CPICH info	
- Primary scrambling code	Primary scrambling code of Cell 4

## 8.4.1.25.5 Test Requirement

1. In step 4 the UE shall send MEASUREMENT REPORT message indicating event 2E. IE "Cell measurement event results" in this message shall contain frequency information and primary scrambling code of Cell 4.
2. In step 8 the UE shall send MEASUREMENT REPORT message indicating event 2B. IE "Cell measurement event results" in this message shall contain frequency information and primary scrambling code of Cell 4.

## 8.4.1.26 Measurement Control and Report: Inter-frequency measurement for events 2D and 2F

## 8.4.1.26.1 Definition

## 8.4.1.26.2 Conformance requirement

When event 2d is configured in the UE within a measurement, the UE shall:

- 1> if equation 1 below has been fulfilled for the used frequency during the time "Time to trigger":
  - 2> if the variable TRIGGERED\_2D\_EVENT is set to FALSE:
    - 3> set the variable TRIGGERED\_2D\_EVENT to TRUE;
    - 3> send a measurement report with IEs set as below:
      - 4> set in "inter-frequency event results": "inter-frequency event identity" to "2d" and no IE "Inter-frequency cells";
      - 4> set the IE "measured results" and the IE "additional measured results" according to TS 25.331 subclause 8.4.2.
- 1> if the variable TRIGGERED\_2D\_EVENT is set to TRUE and if equation 2 is fulfilled for the used frequency:
  - 2> set the variable TRIGGERED\_2D\_EVENT to FALSE.

Triggering condition:

Equation 1:

$$Q_{Used} \leq T_{Used\ 2d} - H_{2d} / 2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used frequency.

$T_{Used\ 2d}$  is the absolute threshold that applies for the used frequency and event 2d.

$H_{2d}$  is the hysteresis parameter for the event 2d.

Leaving triggered state condition:

Equation 2:

$$Q_{Used} > T_{Used\ 2d} + H_{2d} / 2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used frequency.

$T_{Used\ 2d}$  is the absolute threshold that applies for the used frequency and event 2d.

$H_{2d}$  is the hysteresis parameter for the event 2d.

...

When event 2f is configured in the UE within a measurement, the UE shall:

- 1> if equation 1 below has been fulfilled for the used frequency during the time "Time to trigger":
  - 2> if the variable TRIGGERED\_2F\_EVENT is set to FALSE:
    - 3> set the variable TRIGGERED\_2F\_EVENT to TRUE;
    - 3> send a measurement report with IEs set as below:
      - 4> set in "inter-frequency event results": "inter-frequency event identity" to "2f", and no IE "Inter-frequency cells";
      - 4> set the IE "measured results" and the IE "additional measured results" according to TS 25.331 subclause 8.4.2.
  - 2> if the variable TRIGGERED\_2F\_EVENT is set to TRUE and if equation 2 is fulfilled for the used frequency:
    - 2> set the variable TRIGGERED\_2F\_EVENT to FALSE.

Triggering condition:

Equation 1:

$$Q_{Used} \geq T_{Used\ 2f} + H_{2f} / 2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used frequency.

$T_{Used\ 2f}$  is the absolute threshold that applies for the used frequency and event 2f.

$H_{2f}$  is the hysteresis parameter for the event 2f.

Leaving triggered state condition:

Equation 2:

$$Q_{Used} < T_{Used\ 2f} - H_{2f} / 2$$

The variables in the formula are defined as follows:

$Q_{Used}$  is the quality estimate of the used frequency.

$T_{Used\ 2f}$  is the absolute threshold that applies for the used frequency and event 2f.

$H_{2f}$  is the hysteresis parameter for the event 2f.

Reference

3GPP TS 25.331 clause 14.2.1.4, 14.2.1.6

8.4.1.26.3 Test Purpose

1. To confirm that the UE sends MEASUREMENT REPORT message when event 2F is configured and estimated quality of the currently used frequency is above the value of the IE "Threshold used frequency". This MEASUREMENT REPORT message shall contain at least the best primary CPICH on the used frequency.
2. To confirm that the UE sends MEASUREMENT REPORT message when event 2D is configured and estimated quality of the currently used frequency is below the value of the IE "Threshold used frequency". This MEASUREMENT REPORT message shall contain at least the best primary CPICH on the used frequency.

8.4.1.26.4 Method of test

Initial Condition

System Simulator: 1 cells – The initial configurations of the cell in the SS shall follow the values indicated in the column marked "T0" in table 8.4.1.26-1. The table is found in "Test Procedure" clause.

UE: CS-DCCH+DTCH\_DCH (State 6-9) or PS-DCCH+DTCH\_DCH (State 6-10) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

Related ICS/IXIT statements

- Compressed mode required            yes/no

Test Procedure

Table 8.4.1.26-1 illustrates the downlink power to be applied for the cell at various time instants of the test execution. Column marked "T0" denotes the initial conditions, while columns marked "T1" is to be applied subsequently. The exact instant on which these values shall be applied is described in the text in this clause.

**Table 8.4.1.26-1**

Parameter	Unit	Cell 1	
		T0	T1
UTRA RF Channel Number		Ch. 1	
CPICH Ec	dBm	-60	-72

The UE is initially in CELL\_DCH state of cell 1. If UE requires compressed mode, SS performs PHYSICAL CHANNEL RECONFIGURATION procedure to activate compressed mode. SS commands the UE to perform Inter-frequency measurements and report event 2D and/or event 2F by sending MEASUREMENT CONTROL message. Since quality estimate of used frequency is above threshold, the UE sends MEASUREMENT REPORT message indicating event 2F. SS then configures itself according to the values in columns "T1" shown above. Quality estimate for used frequency is now below threshold, the UE sends MEASUREMENT REPORT message to report it. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				If Compressed Mode not required (refer ICS/IXIT) go to step 4
2		←	PHYSICAL CHANNEL RECONFIGURATION	SS instructs UE to begin compressed mode operation.
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
4		←	MEASUREMENT CONTROL	SS commands the UE to perform Inter-frequency measurements and to report event 2D and 2F.
5		→	MEASUREMENT REPORT	The UE shall report event 2F
6				SS re-adjusts the downlink transmission power settings according to columns "T1" in table 8.4.1.26-1.
7		→	MEASUREMENT REPORT	The UE shall report event 2D.
8		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Contents

All messages indicated below shall use the same content as described in default message content, with the following exceptions:

## PHYSICAL CHANNEL RECONFIGURATION (Step 1)

Use the same message sub-type found in Annex A, which is entitled "(Packet to CELL\_DCH from CELL\_DCH in PS)", with the following exceptions in the IE(s) concerned:

Information Element	Value/remark
Downlink information common for all radio links <ul style="list-style-type: none"> <li>- Downlink DPCH info common for all RL</li> <li>- Timing Indication</li> <li>- Downlink DPCH power control information</li> <li>- DPC mode</li> <li>- CHOICE Mode</li> <li>- Power offset PPilot-DPDCH</li> <li>- DL rate matching restriction information</li> <li>- Spreading factor</li> <li>- Fixed or flexible position</li> <li>- TFCI existence</li> <li>- Number of bits for Pilot bits (SF=128, 256)</li> <li>- DPCH compressed mode info</li> <li>- TGPSI</li> <li>- TGPS status flag</li> <li>- TGCFN</li> <li>- Transmission gap pattern sequence</li> </ul> configuration parameters <ul style="list-style-type: none"> <li>- TGMP</li> <li>- TGPRC</li> <li>- TGSN</li> <li>- TGL1</li> <li>- TGL2</li> <li>- TGD</li> <li>- TGPL1</li> <li>- TGPL2</li> <li>- RPP</li> <li>- ITP</li> <li>- CHOICE UL/DL mode</li> <li>- Downlink compressed mode method</li> <li>- Uplink compressed mode method</li> <li>- Downlink frame type</li> <li>- DeltaSIR1</li> <li>- DeltaSIRAfter1</li> <li>- DeltaSIR2</li> <li>- DeltaSIRAfter2</li> <li>- N identify abort</li> <li>- T Reconfirm abort</li> <li>- TX Diversity Mode</li> <li>- SSDT information</li> <li>- Default DPCH Offset Value</li> </ul>	Maintain  0 (Single) FDD TBD Not present Refer to the parameter set in TS 34.108 Flexible FALSE Not present  1 Activate (Current CFN+(256 – TTI/10msec)) mod 256  FDD Measurement Infinity 4 7 Not Present 0 3 Not Present Mode 0 Mode 0 UL and DL or DL only depending on UE capability SF/2 SF/2 or Not present depending on UE capability A 2.0 1.0 Not present Not present Not present Not present None Not present 0

## MEASUREMENT CONTROL (Step 3)

Information Element	Value/remark
Measurement identity	10
Measurement command	Setup
- CHOICE measurement type	Inter-frequency measurement
- Inter-frequency cell info list	
- Inter-frequency cell removal	Not present
- New inter-frequency info list	
- Inter-frequency cell id	Any valid identity other than that of Cell 1
- Frequency Information	Any valid frequency other than that of Cell 1
- Cell info	
- Cell individual offset	Not present
- Reference time difference to cell	Not present
- CHOICE mode	FDD
- Read SFN Indicator	FALSE
- Primary CPICH Info	
- Primary scrambling code	Any value of Primary scrambling code
- Primary CPICH TX power	Not present
- TX Diversity Indicator	FALSE
- Cell for measurement	Not present
- Inter-frequency measurement quantity	
- Filter Coefficient	4
- Frequency quality estimate quantity	CPICH RSCP
- Inter-frequency reporting quantity	
- UTRAN Carrier RSSI	FALSE
- Frequency quality estimate	FALSE
- Non frequency related quantities	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Measurement validity	CELL_DCH state
- UE autonomous update mode	Not present
- CHOICE report criteria	Inter-frequency measurement reporting criteria
- Parameters required for each events	
- Inter-frequency event identity	2D
- Used frequency threshold	-66 dBm
- Used frequency W	0
- Hysteresis Inter Frequency	1 dB
- Time to trigger	5000 mSec
- Reporting cell status	Not present
- Inter-frequency event identity	2F
- Used frequency threshold	-66 dBm
- Used frequency W	0
- Hysteresis Inter Frequency	1 dB
- Time to trigger	5000 mSec
- Reporting cell status	Not present
Measurement reporting mode	
- Measurement reporting transfer mode	Unacknowledged Mode RLC
- Periodic reporting / Event trigger reporting mode	Event trigger
Additional measurement list	Not present
DPCH compressed mode status info	Not present

## MEASUREMENT REPORT (Step 4)

Information Element	Value/remark
Measurement identity	Check to see if set to 10
Measured results	Check to see if it is absent
Measured results on RACH	Check to see if it is absent
Additional measured results	Check to see if it is absent
Event results	Inter frequency event results, 2F
- Event ID	
- Cell measurement event results	
- Frequency info	Frequency of Cell 1
- Primary CPICH info	
- Primary scrambling code	Primary scrambling code of Cell 1

## MEASUREMENT REPORT (Step 6)

Information Element	Value/remark
Measurement identity	Check to see if set to 10
Measured results	Check to see if it is absent
Measured results on RACH	Check to see if it is absent
Additional measured results	Check to see if it is absent
Event results	Inter frequency event results, 2D
- Event ID	
- Cell measurement event results	
- Frequency info	Frequency of Cell 1
- Primary CPICH info	
- Primary scrambling code	Primary scrambling code of Cell 1

## 8.4.1.26.5 Test Requirement

1. In step 4 the UE shall send MEASUREMENT REPORT message indicating event 2F. IE 'Cell measurement event results' in this message shall contain frequency information and primary scrambling code of Cell 1.
2. In step 6 the UE shall send MEASUREMENT REPORT message indicating event 2D. IE 'Cell measurement event results' in this message shall contain frequency information and primary scrambling code of Cell 1.

## 8.4.1.27 Measurement Control and Report: UE internal measurement for events 6A and 6B

## 8.4.1.27.1 Definition

## 8.4.1.27.2 Conformance requirement

When event 6A is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when the UE transmission power (for TDD within a single TS) becomes larger than a predefined threshold. The corresponding report identifies the threshold that was exceeded.

When event 6B is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when the UE transmission power (for TDD within a single TS) becomes less than a predefined threshold. The corresponding report identifies the threshold that the UE Tx power went below.

## Reference

3GPP TS 25.331, clauses 14.6.2.1 and 14.6.2.2.

## 8.4.1.27.3 Test Purpose

1. To confirm that the UE performs UE internal measurements and reporting for events 6A and 6B, when requested by the UTRAN to do so in the MEASUREMENT CONTROL message.

## 8.4.1.27.4 Method of test

## Initial Condition

System Simulator: 1 cell, cell 1.

UE: CS-DCCH+DTCH\_DCH (State 6-9) or PS-DCCH+DTCH\_DCH (State 6-10) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

## Test Procedure

The UE is in CELL\_DCH state in cell 1, after successfully executing procedures P11 or P13 as specified in clause 7.4 of TS 34.108. Next, SS transmits MEASUREMENT CONTROL message to request the UE to perform UE internal measurements and reporting for events 6A and 6B.

SS increases the UE Tx power above the threshold set to event 6A. After 'time to trigger' UE sends MEASUREMENT REPORT, triggered by event 6A, to SS.

SS decreases the UE Tx power below the threshold set to event 6B. After 'time to trigger' UE sends MEASUREMENT REPORT, triggered by event 6B, to SS. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				UE is initially in CELL_DCH state in cell 1.
2		←	MEASUREMENT CONTROL	SS requests for measurement and reporting of events 6A and 6B.
3				SS sets the UE transmission power above 18 dBm.
4		→	MEASUREMENT REPORT	UE shall send 6A event measurement report.
5				SS sets the UE transmission power below 15 dBm.
6		→	MEASUREMENT REPORT	UE shall send 6B event measurement report.
7		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Content

## MEASUREMENT CONTROL (Step 2)

Information Element	Value/remark
Measurement Identity	5
Measurement Command	Setup
Measurement Reporting Mode	Acknowledged Mode RLC
- Measurement Reporting Transfer Mode	Event Trigger Reporting
- Periodic Reporting / Event Trigger Reporting Mode	Not Present
Additional measurements list	UE internal measurement
CHOICE measurement type	Present
- UE internal measurement	FDD
- UE internal measurement quantity	UE Transmitted Power
-CHOICE <i>mode</i>	0
-UE internal measurement quantity	Present
-Filter coefficient	TRUE
- UE internal reporting quantity	FDD
- UE Transmitted Power	FALSE
- CHOICE <i>mode</i>	UE internal measurement reporting criteria
- UE Rx-Tx time difference	
- CHOICE <i>report criteria</i>	
- Parameters sent for each UE internal measurement event	
-UE internal event identity	6A
-Time-to-trigger	100 milliseconds
-UE Transmitted Power Tx power threshold	18 dBm
-UE internal event identity	6B
-Time-to-trigger	100 milliseconds
-UE Transmitted Power Tx power threshold	15 dBm
DPCH compressed mode status info	Not Present

## MEASUREMENT REPORT (Step 4)

Information Element	Value/remark
Measurement identity	Check to see if set to 5
Measured Results	
- CHOICE measurement	Check to see if set to "UE Internal measured results"
- UE internal measured results	
-CHOICE <i>mode</i>	Check to see if set to "FDD"
UE Transmitted Power	Check to see if present and value is reasonable
Measured Results on RACH	Check to see if this IE is absent
Event results	
-CHOICE <i>event result</i>	Check to see if set to "UE internal measurement event results"
-UE internal event identity	Check to see if set to "6A"
-CHOICE <i>mode</i>	Check to see if set to "FDD"
-Primary CPICH info	Check to see if this IE is absent

## MEASUREMENT REPORT (Step 6)

Information Element	Value/remark
Measurement identity	Check to see if set to 5
Measured Results	
- CHOICE measurement	Check to see if set to "UE Internal measured results"
- UE internal measured results	
-CHOICE <i>mode</i>	Check to see if set to "FDD"
UE Transmitted Power	Check to see if present and value is reasonable
Measured Results on RACH	Check to see if this IE is absent
Event results	
-CHOICE <i>event result</i>	Check to see if set to "UE internal measurement event results"
-UE internal event identity	Check to see if set to "6B"
-CHOICE <i>mode</i>	Check to see if set to "FDD"
-Primary CPICH info	Check to see if this IE is absent

## 8.4.1.27.5 Test Requirement

After step 3, the UE shall transmit MEASUREMENT REPORT message, containing measured results for UE transmitted power. The 'Event results' IE contains event identity 6A.

After step 5, the UE shall transmit MEASUREMENT REPORT message, containing measured results for UE transmitted power. The 'Event results' IE contains event identity 6B.

## 8.4.1.28 Measurement Control and Report: UE internal measurement for events 6F and 6G

## 8.4.1.28.1 Definition

## 8.4.1.28.2 Conformance requirement

When event 6F is ordered by UTRAN in a MEASUREMENT CONTROL message, the UE shall send a MEASUREMENT REPORT message when the UE Rx-Tx time difference becomes larger than the threshold defined by the IE "UE Rx-Tx time difference threshold".

When event 6G is ordered by UTRAN in a MEASUREMENT CONTROL message, the UE shall send a MEASUREMENT REPORT when the UE Rx-Tx time difference becomes less than the threshold defined by the IE "UE Rx-Tx time difference threshold".

## Reference

3GPP TS 25.331, clauses 14.6.2.6 and 14.6.2.7.

## 8.4.1.28.3 Test Purpose

1. To confirm that the UE performs UE internal measurements and reporting for events 6F and 6G, when requested by the UTRAN to do so in the MEASUREMENT CONTROL message.

## 8.4.1.28.4 Method of test

## Initial Condition

System Simulator: 1 cell – The initial configuration of the cell 1 in the SS shall follow the values indicated in table 6.1.2 of TS 34.108.

UE: CS-DCCH+DTCH\_DCH (State 6-9) or PS-DCCH+DTCH\_DCH (State 6-10) in cell 1 as specified in clause 7.4 of TS 34.108, depending on the CN domain supported by the UE.

## Test Procedure

Table 6.1.2 of TS 34.108 specifies the radio conditions to be applied for the cells in this test.

The UE is in CELL\_DCH state in cell 1, after successfully executing procedures P11 or P13 as specified in clause 7.4 of TS 34.108.

SS then performs an active set update procedure by sending ACTIVE SET UPDATE REQUEST message on the downlink DCCH. Cell 2 is to be added to the active set, according to the content of this downlink message. The UE shall reply with an ACTIVE SET UPDATE COMPLETE message on the uplink DCCH, and include cell 2 to the active set when the activation time specified has elapsed.

Next, SS transmits MEASUREMENT CONTROL message to request the UE to perform UE internal measurements and reporting for events 6F and 6G.

SS adjusts the Tx timing of cell 2 above the threshold set to event 6F. After 'time to trigger' UE sends MEASUREMENT REPORT, triggered by event 6F, to SS.

SS adjusts the Tx timing of cell 2 below the threshold set to event 6G. After 'time to trigger' UE sends MEASUREMENT REPORT, triggered by event 6G, to SS. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				UE is initially in CELL_DCH state in cell 1.
2		←	ACTIVE SET UPDATE	SS asks UE to add cell 2 into the active set.
3		→	ACTIVE SET UPDATE COMPLETE	
4		←	MEASUREMENT CONTROL	SS requests for measurement and reporting of events 6F and 6G.
5				SS switches Tx timing of cell 2 to a delay of -192 chips with respect to cell 1.
6		→	MEASUREMENT REPORT	UE shall send 6F event measurement report.
7				SS switches Tx timing of cell 2 to a delay of 192 chips with respect to cell 1.
8		→	MEASUREMENT REPORT	UE shall send 6G event measurement report.
9		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Content

### ACTIVE SET UPDATE (Step 2)

The contents of ACTIVE SET UPDATE message for this test step is identical to the same message found in Annex A with the following exceptions:

Information Element	Value/remark
RRC transaction identifier	0
Radio link addition information	
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as assigned for cell 2
- Downlink DPCH info for each RL	
- CHOICE mode	FDD
- Primary CPICH usage for channel estimation	P-CPICH can be used.
- DPCH frame offset	0 chips
- Secondary CPICH info	Not Present
- DL channelisation code	This IE is repeated for all existing downlink DPCHs allocated to the UE
- Secondary scrambling code	Not Present
- Spreading factor	Reference to TS34.108 clause 6.10 Parameter Set
- Code Number	For each DPCH, assign the same code number in the current code given in cell 1.
- Scrambling code change	Not Present
- TPC Combination Index	0
- SSDT Cell Identity	Not Present
- Close loop timing adjustment mode	Not Present
- TFCI Combining Indicator	Not Present
- SCCPCH information for FACH	Not Present
Radio link removal information	Not Present

## ACTIVE SET UPDATE COMPLETE (Step 3)

Information Element	Value/remark
RRC transaction identifier	Check to see if it is set to 0

## MEASUREMENT CONTROL (Step 4)

Information Element	Value/remark
Measurement Identity	5
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Event Trigger Reporting
Additional measurements list	Not Present
CHOICE measurement type	UE internal measurement
- UE internal measurement	
-UE Internal measurement quantity	Present
- CHOICE <i>mode</i>	FDD
- Measurement quantity	UE Rx-Tx time difference
- Filter coefficient	0
- UE internal reporting quantity	Present
- UE Transmitted Power	FALSE
- CHOICE <i>mode</i>	FDD
- UE Rx-Tx time difference	TRUE
- CHOICE <i>report criteria</i>	UE internal measurement reporting criteria
- Parameters sent for each UE internal measurement event	
-UE internal event identity	6F
-Time-to-trigger	0 milliseconds
-UE Rx-Tx time difference threshold	1174
-UE internal event identity	6G
-Time-to-trigger	0 milliseconds
-UE Rx-Tx time difference threshold	874
DPCH compressed mode status info	Not Present

## MEASUREMENT REPORT (Step 6)

Information Element	Value/remark
Measurement identity	Check to see if set to 5
Measured Results	
- CHOICE measurement	Check to see if set to "UE Internal measured results"
- UE internal measured results	
-CHOICE <i>mode</i>	
UE Rx-Tx report entries	Check to see if set to "FDD"
- Primary CPICH info	
-Primary scrambling code	Check to see if set to codes assigned for cell 1 & cell 2.
-UE Rx-Tx time difference type 1	Check to see if present and value is reasonable
Measured Results on RACH	Check to see if this IE is absent
Event results	
-CHOICE <i>event result</i>	Check to see if set to "UE internal measurement event results"
-UE internal event identity	Check to see if set to "6F"
-CHOICE <i>mode</i>	Check to see if set to "FDD"
-Primary CPICH info	
-Primary scrambling code	Check to see if set to code assigned for cell 2.

## MEASUREMENT REPORT (Step 8)

Information Element	Value/remark
Measurement identity	Check to see if set to 5
Measured Results	
- CHOICE measurement	Check to see if set to "UE Internal measured results"
- UE internal measured results	
-CHOICE <i>mode</i>	Check to see if set to "FDD"
UE Rx-Tx report entries	
- Primary CPICH info	
-Primary scrambling code	Check to see if set to codes assigned for cell 1 & cell 2.
-UE Rx-Tx time difference type 1	Check to see if present and value is reasonable
Measured Results on RACH	Check to see if this IE is absent
Event results	
-CHOICE <i>event result</i>	Check to see if set to "UE internal measurement event results"
-UE internal event identity	Check to see if set to "6G"
-CHOICE <i>mode</i>	Check to see if set to "FDD"
-Primary CPICH info	
-Primary scrambling code	Check to see if set to code assigned for cell 2

## 8.4.1.28.5 Test Requirement

After step 5, the UE shall transmit MEASUREMENT REPORT message, containing measured results for UE Rx-Tx time difference. The 'Event results' IE contains event identity 6F.

After step 7, the UE shall transmit MEASUREMENT REPORT message, containing measured results for UE Rx-Tx time difference. The 'Event results' IE contains event identity 6G.

## 8.4.1.29 Measurement Control and Report: Event based Traffic Volume measurement in CELL\_FACH state.

## 8.4.1.29.1 Definition

## 8.4.1.29.2 Conformance requirement

Upon reception of a MEASUREMENT CONTROL message the UE shall perform actions specified in TS 25.331 subclause 8.6 unless otherwise specified below.

The UE shall:

- 1> read the IE "Measurement command";
- 1> if the IE "Measurement command" has the value "setup":
  - 2> store this measurement in the variable MEASUREMENT\_IDENTITY according to the IE "measurement identity", first releasing any previously stored measurement with that identity if that exists;
  - 2> for measurement types "inter-RAT measurement" or "inter-frequency measurement":
    - ...
  - 2> for measurement type "UE positioning measurement":
    - ...
  - 2> for any other measurement type:
    - 3> if the measurement is valid in the current RRC state of the UE:
      - 4> begin measurements according to the stored control information for this measurement identity.
- ...

For traffic volume measurements in the UE only one quantity is compared with the thresholds. This quantity is Transport Channel Traffic Volume (which equals the sum of Buffer Occupancies of RBs multiplexed onto a transport channel) in number of bytes. Every TTI, UE measures the Transport Channel Traffic Volume for each transport channel and compares it with the configured thresholds. If the monitored Transport Channel Traffic Volume exceeds an absolute threshold, i.e. if  $TCTF > \text{Reporting threshold}$ , this is an event (event 4a) that could trigger a report. The corresponding report specifies at least which measurement ID the event that triggered the report belongs to.

In CELL\_FACH state, the UE shall:

- 1> transmit a MEASUREMENT REPORT message on the uplink DCCH when the reporting criteria stored in variable MEASUREMENT\_IDENTITY are met for any ongoing traffic volume measurement or UE positioning measurement that is being performed in the UE;
- 1> include a measurement report in the IE "Measured results on RACH", as specified in the IE "Intra-frequency reporting quantity for RACH reporting" and the IE "Maximum number of reported cells on RACH" in System Information Block type 12 (or "System Information Block Type 11" if "System Information Block Type 12" is not being broadcast);
- 1> include in the IE "Measured results on RACH" all requested reporting quantities for cells for which measurements are reported.

## Reference

3GPP TS 25.331, clause 14.4.2.1, 3GPP TS 25.331, clause 8.4.1.3, 8.4.2.2.

### 8.4.1.29.3 Test Purpose

1. To verify that in CELL\_FACH state when event 4a triggers UE sends RRC: Measurement Report with correct measurement identity and indication of UL transport channel type, radio bearer identities and corresponding RLC buffer payloads in number of bytes.
2. To confirm that the UE includes in the MEASUREMENT REPORT message, measurement report in IE "Measurement results on RACH" as specified in System Information Block type 12.

### 8.4.1.29.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: CELL\_FACH state, state 6-11 as specified in clause 7.4 of TS 34.108.

System Information Block type 11 nor 12 does not include Traffic Volume measurement system information.

### Test Procedure

The UE is brought to the CELL\_FACH state after a successful incoming call attempt. The SS follows the procedure in TS 34.108 clause 7.1.3 (Mobile Terminated), to set up a user RAB, but with the default RAB replaced by the one described in 34.108, clause 6.10.2.4.3.2: Interactive/Background 32 kbps PS RAB + SRBs for CCCH + SRB for DCCH + SRB for BCCH for DL and 6.10.2.4.4.1: Interactive/Background 32 kbps PS RAB + SRB for CCCH + SRB for DCCH for UL. The radio bearer is placed into UE test loop mode 1 described in 34.109 clause 5.3. The System Information Block type 12 is modified compared to the default settings so that CPICH RSCP is reported for intra-frequency reporting when transmitting RACH messages. After this modification, SS sends to UE RRC: MEASUREMENT CONTROL message, which includes traffic volume measurement control parameters eg. uplink transport channel type and reporting threshold. Transport channel traffic volume exceeds threshold and after 'time to trigger' UE sends RRC: MEASUREMENT REPORT to SS. SS does not respond and after 'pending time after trigger' UE sends again same RRC: MEASUREMENT REPORT. SS calls for generic procedure C.2 to check that UE is in CELL\_FACH state.

### Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_FACH state in the cell 1.
1a		←	MASTER INFORMATION BLOCK SYSTEM INFORMATION BLOCK TYPE 12	System Information Block type 12 is different from the default settings (see specific message contents)
1b		←	SYSTEM INFORMATION CHANGE INDICATION	To notify the modification of SYSTEM INFORMATION BLOCK TYPE 12, this message is transmitted.
2		←	MEASUREMENT CONTROL	SS provides Traffic Volume measurement criterias to UE.
3		→	MEASUREMENT REPORT	UE reports that Traffic Volume measurement event 4A is triggered.
4		→	MEASUREMENT REPORT	UE repeats message after 1000 ms.
5		↔	CALL C.2	If the test result of C.2 indicates that UE is in CELL_FACH state, the test passes, otherwise it fails.

### Specific Message Content

#### System Information Block type 12 (Step 1a)

Use the same message sub-type found in clause 6.1 of TS 34.108, with the following exception:

Information Element	Value/Remark
FACH measurement occasion info	Not Present
Measurement control system information	
- Use of HCS	Not used
- Cell selection and reselection quality measure	CPICH RSCP
- Intra-frequency measurement system information	
- Intra-frequency measurement identity	5
- Intra-frequency cell info list	
- CHOICE intra-frequency cell removal	Remove no intra-frequency cells
- New intra-frequency cells	
- Intra-frequency cell id	0
- Cell info	
- Cell individual offset	0 dB
- Reference time difference to cell	Not present
- Read SFN Indicator	FALSE
- CHOICE mode	FDD
- Primary CPICH Info	
- Primary Scrambling Code	Set to same code as used for cell 1
- Primary CPICH TX power	Not Present
- TX Diversity Indicator	FALSE
- Cell selection and Re-selection info	Not present
- Intra-frequency Measurement quantity	
- Filter Coefficient	0
- Measurement quantity	CPICH RSCP
- Intra-frequency measurement for RACH reporting	
- SFN-SFN observed time difference	No report
- Reporting quantity	CPICH RSCP
- Maximum number of reported cells on RACH	Current cell
- Reporting information for state CELL_DCH	
- Intra-frequency reporting quantity	
- Reporting quantities for active set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	FALSE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	FALSE
- Pathloss reporting indicator	FALSE
- Reporting quantities for monitored set cells	
- SFN-SFN observed time difference reporting indicator	No report
- Cell synchronisation information reporting indicator	TRUE
- Cell identity reporting indicator	FALSE
- CPICH Ec/No reporting indicator	FALSE
- CPICH RSCP reporting indicator	TRUE
- Pathloss reporting indicator	FALSE
- Reporting quantities for detected set cells	Not present
- Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged mode RLC
- Periodic Reporting/Event Trigger Reporting Mode	Event trigger
- CHOICE report criteria	Intra-frequency measurement reporting criteria
- Parameters required for each event	
- Intra-frequency event identity	1a
- Triggering condition 1	Not Present
- Triggering condition 2	Monitored set cells
- Reporting Range Constant	15 dB
- Cells forbidden to affect reporting range	Not Present
- W	0.0
- Hysteresis	1.0 dB
- Threshold used frequency	Not Present
- Reporting deactivation threshold	0
- Replacement activation threshold	Not Present

Information Element	Value/Remark
- Time to trigger	60 ms
- Amount of reporting	Infinity
- Reporting interval	16 seconds
- Reporting Cell Status	Report cells within active and/or monitored set on used frequency or within active and/or monitored set on non-used frequency
- CHOICE reported cell	
- Maximum number of reported cells	2
- Inter-frequency measurement system information	Not Present
- Traffic volume measurement system information	Not Present
- UE internal measurement system information	Not Present

## MASTER INFORMATION BLOCK (Step 1a)

Use the same message sub-type found in clause 6.1 of TS 34.108, with the following exception:

Information Element	Value/remark
MIB Value tag	2

## SYSTEM INFORMATION CHANGE INDICATION (Step 1b)

Information Element	Value/remark
Message Type	
BCCH modification info	
MIB Value Tag	2
BCCH Modification time	Not Present

## MEASUREMENT CONTROL (Step 2)

Information Element	Value/remark
Measurement Identity	15
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Event Trigger
Additional measurements list	Not Present
CHOICE measurement type	
- Traffic volume measurement object	
- Uplink transport channel type	RACH
- Traffic volume measurement quantity	
- Measurement quantity	RLC buffer payload
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	TRUE
- Average of RLC Buffer Payload for each RB	FALSE
- Variance of RLC Buffer Payload for each RB	FALSE
- Measurement validity	
- UE state	All states
- Traffic volume measurement reporting criteria	
- Traffic volume event identity	4a
- Reporting threshold	8
- Time to trigger	100
- Pending time after trigger	1000
- Tx interruption after trigger	250

## MEASUREMENT REPORT (Step 3 and step 4)

Information Element	Value/remark
Measurement identity	Check to see if set to 15
Measured Results	
- CHOICE measurement	Check to see if set to "Traffic volume measured results list"
- Traffic volume measurement results	
- RB Identity	1
- RLC Buffers Payload	Check to see if this IE is present
- Average of RLC Buffer Payload	Check to see if this IE is absent
- Variance of RLC Buffer Payload	Check to see if this IE is absent
- RB Identity	2
- RLC Buffers Payload	Check to see if this IE is present
- Average of RLC Buffer Payload	Check to see if this IE is absent
- Variance of RLC Buffer Payload	Check to see if this IE is absent
- RB Identity	3
- RLC Buffers Payload	Check to see if this IE is present
- Average of RLC Buffer Payload	Check to see if this IE is absent
- Variance of RLC Buffer Payload	Check to see if this IE is absent
- RB Identity	4
- RLC Buffers Payload	Check to see if this IE is present
- Average of RLC Buffer Payload	Check to see if this IE is absent
- Variance of RLC Buffer Payload	Check to see if this IE is absent
- RB Identity	20
- RLC Buffers Payload	Check to see if the value is reasonable
- Average of RLC Buffer Payload	Check to see if this IE is absent
- Variance of RLC Buffer Payload	Check to see if this IE is absent
Measured Results on RACH	
- Measurement result for current cell	Check to see if set to 'CPICH RSCP'
- CHOICE measurement quantity	Checked to see if set to within an acceptable range.
- CPICH RSCP	Checked to see if this IE is absent
- Measurement results for monitored cells	Check to see if set to 'CPICH RSCP'
Additional Measured results	Not checked
Event Results	
- Uplink transport channel type causing the event	Check to see if set to "RACH"
- UL transport channel identity	Check to see that is not set
- Traffic volume event identity	Check to see if set to "4a"

## 8.4.1.29.5 Test Requirement

In step 3 UE sends RRC: MEASUREMENT REPORT with correct measurement identity indication. RB identity and RLC buffers payload has reasonable values. The IE "measured results on RACH", containing the measurement value for cell 1's CPICH RSCP shall be included in this message.

In step 4 UE repeats message sent in step 3.

After step 3 UE is not allowed to send user data during the 'Tx interruption after trigger' timer is running.

## 8.4.1.30 Measurement Control and Report: Event based Traffic Volume measurement in CELL\_DCH state.

## 8.4.1.30.1 Definition

## 8.4.1.30.2 Conformance requirement

Upon reception of a MEASUREMENT CONTROL message the UE shall perform actions specified in TS 25.331 subclause 8.6 unless otherwise specified below.

The UE shall:

- 1> read the IE "Measurement command";

- 1> if the IE "Measurement command" has the value "setup":
  - 2> store this measurement in the variable MEASUREMENT\_IDENTITY according to the IE "measurement identity", first releasing any previously stored measurement with that identity if that exists;
  - 2> for measurement types "inter-RAT measurement" or "inter-frequency measurement":
    - ...
  - 2> for measurement type "UE positioning measurement":
    - ...
  - 2> for any other measurement type:
    - 3> if the measurement is valid in the current RRC state of the UE:
      - 4> begin measurements according to the stored control information for this measurement identity.

...

For traffic volume measurements in the UE only one quantity is compared with the thresholds. This quantity is Transport Channel Traffic Volume (which equals the sum of Buffer Occupancies of RBs multiplexed onto a transport channel) in number of bytes. Every TTI, UE measures the Transport Channel Traffic Volume for each transport channel and compares it with the configured thresholds.

If the monitored Transport Channel Traffic Volume exceeds an absolute threshold, i.e. if  $TCTF > \text{Reporting threshold}$ , this is an event (event 4a) that could trigger a report. The corresponding report specifies at least which measurement ID the event that triggered the report belongs to.

If the monitored Transport Channel Traffic Volume becomes smaller than an absolute threshold, i.e. if  $TCTF < \text{Reporting threshold}$ , this is an event (4b) that could trigger a report. The corresponding report specifies at least which measurement ID the event that triggered the report belongs to.

## Reference

3GPP TS 25.331, clause 14.4.2.2, 3GPP TS 25.331, clause 8.4.1.3.

### 8.4.1.30.3 Test Purpose

1. To verify that in CELL\_DCH state when event 4a or 4b triggers UE sends RRC: Measurement Report with correct measurement identity and indication of uplink transport channel type and identity, radio bearer identities and corresponding RLC buffer payloads in number of bytes.

### 8.4.1.30.4 Method of test

#### Initial Condition

System Simulator: 1 cell

UE: CELL\_DCH state, state 6-10 as specified in clause 7.4 of TS 34.108.

System Information Block type 11 nor 12 does not include Traffic Volume measurement system information.

#### Test Procedure

The UE is brought to the CELL\_DCH state after a successful incoming call attempt. The SS follows the procedure in TS 34.108 clause 7.1.3 (Mobile Terminated), to set up a user RAB, but with the default RAB replaced by the one described in 34.108, clause 6.10.2.4.1.26: Interactive or background / UL: 64 DL: 64 kbps / PS RAB + UL: 3.4 DL: 3.4 kbps SRBs for DCCH. The radio bearer is placed into UE test loop mode 1 described in 34.109 clause 5.3. SS sends to UE RRC: MEASUREMENT CONTROL messages, which includes in addition to measurement identity traffic volume measurement control parameters eg. uplink transport channel type and identity and reporting threshold for both events 4a and 4b. Transport channel traffic volume exceeds threshold and after 'time to trigger' UE sends RRC: MEASUREMENT REPORT to SS. SS does not respond and after 'pending time after trigger' UE sends again same

RRC: MEASUREMENT REPORT. UE's transport channel load decreases to zero, event 4b triggers and previous signaling procedure repeats. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_DCH state in the cell 1.
2		←	MEASUREMENT CONTROL	SS provides Traffic Volume measurement criterias (event 4a) to UE.
3		←	MEASUREMENT CONTROL	SS provides Traffic Volume measurement criterias (event 4b) to UE.
4		→	MEASUREMENT REPORT	UE's transport channel is loaded. UE reports that Traffic Volume measurement event 4A is triggered.
5		→	MEASUREMENT REPORT	UE repeats message after 2000 ms.
6		→	MEASUREMENT REPORT	UE's transport channel traffic volume decreases to zero. UE reports that Traffic Volume measurement event 4B is triggered.
7		→	MEASUREMENT REPORT	UE repeats message after 2000 ms.
8		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

Specific Message Content

MEASUREMENT CONTROL (Step 2)

Information Element	Value/remark
Measurement Identity	15
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Event Trigger
Additional measurements list	Not Present
CHOICE measurement type	
- Traffic volume measurement objects	
- Uplink transport channel type	DCH
- UL target transport channel ID	1
- Traffic volume measurement quantity	
- Measurement quantity	RLC buffer payload
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	TRUE
- Average of RLC Buffer Payload for each RB	FALSE
- Variance of RLC Buffer Payload for each RB	FALSE
- Measurement validity	
- UE state	CELL_DCH
- Traffic volume measurement reporting criteria	
- Traffic volume event identity	4a
- Reporting threshold	256
- Time to trigger	100
- Pending time after trigger	2000
- Tx interruption after trigger	Not present

## MEASUREMENT CONTROL (Step 3)

Information Element	Value/remark
Measurement Identity	14
Measurement Command	Setup
Measurement Reporting Mode	Acknowledged Mode RLC
- Measurement Reporting Transfer Mode	Event Trigger
- Periodic Reporting / Event Trigger Reporting Mode	Not Present
Additional measurements list	
CHOICE measurement type	
- Traffic volume measurement objects	
- Uplink transport channel type	DCH
- UL target transport channel ID	1
- Traffic volume measurement quantity	
- Measurement quantity	RLC buffer payload
- Traffic volume reporting quantity	
- RLC Buffer Payload for each RB	TRUE
- Average of RLC Buffer Payload for each RB	FALSE
- Variance of RLC Buffer Payload for each RB	FALSE
- Measurement validity	
- UE state	CELL_DCH
- Traffic volume measurement reporting criteria	
- Traffic volume event identity	4b
- Reporting threshold	32
- Time to trigger	100
- Pending time after trigger	2000
- Tx interruption after trigger	Not present

## MEASUREMENT REPORT (Step 4 and step 5)

Information Element	Value/remark
Measurement identity	Check to see if set to 15
Measured Results	
- CHOICE measurement	Check to see if set to "Traffic volume measured results list"
- Traffic volume measurement results	
- RB Identity	1
- RLC Buffers Payload	Check to see if this IE is present
- Average of RLC Buffer Payload	Check to see if this IE is absent
- Variance of RLC Buffer Payload	Check to see if this IE is absent
- RB Identity	2
- RLC Buffers Payload	Check to see if this IE is present
- Average of RLC Buffer Payload	Check to see if this IE is absent
- Variance of RLC Buffer Payload	Check to see if this IE is absent
- RB Identity	3
- RLC Buffers Payload	Check to see if this IE is present
- Average of RLC Buffer Payload	Check to see if this IE is absent
- Variance of RLC Buffer Payload	Check to see if this IE is absent
- RB Identity	4
- RLC Buffers Payload	Check to see if this IE is present
- Average of RLC Buffer Payload	Check to see if this IE is absent
- Variance of RLC Buffer Payload	Check to see if this IE is absent
- RB Identity	20
- RLC Buffers Payload	Check to see if the value is reasonable
- Average of RLC Buffer Payload	Check to see if this IE is absent
- Variance of RLC Buffer Payload	Check to see if this IE is absent
Measured Results on RACH	Not checked
Additional Measured results	Not checked
Event Results	
- Uplink transport channel type causing the event	Check to see if set to "DCH"
- UL transport channel identity	Check to see if set to "1"
- Traffic volume event identity	Check to see if set to "4a"

## MEASUREMENT REPORT (Step 6 and step 7)

Information Element	Value/remark
Measurement identity	Check to see if set to 14
Measured Results	
- CHOICE measurement	Check to see if set to "Traffic volume measured results list"
- Traffic volume measurement results	
- RB identity	Check that value is correct
- RLC buffers payload	Check that value is reasonable
Measured Results on RACH	Not checked
Additional Measured results	Not checked
Event Results	
- Uplink transport channel type causing the event	Check to see if set to "DCH"
- UL transport channel identity	Check to see if set to "1"
- Traffic volume event identity	Check to see if set to "4b"

## 8.4.1.30.5 Test Requirement

In steps 4, 5, 6 and 7 UE sends RRC: MEASUREMENT REPORT with correct measurement identity indication. RB identity and RLC buffers payload has correct values. Measurement identity, transport channel type, transport channel identity and event identity has to match with set values.

## 8.4.1.31 Measurement Control and Report: Inter-RAT measurement in CELL\_DCH state.

## 8.4.1.31.1 Definition

## 8.4.1.31.2 Conformance requirement

The UE shall perform GSM RSSI measurements in the gaps of compressed mode pattern sequence specified for GSM RSSI measurement purpose.

The UE shall perform GSM Initial BSIC identification in compressed mode pattern sequence specified for Initial BSIC identification measurement purpose.

## Reference

3GPP TS 25.331, clause 14.3.2.

## 8.4.1.31.3 Test Purpose

Purpose of this test is to verify that UE is capable to perform GSM RSSI and GSM Initial BSIC identification measurements in compressed mode.

## 8.4.1.31.4 Method of test

## Initial Condition

System Simulator: 1 UTRAN FDD cell and 2 GSM cells.

Parameter	Unit	Cell 1 (GSM)	Cell 2 (GSM)
Test Channel	#	1	2
RF Signal Level	dBm	-80	-85
BCCH ARFCN	#	1	7
CELL identity	#	0	1
BSIC	#	BSIC1	BSIC2

UE: CELL\_DCH state, state 6-9 as specified in clause 7.4 of TS 34.108.

System Information Block type 11 nor 12 does not include Inter-RAT measurement system information.

#### Related ICS/IXIT statements

- Compressed mode required yes/no

#### Test Procedure

The UE is brought to the CELL\_DCH state after a successful outgoing call attempt. SS provides compressed mode pattern sequence parameters to UE by using physical channel reconfiguration procedure. Depending on UE's measurement capability uplink and/or downlink compressed mode is requested. If required compressed mode method is SF/2 with 7 slot gap in single frame. Two normal frames is between gapped frames. First RRC: MEASUREMENT CONTROL message is used to provide measurement control parameters (GSM RSSI) to UE and to start compressed mode for measurement. UE replies according to request by sending RRC: MEASUREMENT REPORT messages periodically to SS. Reporting period is 1000 ms. After two RRC: MEASUREMENT REPORT messages, SS sends second RRC: MEASUREMENT CONTROL message to start GSM Initial BSIC identification measurement. UE replies similarly as in GSM RSSI measurement case. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_DCH state in the cell 1.
2		←	PHYSICAL CHANNEL RECONFIGURATION	Compressed mode pattern sequence parameters are loaded to UE.
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
4		←	MEASUREMENT CONTROL	SS provides GSM RSSI measurement control parameters to UE. Compressed mode for GSM RSSI measurement is started.
5		→	MEASUREMENT REPORT	UE reports measurement results of GSM RSSI measurement to SS.
6		→	MEASUREMENT REPORT	Next periodical measurement report.
7		←	MEASUREMENT CONTROL	SS provides GSM Initial BSIC identification measurement control parameters to UE. Compressed mode for GSM Initial BSIC identification measurement is started.
8		→	MEASUREMENT REPORT	UE reports measurement results of GSM Initial BSIC identification measurement to SS.
9		→	MEASUREMENT REPORT	Next periodical measurement report.
10		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Content

## PHYSICAL CHANNEL RECONFIGURATION (Step 2)

Use the same message sub-type in Annex A titled "Speech in CS", with the following exceptions:

Information Element	Value/remark
Downlink information common for all radio links - DPCH compressed mode info	
- TGPSI	1
- TGPS Status Flag	Deactivate
- TGCFN	Not present
- Transmission gap pattern sequence configuration parameters	
- TGMP	GSM Carrier RSSI Measurement
- TGPRC	Infinity
- TGSN	4
- TGL1	7
- TGL2	Not present
- TGD	0
- TGPL1	12
- TGPL2	Not present
- RPP	Mode 1
- ITP	Mode 1
CHOICE UL/DL Mode	UL and DL (depends on UE's Measurement capability)
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	2.0
- DeltaSIRAfter1	1.0
- DeltaSIR2	Not Present
- DeltaSIR2After2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	Not Present
- TGPSI	2
- TGPS Status Flag	Deactivate
- TGCFN	Not present
- Transmission gap pattern sequence configuration parameters	
- TGMP	GSM Initial BSIC identification
- TGPRC	Infinity
- TGSN	4
- TGL1	7
- TGL2	Not present
- TGD	0
- TGPL1	8
- TGPL2	Not present
- RPP	Mode 1
- ITP	Mode 1
CHOICE UL/DL Mode	UL and DL (depends on UE's Measurement capability)
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	2.0
- DeltaSIRAfter1	1.0
- DeltaSIR2	Not Present
- DeltaSIR2After2	Not Present
- N identify abort	128
- T Reconfirm abort	Not Present

## MEASUREMENT CONTROL (Step 4)

Information Element	Value/remark
Measurement Identity	15

Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Periodical reporting
Additional measurements list	Not Present
CHOICE measurement type	
- inter-RAT measurement	
- inter-RAT measurement object list	
CHOICE Inter-RAT Cell Removal	Remove no inter-RAT cells
- inter-RAT cell id	0
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC1
- Band indicator	DCS 1800 band used
- BCCH ARFCN	1
- inter-RAT cell id	1
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC2
- Band indicator	DCS 1800 band used
- BCCH ARFCN	7
- Cell for measurement	Not present
- inter-RAT measurement quantity	
- Measurement quantity for UTRAN quality estimate	Not present
CHOICE system	GSM
- Measurement quantity	GSM carrier RSSI
- Filter coefficient	0
- BSIC verification required	not required
- inter-RAT reporting quantity	
UTRAN estimated quality	FALSE
CHOICE system	GSM
- Observed time difference to to GSM cell reporting indicator	FALSE
- GSM carrier RSSI reporting indicator	TRUE
- Reporting cell status	
CHOICE reported cell	
- Reported cells within active set or within virtual active set or of the other RAT	
- Maximum number of reported cells	6
CHOICE report criteria	
- Periodical reporting criteria	
- Amount of reporting	infinity
- Reporting interval	1000
Physical channel information elements	
- DPCH compressed mode status info	
- TGPS reconfiguration CFN	$(\text{Current CFN} + (256 - \text{TTI}/10\text{msec})) \bmod 256$
- Transmission gap pattern sequence	
- TGPSI	1
- TGPS status flag	Activate
- TGCFN	$(\text{Current CFN} + (256 - \text{TTI}/10\text{msec})) \bmod 256$
- TGPSI	2
- TGPS status flag	Activate
- TGCFN	Not present

## MEASUREMENT REPORT (Step 5 and step 6)

Information Element	Value/remark
Measurement identity	Check to see if set to 15
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-RAT measured results list"
- Inter-RAT measured result list	

<ul style="list-style-type: none"> <li>- CHOICE system</li> <li>- Measured GSM cells                         <ul style="list-style-type: none"> <li>- GSM carrier RSSI</li> </ul> </li> <li>CHOICE BSIC                         <ul style="list-style-type: none"> <li>- BCCH ARFCN</li> </ul> </li> <li>- Observed time difference to GSM cell</li> <li>- GSM carrier RSSI</li> <li>CHOICE BSIC                         <ul style="list-style-type: none"> <li>- BCCH ARFCN</li> </ul> </li> <li>- Observed time difference to GSM cell</li> </ul> <p>Measured results on RACH                      Additional Measured results                      Event results</p>	<p>GSM</p> <p>Check to see if present                      Non verified BSIC                      Check that is set to "0"                      Check that not present                      Check that measurement result is reasonable                      Non verified BSIC                      Check that is set to "7"                      Check that not present                      Check that not present                      Check that not present</p>
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MEASUREMENT CONTROL (Step 7)

Information Element	Value/remark
Measurement Identity	15
Measurement Command	Modify
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Periodical reporting
Additional measurements list	Not Present
CHOICE measurement type	
- inter-RAT measurement	
- inter-RAT measurement object list	Not present
- inter-RAT measurement quantity	
- Measurement quantity for UTRAN quality estimate	Not present
CHOICE system	GSM
- Measurement quantity	GSM carrier RSSI
- Filter coefficient	0
- BSIC verification required	required
- inter-RAT reporting quantity	
UTRAN estimated quality	FALSE
CHOICE system	GSM
- Observed time difference to to GSM cell reporting indicator	FALSE
- GSM carrier RSSI reporting indicator	TRUE
- Reporting cell status	
CHOICE reported cell	
- Reported cells within active set or within virtual active set or of the other RAT	
- Maximum number of reported cells	6
CHOICE report criteria	
- Periodical reporting criteria	
- Amount of reporting	infinity
- Reporting interval	1000
Physical channel information elements	
- DPCH compressed mode status info	
- TGPS reconfiguration CFN	(Current CFN + (256 – TTI/10msec))mod 256
- Transmission gap pattern sequence	
- TGPSI	1
- TGPS status flag	Deactivate
- TGCFN	Not present
- TGPSI	2
- TGPS status flag	Activate
- TGCFN	(Current CFN + (256 – TTI/10msec))mod 256

## MEASUREMENT REPORT (Step 8 and step 9)

Information Element	Value/remark
Measurement identity	Check to see if set to 15
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-RAT measured results list"
- Inter-RAT measured result list	
- CHOICE system	GSM
- Measured GSM cells	
- GSM carrier RSSI	Check to see if present
CHOICE BSIC	Verified BSIC
- Inter-RAT cell id	Check that is set to "0"
- Observed time difference to GSM cell	Check that not present
- GSM carrier RSSI	Check that measurement result is reasonable
CHOICE BSIC	Verified BSIC
- Inter-RAT cell id	Check that is set to "1"
- Observed time difference to GSM cell	Check that not present
Measured results on RACH	Check that not present
Additional Measured results	Check that not present
Event results	Check that not present

## 8.4.1.31.5 Test Requirement

In step 5 and step 6 UE reports correctly GSM RSSI values.

In step 8 and step 9 UE reports correctly BSIC values.

Reporting period is the requested one.

## 8.4.1.32 Void

## 8.4.1.33 Measurement Control and Report: Inter-RAT measurement, event 3a

## 8.4.1.33.1 Definition

## 8.4.1.33.2 Conformance requirement

- When this event is ordered by UTRAN in a MEASUREMENT CONTROL message the UE shall send a report when the estimated quality of the currently used frequency is below the value of the IE "Threshold own system" and the hysteresis and time to trigger conditions are fulfilled and the estimated quality of the other system is above the value of the IE "Threshold other system" and the hysteresis and time to trigger conditions are fulfilled.
- If the IE "DPCH Compressed Mode Status Info" is present, [in the MEASUREMENT CONTROL message]:
  - after the time indicated by IE "TGPS reconfiguration CFN" has elapsed:
    - activate the pattern sequence stored in the variable TGPS\_IDENTITY corresponding to each IE "TGPSI" for which the "TGPS status flag" is set to "activate" at the time indicated by IE "TGCFN"; and
    - begin the inter-frequency and/or inter-RAT measurements corresponding to the pattern sequence measurement purpose of each activated pattern sequence;
    - if the values of IE "TGPS reconfiguration CFN" and IE "TGCFN" are equal:
      - start the concerned pattern sequence immediately at that CFN;
  - not alter pattern sequences stored in variable TGPS\_IDENTITY, but not identified in IE "TGPSI"
- The UE shall perform GSM RSSI measurements in the gaps of compressed mode pattern sequence specified for GSM RSSI measurement purpose. The UE shall perform Initial BSIC identification in compressed mode pattern sequence specified for Initial BSIC identification measurement purpose. The UE shall be able to measure the

"Observed time difference to GSM cell" during a compressed mode pattern sequence configured for this purpose. The UE shall perform BSIC re-confirmation in compressed mode pattern sequence specified for BSIC re-confirmation measurement purpose.

4. If the IE "Inter-RAT measurement quantity" is received in a MEASUREMENT CONTROL message and CHOICE system is GSM, the UE shall:
  - if IE "BSIC verification required" is set to "required", for cells that match any of the BCCH ARFCN and BSIC combinations in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list", and that has a "verified" BSIC:
    - report measurement quantities according to IE "inter-RAT reporting quantity" taking into account the restrictions defined in TS 25.331 clause 8.6.7.6;
    - trigger inter-RAT events according to IE "inter-RAT measurement reporting criteria"; and
    - perform event evaluation for event-triggered reporting after BSIC has been verified for a GSM cell
    - indicate non-verified BSIC for a GSM cell in the "Inter-RAT measured results list" IE
5. The UE shall include measured results in MEASUREMENT REPORT as specified in the IE "Inter-RAT reporting quantity".
6. If IE "Observed time difference to GSM cell" is set to "TRUE" [, the UE shall]:
  - include optional IE "Observed time difference to GSM cell" with the value set to the time difference to that GSM cell for the GSM cells that have a BSIC that is "verified", and that match any of the BCCH ARFCN and BSIC combinations in the list of inter-RAT cells that the UE has received in IE "Inter-RAT cell info list".
  - if IE "GSM Carrier RSSI" is set to "TRUE"[, the UE shall]:
    - include optional IE "GSM Carrier RSSI" with a value set to the measured RXLEV to that GSM cell in IE "Inter-RAT measured results list".
  - if the BSIC of reported GSM cell is "verified"[, the UE shall]:
    - set the CHOICE BSIC to "Verified BSIC" and IE "inter-RAT cell id" to the value that GSM cell had in the IE "Inter-RAT cell info list";
7. If the IE "Reporting Cell Status" is received, the UE shall set the IE "Measured Results" in MEASUREMENT REPORT as follows.
  - the maximum number of the IE "Cell Measured Results" to be included in the IE "Measured Results" is the number specified in "Reporting Cell Status".

## Reference

3GPP TS 25.331 clauses 8.4.1.3, 8.6.7.5, 8.6.7.6, 8.6.7.9, 14.3.1.1, 14.3.2.1, 14.3.2.2, 14.3.2.3.

### 8.4.1.33.3 Test Purpose

1. To confirm that the UE starts compressed mode and inter-RAT measurements when so required by the network in a MEASUREMENT CONTROL message.
2. To confirm that the UE sends MEASUREMENT REPORT message if event 3a is configured, if the quality of the currently used UTRAN frequency is below a given threshold and the estimated quality of the other system is above a certain threshold.
3. To confirm that the hysteresis and time to trigger behaviours for event 3a are correctly implemented.
4. To confirm that the UE verifies the BSIC of the cell triggering the event if so required by UTRAN and if the proper compressed mode patterns have been configured in the UE by UTRAN.
5. To confirm that the content of the MEASUREMENT REPORT sent by the UE is according to what was required by UTRAN.

NOTE: Test purpose 1 verifies conformance requirement 1 and 2.

NOTE: Test purpose 2 and 3 verifies conformance requirement 1.

NOTE: Test purpose 4 verifies conformance requirement 2, 3 and 4.

NOTE: Test purpose 5 verifies conformance requirement 4, 5, 6 and 7.

#### 8.4.1.33.4 Method of test

##### Initial Condition

System simulator: 1 UTRAN FDD cell and 3 GSM cells. The initial configurations of the 3 cells in the SS shall follow the values indicated in the column marked T0. The table is found in "Test procedure".

UE: CELL\_DCH state, state 6-9 as specified in clause 7.4 of TS 34.108.

##### Related ICS/IXIT statements

- Compressed mode required            yes/no

##### Test procedure

**Table 8.4.1.33.4-1**

Parameter	Unit	Cell 1 (GSM)					Cell 2 (GSM)					Cell 3 (GSM)				
		T0	T1	T2	T3	T4	T0	T1	T2	T3	T4	T0	T1	T2	T3	T4
Test Channel	#	GSM Ch.1					GSM Ch.2					GSM Ch.3				
BCCH ARFCN	#	1					7					39				
CELL identity	#	1					2					3				
BSIC	#	BSIC 1					BSIC 2					BSIC 3				
RF Signal Level	dBm	-85	-85	-70	-82	-70	-85	-85	-85	-77	-77	-90	-90	-90	-90	-90

**Table 8.4.1.33.4-2**

Parameter	Unit	Cell 1 (UTRA)				
		T0	T1	T2	T3	T4
UTRA RF Channel Number		Ch.1				
CPICH Ec/No	dB	-5	-20	-20	-20	-5

The two tables above illustrate the downlink power to be applied for the two cells at various instants of the test execution. Column marked "T0" denotes the initial conditions, while columns marked "T1", "T2" and "T3" indicate the values to be applied subsequently.

The UE is initially in CELL\_DCH, state 6-9 as specified in clause 7.4 of TS 34.108. UTRA cell 1 is the only cell in the active set of the UE. If the UE requires compressed mode (refer ICS/IXIT), the SS sends a PHYSICAL CHANNEL RECONFIGURATION message to the UE to configure the compressed mode pattern sequence parameters to the UE. Three compressed mode patterns are configured, according to the message specified below. When the PHYSICAL CHANNEL RECONFIGURATION COMPLETE is received from the UE, the SS sends a MEASUREMENT CONTROL message to the UE, to set up inter-RAT measurements. Event 3a is set up in this message, and if the UE requires compressed mode (refer ICS/IXIT), compressed mode is activated.

At instant T1, the CPICH Ec/No drops as described in table 8.4.1.33.4-2.

At instant T2, the RF signal for GSM cell 1 increases, and crosses the threshold for the other system defined for event 3a.

After reception of the MEASUREMENT REPORT message, at instant T3, the RF signal strength for GSM cell 2 increases above the threshold for the other system for event 3a. During that time, the RF signal strength for GSM cell 1 has dropped above the threshold for the other system for event 3a, but remains above threshold-hysteresis for event 3a.

At instant T4, the RF signal strength for GSM cell 1 increases above the threshold for the other system for event 3a+hysteresis. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_DCH state in the cell 1. If the UE does not require compressed mode (refer ICS/IXIT), then goto step 4.
2		←	PHYSICAL CHANNEL RECONFIGURATION	Compressed mode pattern sequence parameters are loaded to UE.
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
4		←	MEASUREMENT CONTROL	SS configures event 3a in the UE. If the UE requires compressed mode (refer ICS/IXIT), compressed mode is started.
5				SS re-adjusts the downlink transmission power settings according to columns "T1" in tables 8.4.1.33.4-1 and 8.4.1.33.4-2.
6				SS waits for approximately 10 seconds and verifies that no MEASUREMENT REPORT messages are detected on uplink DCCH.
7				SS re-adjusts the downlink transmission power settings according to columns "T2" in tables 8.4.1.33.4-1 and 8.4.1.33.4-2.
8		→	MEASUREMENT REPORT	After about 640 ms, the UE sends a MEASUREMENT REPORT to SS triggered by event 3a.
9				SS re-adjusts the downlink transmission power settings according to columns "T3" in tables 8.4.1.33.4-1 and 8.4.1.33.4-2.
10				SS waits for approximately 10 seconds and verifies that no MEASUREMENT REPORT messages are detected on uplink DCCH.
11				SS re-adjusts the downlink transmission power settings according to columns "T4" in tables 8.4.1.33.4-1 and 8.4.1.33.4-2.
12				SS waits for approximately 10 seconds and verifies that no MEASUREMENT REPORT messages are detected on uplink DCCH.
13		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Content

## PHYSICAL CHANNEL RECONFIGURATION (Step 2)

Use the same message sub-type in Annex A titled "Speech in CS", with the following exceptions:

Information Element	Value/remark
Downlink information common for all radio links	
- DPCH compressed mode info	1
- TGPSI	Deactivate
- TGPS Status Flag	Not present
- TGCFN	
- Transmission gap pattern sequence	
configuration parameters	
- TGMP	GSM Carrier RSSI Measurement
- TGPRC	Infinity
- TGSN	4
- TGL1	7
- TGL2	Not present
- TGD	0
- TGPL1	12
- TGPL2	Not present
- RPP	Mode 0
- ITP	Mode 0
CHOICE UL/DL Mode	UL and DL (depends on UE's Measurement capability)
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	1.0
- DeltaSIRAfter1	0.5
- DeltaSIR2	Not Present
- DeltaSIR2After2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	Not Present
- DPCH compressed mode info	
- TGPSI	2
- TGPS Status Flag	Deactivate
- TGCFN	Not present
- Transmission gap pattern sequence	
configuration parameters	
- TGMP	GSM BSIC identification
- TGPRC	Infinity
- TGSN	4
- TGL1	7
- TGL2	Not present
- TGD	0
- TGPL1	8
- TGPL2	Not present
- RPP	Mode 0
- ITP	Mode 0
CHOICE UL/DL Mode	UL and DL (depends on UE's Measurement capability)
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	1.0
- DeltaSIRAfter1	0.5
- DeltaSIR2	Not Present
- DeltaSIR2After2	Not Present
- N identify abort	12
- T Reconfirm abort	Not Present
- TGPSI	3
- TGPS Status Flag	Deactivate
- TGCFN	Not present
- Transmission gap pattern sequence	
configuration parameters	
- TGMP	GSM BSIC re-confirmation
- TGPRC	Infinity
- TGSN	4

- TGL1	7
- TGL2	Not present
- TGD	0
- TGPL1	8
- TGPL2	Not present
- RPP	Mode 0
- ITP	Mode 0
CHOICE UL/DL Mode	UL and DL
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	1.0
- DeltaSIRAfter1	0.5
- DeltaSIR2	Not Present
- DeltaSIR2After2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	5 s

MEASUREMENT CONTROL (Step 4)

Information Element	Value/remark
Measurement Identity	3
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Event triggered
Additional measurements list	Not Present
CHOICE measurement type	
- inter-RAT measurement	
- inter-RAT measurement object list	
CHOICE Inter-RAT Cell Removal	Remove all inter-RAT cells
- Remove all inter-RAT cells	(No Data)
New inter-RAT cells (1 to <MaxCellMeas>)	MaxCellMeas=3
- inter-RAT cell id	0
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC1
- Band indicator	DCS 1800 band used
- BCCH ARFCN	1
- inter-RAT cell id	1
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC2
- Band indicator	DCS 1800 band used
- BCCH ARFCN	7
- inter-RAT cell id	2
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC3
- Band indicator	DCS 1800 band used
- BCCH ARFCN	2
- Cell for measurement	Not present
- inter-RAT measurement quantity	
- Measurement quantity for UTRAN quality estimate	
- Intra-frequency measurement quantity	
- Filter coefficient	0
- CHOICE mode	FDD
- Measurement quantity	Ec/No
CHOICE system	GSM
- Measurement quantity	GSM carrier RSSI
- Filter coefficient	0
- BSIC verification required	required
- inter-RAT reporting quantity	

<p>CHOICE system</p> <ul style="list-style-type: none"> <li>- Observed time difference to to GSM cell reporting indicator</li> <li>- GSM carrier RSSI reporting indicator</li> </ul> <p>CHOICE report criteria</p> <ul style="list-style-type: none"> <li>- Inter-RAT measurements reporting criteria                     <ul style="list-style-type: none"> <li>- Parameters required for each event (1 to &lt;maxMeasEvent&gt;)                             <ul style="list-style-type: none"> <li>- Inter-RAT event identity</li> <li>- Threshold own system</li> <li>- W</li> <li>- Threshold other system</li> <li>- Hysteresis</li> <li>- Time to Trigger</li> <li>- Reporting cell status</li> </ul> </li> </ul> </li> <li>- Maximum number of reported cells</li> </ul> <p>Physical channel information elements</p> <ul style="list-style-type: none"> <li>- DPCH compressed mode status info</li> </ul> <ul style="list-style-type: none"> <li>- TGPS reconfiguration CFN</li> <li>- Transmission gap pattern sequence (1 to &lt;MaxTGPS&gt;)                     <ul style="list-style-type: none"> <li>- TGPSI</li> <li>- TGPS status flag</li> <li>- TGCFN</li> <li>- TGPSI</li> <li>- TGPS status flag</li> <li>- TGCFN</li> <li>- TGPSI</li> <li>- TGPS status flag</li> <li>- TGCFN</li> </ul> </li> </ul>	<p>GSM TRUE</p> <p>TRUE</p> <p>&lt;MaxMeasEvent&gt;=1 3a -12 0 -80 5 640 ms Report cells within active set or within virtual active set or of the other RAT 2 cells</p> <p>If the UE requires compressed mode (refer ICS/IXIT), this IE is present and contains the IEs as follows. If the UE does not require compressed mode (refer ICS/IXIT), this IE is not present. Not present &lt;MaxTGPS&gt;=3</p> <p>1 Activate (Current CFN + (252 – TTI/10msec))mod 256 2 Activate (Current CFN + (254 – TTI/10msec))mod 256 3 Activate (Current CFN + (250 – TTI/10msec))mod 256</p>
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MEASUREMENT REPORT (Step 8)

Information Element	Value/remark
Measurement identity	Check to see if set to 3
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-RAT measured results list"
- Inter-RAT measured result list	
- CHOICE system	GSM
- Measured GSM cells	Check that measurement results for two GSM cells are included
- GSM carrier RSSI	Check that measurement result is reasonable
CHOICE BSIC	Check it is set to verified BSIC
- inter-RAT cell id	Check that it is set to either 0 or 1.
- Observed time difference to GSM cell	Check that the IE is present and that the reported value is reasonable
- GSM carrier RSSI	Check that measurement result is reasonable
CHOICE BSIC	Verified BSIC
- inter-RAT cell id	Check that is set to 1 or 0 depending on the value of the previous inter-RAT cell id. (The value here shall be the one not chosen for the previous inter-RAT cell id).
- Observed time difference to GSM cell	Check that the IE is present and that the reported value is reasonable
Measured results on RACH	Check that not present
Additional Measured results	Check that not present
Event results	Check that the IE is included
- CHOICE event result	Check that this is set to inter-RAT measurement event results
- Inter-RAT event identity	Check that this is set to 3a
- Cells to report (1 to <maxCellMeas>)	Check that <maxCellMeas> is set to 1
- CHOICE BSIC	Check that this is set to verified BSIC
- Inter-RAT cell id	Check that this is set to 0.

#### 8.4.1.33.5 Test requirement

The UE shall not send any measurement report between instants T1 and T2.

Event 3a shall be triggered in the UE (i.e.the transmission of the MEASUREMENT REPORT) about 0.64 s after instant T2.

Between instants T2 and T3, no MEASUREMENT REPORT message shall be received from the UE (since the hysteresis condition for triggering event 3a is not fulfilled).

No MEASUREMENT REPORT message shall be received from the UE after instant T4 (since the signal strength for cell 1 has not dropped under Threshold for event 3a-hysteresis).

### 8.4.1.34 Measurement Control and Report: Inter-RAT measurement, event 3b

#### 8.4.1.34.1 Definition

#### 8.4.1.34.2 Conformance requirement

If the IE "Inter-RAT cell info list" is received in a MEASUREMENT CONTROL message, the UE shall update the variable CELL\_INFO\_LIST accordingly and in the following order. The UE shall:

- if the IE "Removed Inter-RAT cells" is received, at the position indicated by the IE "Inter-RAT cell id":
  - clear the cell information stored in the variable CELL\_INFO\_LIST; and
  - mark the position "vacant";
- if the IE "New Inter-RAT cells" is received, for each cell, and in the same order as the cells appear in the IE:
  - update the variable CELL\_INFO\_LIST as follows:
    - if the IE "Inter-RAT cell id" is received:
      - store received cell information at this position in the Inter-RAT cell info list in the variable CELL\_INFO\_LIST, possibly overwriting any existing information in this position; and
      - mark the position "occupied";
    - if the IE "Inter-RAT cell id" is not received:
      - store the received cell information at the first vacant position in ascending order in the Inter-RAT cell info list in the variable CELL\_INFO\_LIST; and
  - mark the position as "occupied";

When event 3b is configured in the UE within a measurement, the UE shall:

- 1> if the other RAT is GSM, and if IE "BSIC verification required" is set to "required":
  - 2> if equation 1 below has been fulfilled for a time period indicated by "time to trigger" for one or several GSM cells that match any of the BCCH ARFCN and BSIC combinations considered in that inter-RAT measurement:
    - 3> if the inter-RAT cell id of any of those GSM cell is not stored in the variable TRIGGERED\_3B\_EVENT:
      - 4> store the inter-RAT cell ids of the GSM cells that triggered the event and that were not previously stored in the variable TRIGGERED\_3B\_EVENT into that variable;
      - 4> send a measurement report with IEs set as below:
        - 5> set in "inter-RAT measurement event result": "inter-RAT event identity" to "3b", "CHOICE BSIC" to "verified BSIC" and "Inter-RAT cell id" to the GSM cells that triggered the event (worst one first);

- 5> set the IE "measured results" and the IE "additional measured results" according to TS 25.331 subclause 8.4.2.
- 2> if equation 2 below is fulfilled for a GSM cell whose inter-RAT cell id is stored in the variable TRIGGERED\_3B\_EVENT:
- 3> remove the inter-RAT cell id of that GSM cell from the variable TRIGGERED\_3B\_EVENT.
- 1> if the other RAT is GSM, and if IE "BSIC verification required" is set to "not required":
- 2> if equation 1 below has been fulfilled for a time period indicated by "time to trigger" for one or several of the BCCH ARFCNs considered in that inter-RAT measurement:
- 3> if any of those BCCH ARFCN is not stored into the variable TRIGGERED\_3B\_EVENT:
- 4> store the BCCH ARFCNs that triggered the event and that were not previously stored in the variable TRIGGERED\_3B\_EVENT into that variable;
- 4> send a measurement report with IEs set as below:
- 5> set in "inter-RAT measurement event result": "inter-RAT event identity" to "3b", "CHOICE BSIC" to "non verified BSIC" and "BCCH ARFCN" to BCCH ARFCNs that triggered the event (worst one first);
- 5> set the IE "measured results" and the IE "additional measured results" according to 8.4.2.;
- 2> if equation 2 below is fulfilled for a BCCH ARFCN that is stored in the variable TRIGGERED\_3B\_EVENT:
- 3> remove that BCCH ARFCN from the variable TRIGGERED\_3B\_EVENT.

Triggering condition:

Equation 1:

$$M_{Other\ RAT} + CIO_{Other\ RAT} \leq T_{Other\ RAT} - H_{3b} / 2$$

The variables in the formula are defined as follows:

$M_{Other\ RAT}$  is the measurement quantity for the cell of the other system.

$CIO_{Other\ RAT}$  is the cell individual offset for the cell of the other system.

$T_{Other\ RAT}$  is the absolute threshold that applies for the other system in that measurement.

$H_{3b}$  is the hysteresis parameter for event 3b.

Leaving triggered state condition:

Equation 2:

$$M_{Other\ RAT} + CIO_{Other\ RAT} > T_{Other\ RAT} + H_{3b} / 2$$

The variables in the formula are defined as follows:

$M_{Other\ RAT}$  is the measurement quantity for the cell of the other system.  $M_{Other\ RAT}$  is expressed in dBm.

$CIO_{Other\ RAT}$  is the cell individual offset for the cell of the other system.

$T_{Other\ RAT}$  is the absolute threshold that applies for the other system in that measurement.

$H_{3b}$  is the hysteresis parameter for event 3b.

Reference

3GPP TS 25.331 clause 8.6.7.3, 14.3.1.2

## 8.4.1.34.3 Test Purpose

- 1 To confirm that the UE sends MEASUREMENT REPORT message if event 3b is configured, if the estimated quality of the other system is below a given threshold.
- 2 To confirm that the hysteresis and time to trigger behaviours for event 3b are correctly implemented. To confirm that the UE updates the list of inter-RAT cells it stores according to what is ordered in the MEASUREMENT CONTROL messages received from UTRAN.

## 8.4.1.34.4 Method of test

## Initial Condition

System simulator: 1 UTRAN FDD cell and 3 GSM cells. The initial configurations of the 4 cells in the SS shall follow the values indicated in the column marked T0. The table is found in "Test procedure".

UE: CELL\_DCH state, state 6-9 as specified in clause 7.4 of TS 34.108.

## Related ICS/IXIT statements

- Compressed mode required            yes/no

## Test procedure

Table 8.4.1.34.4-1

Parameter	Unit	Cell 1 (GSM)		Cell 2 (GSM)		Cell 3 (GSM)	
		T0	T1	T0	T1	T0	T1
Test Channel	#	GSM Ch.1		GSM Ch.2		GSM Ch.3	
BCCH ARFCN	#	1		7		39	
CELL identity	#	1		2		3	
BSIC	#	BSIC 1		BSIC 2		BSIC 3	
RF Signal Level	dBm	-70	-90	-70	-70	-90	-90

The two tables above illustrate the downlink power to be applied for the two cells at various instants of the test execution. Column marked "T0" denotes the initial conditions, while column marked "T1" indicates the values to be applied subsequently.

The UE is initially in CELL\_DCH, state 6-9 as specified in clause 7.4 of TS 34.108. UTRA cell 1 is the only cell in the active set of the UE. If the UE requires compressed mode (refer ICS/IXIT), the SS sends a PHYSICAL CHANNEL RECONFIGURATION message to the UE to configure the compressed mode pattern sequence parameters to the UE. Three compressed mode patterns are configured, according to the message specified below. When the PHYSICAL CHANNEL RECONFIGURATION COMPLETE is received from the UE, the SS sends a MEASUREMENT CONTROL message to the UE, to set up inter-RAT measurements. Event 3b is set up in this message, and if the UE requires compressed mode (refer ICS/IXIT), compressed mode is activated. The monitored GSM cells at measurement establishment are GSM cells 1 and 2.

At instant T1, the RF signal strength for GSM cell 1 drops as described in table 8.4.1.34.4-1.

When the MEASUREMENT REPORT has been received by the SS, a MEASUREMENT CONTROL message is sent to the UE, to add GSM cell 3 to the monitored GSM cells.

A second MEASUREMENT REPORT triggered by event 3b shall be received shortly after by the SS. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_DCH state in the cell 1. If the UE does not require compressed mode (refer ICS/IXIT), then goto step 4.
2		←	PHYSICAL CHANNEL RECONFIGURATION	Compressed mode pattern sequence parameters are loaded to UE.
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
4		←	MEASUREMENT CONTROL	SS configures event 3b in the UE. If the UE requires compressed mode (refer ICS/IXIT), compressed mode is started.
5				SS waits for approximately 10 seconds and verifies that no MEASUREMENT REPORT messages are detected on uplink DCCH.
6				SS re-adjusts the downlink transmission power settings according to columns "T1" in tables 8.4.1.34.4-1.
7		→	MEASUREMENT REPORT	After about 60 ms, the UE sends a MEASUREMENT REPORT to SS triggered by event 3b.
8		←	MEASUREMENT CONTROL	SS adds GSM cell 3 to the list of the monitored GSM cells.
9		→	MEASUREMENT REPORT	After about 60 ms, the UE sends a MEASUREMENT REPORT to SS triggered by event 3b.
10		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Content

## PHYSICAL CHANNEL RECONFIGURATION (Step 2)

Use the same message sub-type in Annex A titled "Speech in CS", with the following exceptions:

Information Element	Value/remark
Downlink information common for all radio links	
- DPCH compressed mode info	1
- TGPSI	Deactivate
- TGPS Status Flag	Not present
- TGCFN	
- Transmission gap pattern sequence	
configuration parameters	
- TGMP	GSM Carrier RSSI Measurement
- TGPRC	Infinity
- TGSN	4
- TGL1	7
- TGL2	Not present
- TGD	0
- TGPL1	12
- TGPL2	Not present
- RPP	Mode 0
- ITP	Mode 0
CHOICE UL/DL Mode	UL and DL (depends on UE's Measurement capability)
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	1.0
- DeltaSIRAfter1	0.5
- DeltaSIR2	Not Present
- DeltaSIR2After2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	Not Present
- DPCH compressed mode info	
- TGPSI	2
- TGPS Status Flag	Deactivate
- TGCFN	Not present
- Transmission gap pattern sequence	
configuration parameters	
- TGMP	GSM BSIC identification
- TGPRC	Infinity
- TGSN	4
- TGL1	7
- TGL2	Not present
- TGD	0
- TGPL1	8
- TGPL2	Not present
- RPP	Mode 0
- ITP	Mode 0
CHOICE UL/DL Mode	UL and DL (depends on UE's Measurement capability)
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	1.0
- DeltaSIRAfter1	0.5
- DeltaSIR2	Not Present
- DeltaSIR2After2	Not Present
- N identify abort	12
- T Reconfirm abort	Not Present
- TGPSI	3
- TGPS Status Flag	Deactivate
- TGCFN	Not present
- Transmission gap pattern sequence	
configuration parameters	
- TGMP	GSM BSIC re-confirmation
- TGPRC	Infinity
- TGSN	4

- TGL1	7
- TGL2	Not present
- TGD	0
- TGPL1	8
- TGPL2	Not present
- RPP	Mode 0
- ITP	Mode 0
CHOICE UL/DL Mode	UL and DL(depends on UE's Measurement capability)
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	1.0
- DeltaSIRAfter1	0.5
- DeltaSIR2	Not Present
- DeltaSIR2After2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	5 s

## MEASUREMENT CONTROL (Step 4)

Information Element	Value/remark
Measurement Identity	3
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Event triggered
Additional measurements list	Not Present
CHOICE measurement type	
- inter-RAT measurement	
- inter-RAT measurement object list	
CHOICE Inter-RAT Cell Removal	Remove all inter-RAT cells
- Remove all inter-RAT cells	(No Data)
New inter-RAT cells (1 to <MaxCellMeas>)	MaxCellMeas=2
- inter-RAT cell id	0
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC1
- Band indicator	DCS 1800 band used
- BCCH ARFCN	1
- inter-RAT cell id	1
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC2
- Band indicator	DCS 1800 band used
- BCCH ARFCN	7
- Cell for measurement	Not present
- inter-RAT measurement quantity	
- Measurement quantity for UTRAN quality estimate	Not included
CHOICE system	GSM
- Measurement quantity	GSM carrier RSSI
- Filter coefficient	0
- BSIC verification required	required
- inter-RAT reporting quantity	
CHOICE system	GSM
- Observed time difference to to GSM cell reporting indicator	FALSE
- GSM carrier RSSI reporting indicator	TRUE
CHOICE report criteria	
- Inter-RAT measurements reporting criteria	
- Parameters required for each event (1 to <maxMeasEvent>)	<MaxMeasEvent>=1
- Inter-RAT event identity	3b
- Threshold own system	Not included
- W	Not included
- Threshold other system	-80
- Hysteresis	2
- Time to Trigger	60 ms
- Reporting cell status	Report cells within active set or within virtual active set or of the other RAT
- Maximum number of reported cells	3
Physical channel information elements	
- DPCH compressed mode status info	If the UE requires compressed mode (refer ICS/IXIT), this IE is present and contains the IEs as follows. If the UE does not require compressed mode (refer ICS/IXIT), this IE is not present.
- TGPS reconfiguration CFN	Not present
- Transmission gap pattern sequence (1 to <MaxTGPS>)	<MaxTGPS>=3
- TGPSI	1
- TGPS status flag	Activate
- TGCFN	(Current CFN + (252 - TTI/10msec))mod 256
- TGPSI	2
- TGPS status flag	Activate

- TGCFN	(Current CFN + (254 – TTI/10msec))mod 256
- TGPSI	3
- TGPS status flag	Activate
- TGCFN	(Current CFN + (250 – TTI/10msec))mod 256

MEASUREMENT REPORT (Step 7)

Information Element	Value/remark
Measurement identity	Check to see if set to 3
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-RAT measured results list"
- Inter-RAT measured result list	
- CHOICE system	GSM
- Measured GSM cells	Check that measurement results for two GSM cells are included
- GSM carrier RSSI	Check that measurement result is reasonable
CHOICE BSIC	Check it is set to verified BSIC
- inter-RAT cell id	Check that it is set to either 0 or 1
- Observed time difference to GSM cell	Check that the IE is not included
- GSM carrier RSSI	Check that measurement result is reasonable
CHOICE BSIC	Verified BSIC
- inter-RAT cell id	Check that is set to 1 if the previous inter-RAT cell id was set to 0 or to 0 if the previous cell id was set to 1.
- Observed time difference to GSM cell	Check that the IE is not present
Measured results on RACH	Check that not present
Additional Measured results	Check that not present
Event results	Check that the IE is included
- CHOICE event result	Check that this is set to inter-RAT measurement event results
- Inter-RAT event identity	Check that this is set to 3b
- Cells to report (1 to <maxCellMeas>)	Check that <maxCellMeas> is set to 1
- CHOICE BSIC	Check that this is set to verified BSIC
- Inter-RAT cell id	Check that this is set to 0.

## MEASUREMENT CONTROL (Step 8)

Information Element	Value/remark
Measurement Identity	3
Measurement Command	Modify
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Not present
- Periodic Reporting / Event Trigger Reporting Mode	Not present
Additional measurements list	Not Present
CHOICE measurement type	
- inter-RAT measurement	
- inter-RAT measurement object list	
CHOICE Inter-RAT Cell Removal	Remove no inter-RAT cells
New inter-RAT cells (1 to <MaxCellMeas>)	MaxCellMeas=1
- inter-RAT cell id	Not present
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC3
- Band indicator	DCS 1800 band used
- BCCH ARFCN	2
- Cell for measurement	Not present
- inter-RAT measurement quantity	Not present
CHOICE report criteria	
- Inter-RAT measurements reporting criteria	
- Parameters required for each event (1 to <maxMeasEvent>)	<MaxMeasEvent>=1
- Inter-RAT event identity	3b
- Threshold own system	Not present
- W	Not present
- Threshold other system	-80
- Hysteresis	2
- Time to Trigger	60 ms
- Reporting cell status	Not present
Physical channel information elements	Not present

## MEASUREMENT REPORT (Step 9)

Information Element	Value/remark
Measurement identity	Check to see if set to 3
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-RAT measured results list"
- Inter-RAT measured result list	
- CHOICE system	GSM
- Measured GSM cells	Check that measurement results for three GSM cells are included
- GSM carrier RSSI	Check that measurement result is reasonable
CHOICE BSIC	Check it is set to verified BSIC
- inter-RAT cell id	Check that it is set to either 0, 1 or 2
- Observed time difference to GSM cell	Check that the IE is not included
- GSM carrier RSSI	Check that measurement result is reasonable
CHOICE BSIC	Verified BSIC
- inter-RAT cell id	Check that is set to 0, 1 or 2 and that this inter-RAT cell id is different from the previous inter-RAT cell id.
- Observed time difference to GSM cell	Check that the IE is not present
- GSM carrier RSSI	Check that measurement result is reasonable
CHOICE BSIC	Verified BSIC
- inter-RAT cell id	Check that is set to 0, 1 or 2 and that this inter-RAT cell id is different from the two previous inter-RAT cell id.
- Observed time difference to GSM cell	Check that the IE is not present
Measured results on RACH	Check that not present
Additional Measured results	Check that not present
Event results	Check that the IE is included
- CHOICE event result	Check that this is set to inter-RAT measurement event results
- Inter-RAT event identity	Check that this is set to 3b
- Cells to report (1 to <maxCellMeas>)	Check that <maxCellMeas> is set to 1
- CHOICE BSIC	Check that this is set to verified BSIC
- Inter-RAT cell id	Check that this is set to 2.

## 8.4.1.34.5 Test requirement

Between instants T0 and T1, the UE shall not send any MEASUREMENT REPORT message to the SS.

Event 3b shall be triggered in the UE (i.e. the transmission of the first MEASUREMENT REPORT message shall begin) about 60 ms after instant T1.

About 60 ms after the reception by the UE of the second MEASUREMENT CONTROL message, the UE shall begin to transmit the second MEASUREMENT REPORT message (since the signal strength for GSM cell 3 is below the threshold for triggering event 3b).

## 8.4.1.35 Measurement Control and Report: Inter-RAT measurement, event 3c

## 8.4.1.35.1 Definition

## 8.4.1.35.2 Conformance requirement

When event 3c is configured in the UE within a measurement, the UE shall:

- 1> if the other RAT is GSM, and if IE "BSIC verification required" is set to "required":
- 2> if equation 1 below has been fulfilled for a time period indicated by "time to trigger" for one or several GSM cells that match any of the BCCH ARFCN and BSIC combinations considered in that inter-RAT measurement:
- 3> if the inter-RAT cell id of any of those GSM cell is not stored in the variable TRIGGERED\_3C\_EVENT:

- 4> store the Inter-RAT cell ids of the GSM cells that triggered the event and that were not previously stored in the variable TRIGGERED\_3C\_EVENT into that variable;
- 4> send a measurement report with IEs set as below:
  - 5> set in "inter-RAT measurement event result": "inter-RAT event identity" to "3c", "CHOICE BSIC" to "verified BSIC" and "Inter-RAT cell id" to the GSM cells that triggered the event (best one first);
  - 5> set the IE "measured results" and the IE "additional measured results" according to 8.4.2.
- 2> if equation 2 below is fulfilled for a GSM cell whose inter-RAT cell id is stored in the variable TRIGGERED\_3C\_EVENT:
  - 3> remove the inter-RAT cell id of that GSM cell from the variable TRIGGERED\_3C\_EVENT.
- 1> if the other RAT is GSM, and if IE "BSIC verification required" is set to "not required":
  - 2> if equation 1 below has been fulfilled for a time period indicated by "time to trigger" for one or several of the BCCH ARFCNs considered in that inter-RAT measurement:
    - 3> if any of those BCCH ARFCN is not stored into the variable TRIGGERED\_3C\_EVENT:
      - 4> store the BCCH ARFCNs that triggered the event and that were not previously stored in the variable TRIGGERED\_3C\_EVENT into that variable;
      - 4> send a measurement report with IEs set as below:
        - 5> set in "inter-RAT measurement event result": "inter-RAT event identity" to "3c", "CHOICE BSIC" to "non verified BSIC" and "BCCH ARFCN" to BCCH ARFCNs that triggered the event (best one first);
        - 5> set the IE "measured results" and the IE "additional measured results" according to TS 25.331 subclause 8.4.2.
    - 2> if equation 2 is fulfilled for a BCCH ARFCN that is stored in the variable TRIGGERED\_3C\_EVENT:
      - 3> remove that BCCH ARFCN from the variable TRIGGERED\_3C\_EVENT.

Triggering condition:

Equation 1:

$$M_{Other\ RAT} + CIO_{Other\ RAT} \geq T_{Other\ RAT} + H_{3c} / 2$$

The variables in the formula are defined as follows:

$M_{Other\ RAT}$  is the measurement quantity for the cell of the other system.  $M_{Other\ RAT}$  is expressed in dBm.

$CIO_{Other\ RAT}$  is the cell individual offset for the cell of the other system.

$T_{Other\ RAT}$  is the absolute threshold that applies for the other system in that measurement.

$H_{3c}$  is the hysteresis parameter for event 3c.

Leaving triggered state condition:

Equation 2:

$$M_{Other\ RAT} + CIO_{Other\ RAT} < T_{Other\ RAT} - H_{3c} / 2$$

The variables in the formula are defined as follows:

$M_{Other\ RAT}$  is the measurement quantity for the cell of the other system.  $M_{Other\ RAT}$  is expressed in dBm.

$CIO_{Other\ RAT}$  is the cell individual offset for the cell of the other system.

$T_{Other\ RAT}$  is the absolute threshold that applies for the other system in that measurement.

$H_{3c}$  is the hysteresis parameter for event 3c.

#### Reference

3GPP TS 25.331 clauses 14.3.1.3, 8.4.2.2.

#### 8.4.1.35.3 Test Purpose

- 1 To confirm that the UE sends MEASUREMENT REPORT message if event 3c is configured, and if the quality of the other system becomes better than the given threshold for event 3c.
- 2 To confirm that no other UE MEASUREMENT REPORT message is sent by the UE for a cell that has already triggered event 3c as long as the hysteresis condition for triggering once again event 3c has not been fulfilled.

#### 8.4.1.35.4 Method of test

##### Initial Condition

System simulator: 1 UTRAN FDD cell and 2 GSM cells. The initial configurations of the 4 cells in the SS shall follow the values indicated in the column marked T0. The table is found in "Test procedure".

UE: CELL\_DCH state, state 6-9 as specified in clause 7.4 of TS 34.108.

##### Related ICS/IXIT statements

- Compressed mode required            yes/no

##### Test procedure

**Table 8.4.1.35.4-1**

Parameter	Unit	Cell 1 (GSM)				Cell 2 (GSM)			
		T0	T1	T2	T3	T0	T1	T2	T3
Test Channel	#	GSM Ch.1				GSM Ch.2			
BCCH ARFCN	#	1				7			
CELL identity	#	1				2			
BSIC	#	BSIC 1				BSIC 2			
RF Signal Level	dBm	-90	-80	-90	-80	-80	-80	-80	-80

The two tables above illustrate the downlink power to be applied for the two cells at various instants of the test execution. Column marked "T0" denotes the initial conditions, while column marked "T1", "T2" and "T3" indicate the values to be applied subsequently.

The UE is initially in CELL\_DCH, state 6-9 as specified in clause 7.4 of TS 34.108. UTRA cell 1 is the only cell in the active set of the UE. If the UE requires compressed mode (refer ICS/IXIT), the SS sends a PHYSICAL CHANNEL RECONFIGURATION message to the UE to configure the compressed mode pattern sequence parameters to the UE. Three compressed mode patterns are configured, according to the message specified below. When the PHYSICAL CHANNEL RECONFIGURATION COMPLETE is received from the UE, the SS sends a MEASUREMENT CONTROL message to the UE, to set up inter-RAT measurements. Event 3c is set up in this message, and if the UE requires compressed mode (refer ICS/IXIT), compressed mode is activated.

At instant T1, the RF signal strength for GSM cell 1 increases as described in table 8.4.1.35.4-1.

At instant T2, the RF signal strength for GSM cell 2 drops as described in table 8.4.1.35.4-1, and at instant T3, it increases again to its previous level. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_DCH state in the cell 1. If the UE does not require compressed mode (refer ICS/IXIT), then goto step 4.
2		←	PHYSICAL CHANNEL RECONFIGURATION	Compressed mode pattern sequence parameters are loaded to UE.
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
4		←	MEASUREMENT CONTROL	SS configures event 3c in the UE. If the UE requires compressed mode (refer ICS/IXIT), compressed mode is started.
5				SS waits for approximately 10 seconds and verifies that no MEASUREMENT REPORT messages are detected on uplink DCCH.
6				SS re-adjusts the downlink transmission power settings according to columns "T1" in table 8.4.1.35.4-1.
7		→	MEASUREMENT REPORT	After about 100 ms, the UE sends a MEASUREMENT REPORT to SS triggered by event 3b.
8				SS re-adjusts the downlink transmission power settings according to columns "T2" in table 8.4.1.35.4-1.
9				SS re-adjusts the downlink transmission power settings according to columns "T3" in table 8.4.1.35.4-1.
10				SS waits for approximately 10 seconds and verifies that no MEASUREMENT REPORT messages are detected on uplink DCCH.
11		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Content

## PHYSICAL CHANNEL RECONFIGURATION (Step 2)

Use the same message sub-type in Annex A titled "Speech in CS", with the following exceptions:

Information Element	Value/remark
Downlink information common for all radio links	
- DPCH compressed mode info	1
- TGPSI	Deactivate
- TGPS Status Flag	Not present
- TGCFN	
- Transmission gap pattern sequence	
configuration parameters	
- TGMP	GSM Carrier RSSI Measurement
- TGPRC	Infinity
- TGSN	4
- TGL1	7
- TGL2	Not present
- TGD	0
- TGPL1	12
- TGPL2	Not present
- RPP	Mode 0
- ITP	Mode 0
CHOICE UL/DL Mode	UL and DL (depends on UE's Measurement capability)
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	1.0
- DeltaSIRAfter1	0.5
- DeltaSIR2	Not Present
- DeltaSIR2After2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	Not Present
- DPCH compressed mode info	
- TGPSI	2
- TGPS Status Flag	Deactivate
- TGCFN	Not present
- Transmission gap pattern sequence	
configuration parameters	
- TGMP	GSM BSIC identification
- TGPRC	Infinity
- TGSN	4
- TGL1	7
- TGL2	Not present
- TGD	0
- TGPL1	8
- TGPL2	Not present
- RPP	Mode 0
- ITP	Mode 0
CHOICE UL/DL Mode	UL and DL (depends on UE's Measurement capability)
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	1.0
- DeltaSIRAfter1	0.5
- DeltaSIR2	Not Present
- DeltaSIR2After2	Not Present
- N identify abort	12
- T Reconfirm abort	Not Present
- TGPSI	3
- TGPS Status Flag	Deactivate
- TGCFN	Not present
- Transmission gap pattern sequence	
configuration parameters	
- TGMP	GSM BSIC re-confirmation
- TGPRC	Infinity
- TGSN	4

- TGL1	7
- TGL2	Not present
- TGD	0
- TGPL1	8
- TGPL2	Not present
- RPP	Mode 0
- ITP	Mode 0
CHOICE UL/DL Mode	UL and DL(depends on UE's Measurement capability)
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	1.0
- DeltaSIRAfter1	0.5
- DeltaSIR2	Not Present
- DeltaSIR2After2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	5 s

MEASUREMENT CONTROL (Step 4)

Information Element	Value/remark
Measurement Identity	3
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Event triggered
Additional measurements list	Not Present
CHOICE measurement type	
- inter-RAT measurement	
- inter-RAT measurement object list	
CHOICE Inter-RAT Cell Removal	Remove all inter-RAT cells
- Remove all inter-RAT cells	(No Data)
New inter-RAT cells (1 to <MaxCellMeas>)	MaxCellMeas=2
- inter-RAT cell id	0
CHOICE Radio Access Technology	GSM
- Cell individual offset	10
- Cell selection and re-selection info	Not present
- BSIC	BSIC1
- Band indicator	DCS 1800 band used
- BCCH ARFCN	1
- inter-RAT cell id	1
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC2
- Band indicator	DCS 1800 band used
- BCCH ARFCN	7
- Cell for measurement	Not present
- inter-RAT measurement quantity	
- Measurement quantity for UTRAN quality estimate	Not included
CHOICE system	GSM
- Measurement quantity	GSM carrier RSSI
- Filter coefficient	0
- BSIC verification required	required
- inter-RAT reporting quantity	
CHOICE system	GSM
- Observed time difference to to GSM cell	FALSE
reporting indicator	
- GSM carrier RSSI reporting indicator	TRUE
CHOICE report criteria	
- Inter-RAT measurements reporting criteria	
- Parameters required for each event (1 to<maxMeasEvent>)	<MaxMeasEvent>=1
- Inter-RAT event identity	3c
- Threshold own system	Not included
- W	Not included

<ul style="list-style-type: none"> <li>- Threshold other system</li> <li>- Hysteresis</li> <li>- Time to Trigger</li> <li>- Reporting cell status</li>   <li>- Maximum number of reported cells</li> </ul> <p>Physical channel information elements</p> <ul style="list-style-type: none"> <li>- DPCCH compressed mode status info</li>   <li>- TGPS reconfiguration CFN</li> <li>- Transmission gap pattern sequence (1 to &lt;MaxTGPS&gt;)</li> <li>- TGPSI</li> <li>- TGPS status flag</li> <li>- TGCFN</li> <li>- TGPSI</li> <li>- TGPS status flag</li> <li>- TGCFN</li> <li>- TGPSI</li> <li>- TGPS status flag</li> <li>- TGCFN</li> </ul>	<p>-80</p> <p>5</p> <p>100 ms</p> <p>Report cells within active set or within virtual active set or of the other RAT</p> <p>2</p> <p>If the UE requires compressed mode (refer ICS/IXIT), this IE is present and contains the IEs as follows. If the UE does not require compressed mode (refer ICS/IXIT), this IE is not present.</p> <p>Not present</p> <p>&lt;MaxTGPS&gt;=3</p> <p>1</p> <p>Activate</p> <p>(Current CFN + (252 – TTI/10msec))mod 256</p> <p>2</p> <p>Activate</p> <p>(Current CFN + (254 – TTI/10msec))mod 256</p> <p>3</p> <p>Activate</p> <p>(Current CFN + (250 – TTI/10msec))mod 256</p>
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MEASUREMENT REPORT (Step 7)

Information Element	Value/remark
Measurement identity	Check to see if set to 3
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-RAT measured results list"
- Inter-RAT measured result list	
- CHOICE system	GSM
- Measured GSM cells	Check that measurement results for two GSM cells are included
- GSM carrier RSSI	Check that measurement result is reasonable
CHOICE BSIC	Check it is set to verified BSIC
- inter-RAT cell id	Check that it is set to either 0 or 1
- Observed time difference to GSM cell	Check that the IE is not included
- GSM carrier RSSI	Check that measurement result is reasonable
CHOICE BSIC	Verified BSIC
- inter-RAT cell id	Check that is set to 1 if the previous inter-RAT cell id was set to 0 or to 0 if the previous cell id was set to 1.
- Observed time difference to GSM cell	Check that the IE is not present
Measured results on RACH	Check that not present
Additional Measured results	Check that not present
Event results	Check that the IE is included
- CHOICE event result	Check that this is set to inter-RAT measurement event results
- Inter-RAT event identity	Check that this is set to 3c
- Cells to report (1 to <maxCellMeas>)	Check that <maxCellMeas> is set to 1
- CHOICE BSIC	Check that this is set to verified BSIC
- Inter-RAT cell id	Check that this is set to 0.

8.4.1.35.4 Test requirement

About 100 ms after instant T1, since the cell individual offset for GSM cell 1 is +10 dB, event 3c shall be triggered in the UE, i.e the UE shall begin to transmit a MEASUREMENT REPORT to the SS. Note that GSM cell 2 has not triggered event 3c even though the RF signal strength for GSM cell 2 is the same as for cell 1, because the cell individual offset for GSM cell 2 is 0 dB.

After instant T2, no MEASUREMENT REPORT shall be received from the UE, since GSM cell 1 has already triggered event 3c, and since the RF signal strength has not dropped enough for it to trigger the event once again.

## 8.4.1.36 Measurement Control and Report: Inter-RAT measurement, event 3d

### 8.4.1.36.1 Definition

### 8.4.1.36.2 Conformance requirement

When event 3d is configured in the UE within a measurement, the UE shall:

- 1> if the other RAT is GSM, and if IE "BSIC verification required" is set to "required":
  - 2> when the measurement is initiated or resumed:
    - 3> store in the variable BEST\_CELL\_3D\_EVENT the Inter-RAT cell id of the GSM cell that has the best measured quantity among the GSM cells that match any of the BCCH ARFCN and BSIC combinations considered in that inter-RAT measurement
    - 3> send a measurement report with IE set as below:
      - 4> set in "inter-RAT measurement event result": "inter-RAT event identity" to "3d", "CHOICE BSIC" to "verified BSIC" and "Inter-RAT cell id" to the GSM cell that is stored in the variable BEST\_CELL\_3D\_EVENT;
      - 4> set the IE "measured results" and the IE "additional measured results" according to TS 25.331 subclause 8.4.2.
  - 2> if equation 1 has been fulfilled for a time period indicated by "time to trigger" for a GSM cell that is different from the one stored in BEST\_CELL\_3D\_EVENT and that matches any of the BCCH ARFCN and BSIC combinations considered in that inter-RAT measurement:
    - 3> store the Inter-RAT cell id of that GSM cell in the variable BEST\_CELL\_3D\_EVENT;
    - 3> send a measurement report with IEs set as below:
      - 4> set in "inter-RAT measurement event result": "inter-RAT event identity" to "3d", "CHOICE BSIC" to "verified BSIC" and "Inter-RAT cell id" to the GSM cell is now stored in BEST\_CELL\_3D\_EVENT;
      - 4> set the IE "measured results" and the IE "additional measured results" according to TS 25.331 subclause 8.4.2.
- 1> if the other RAT is GSM, and if IE "BSIC verification required" is set to "not required":
  - 2> when the measurement is initiated or resumed:
    - 3> store in the variable BEST\_CELL\_3D\_EVENT the BCCH ARFCN of the GSM cell that has the best measured quantity among the BCCH ARFCNs considered in that inter-RAT measurement;
    - 3> send a measurement report with IE set as below:
      - 4> set in "inter-RAT measurement event result": "inter-RAT event identity" to "3d", "CHOICE BSIC" to "non verified BSIC" and "BCCH ARFCN" to the BCH ARFCN that is stored in the variable BEST\_CELL\_3D\_EVENT;
      - 4> set the IE "measured results" and the IE "additional measured results" according to TS 25.331 subclause 8.4.2.
  - 2> if equation 1 below has been fulfilled for a time period indicated by "time to trigger" for one of the BCCH ARFCNs considered in that inter-RAT measurement and different from the one stored in BEST\_CELL\_3D\_EVENT:
    - 3> store the BCCH ARFCN of that GSM cell in the variable BEST\_CELL\_3D\_EVENT;
    - 3> send a measurement report with IEs set as below:

- 4> set in "inter-RAT measurement event result": "inter-RAT event identity" to "3d", "CHOICE BSIC" to "non verified BSIC" and "BCCH ARFCN" to the BCCH ARFCN that is now stored in the variable BEST\_CELL\_3D\_EVENT;
- 4> set the IE "measured results" and the IE "additional measured results" according to TS 25.331 subclause 8.4.2.

Equation 1:

$$M_{New} \geq M_{Best} + H_{3d} / 2$$

The variables in the formula are defined as follows:

$M_{New}$  is the measurement quantity for a GSM cell that is not stored in the variable BEST\_CELL\_3D.

$M_{Best}$  is the measurement quantity for a GSM cell that is stored in the variable BEST\_CELL\_3D.

$H_{3d}$  is the hysteresis parameter for event 3d.

Reference

3GPP TS 25.331 clause 14.3.1.4.

8.4.1.36.3 Test Purpose

1. To confirm that the UE sends MEASUREMENT REPORT message if event 3d is configured, and if the best cell changes in the other system. To confirm that no other UE MEASUREMENT REPORT message is sent by the UE for a cell that has already triggered event 3d as long as the hysteresis condition for triggering once again event 3d has not been fulfilled.

8.4.1.36.4 Method of test

Initial Condition

System simulator: 1 UTRAN FDD cell and 2 GSM cells. The initial configurations of the 4 cells in the SS shall follow the values indicated in the column marked T0. The table is found in "Test procedure".

UE: CELL\_DCH state, state 6-9 as specified in clause 7.4 of TS 34.108.

Related ICS/IXIT statements

- Compressed mode required                      yes/no

Test procedure

**Table 8.4.1.36.4-1**

Parameter	Unit	Cell 1 (GSM)		Cell 2 (GSM)	
		T0	T2	T0	T1
Test Channel	#	GSM Ch.1		GSM Ch.2	
BCCH ARFCN	#	1		7	
CELL identity	#	1		2	
BSIC	#	BSIC 1		BSIC 2	
RF Signal Level	dBm	-70	-90	-90	-70

The two tables above illustrate the downlink power to be applied for the two cells at various instants of the test execution. Column marked "T0" denotes the initial conditions, while column marked "T1", "T2" and "T3" indicate the values to be applied subsequently.

The UE is initially in CELL\_DCH, state 6-9 as specified in clause 7.4 of TS 34.108. UTRA cell 1 is the only cell in the active set of the UE. If the UE requires compressed mode (refer ICS/IXIT), the SS sends a PHYSICAL CHANNEL RECONFIGURATION message to the UE to configure the compressed mode pattern sequence parameters to the UE. Three compressed mode patterns are configured, according to the message specified below. When the PHYSICAL CHANNEL RECONFIGURATION COMPLETE is received from the UE, the SS sends a MEASUREMENT CONTROL message to the UE, to set up inter-RAT measurements. Event 3d is set up in this message, and if the UE requires compressed mode (refer ICS/IXIT), compressed mode is activated.

At instant T1, the RF signal strength for GSM cell 1 increases while the RF signal strength for GSM cell 2 decreases as described in table 8.4.1.36.4-1.

A MEASUREMENT CONTROL is then sent to the UE that releases the inter-RAT measurement, and deactivates compressed mode. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

#### Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_DCH state in the cell 1. If the UE does not require compressed mode (refer ICS/IXIT), then goto step 4.
2		←	PHYSICAL CHANNEL RECONFIGURATION	Compressed mode pattern sequence parameters are loaded to UE.
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
4		←	MEASUREMENT CONTROL	SS configures event 3d in the UE. If the UE requires compressed mode (refer ICS/IXIT), compressed mode is started.
5		→	MEASUREMENT REPORT	The UE sends a MEASUREMENT REPORT to UTRAN indicating which is the best GSM cells just after the initiation of the measurement
6				SS re-adjusts the downlink transmission power settings according to columns "T1" in tables 8.4.1.36.4-1.
7		→	MEASUREMENT REPORT	After about 200 ms, the UE sends a MEASUREMENT REPORT to SS triggered by event 3b.
8		←	MEASUREMENT CONTROL	SS releases the inter-RAT measurements, and, if the UE requires compressed mode (refer ICS/IXIT), deactivates compressed mode.
9				If the UE requires compressed mode (refer ICS/IXIT), SS checks that the UE has deactivated compressed mode.
10		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Content

## PHYSICAL CHANNEL RECONFIGURATION (Step 2)

Use the same message sub-type in Annex A titled "Speech in CS", with the following exceptions:

Information Element	Value/remark
Downlink information common for all radio links	
- DPCH compressed mode info	1
- TGPSI	Deactivate
- TGPS Status Flag	Not present
- TGCFN	
- Transmission gap pattern sequence	
configuration parameters	
- TGMP	GSM Carrier RSSI Measurement
- TGPRC	Infinity
- TGSN	4
- TGL1	7
- TGL2	Not present
- TGD	0
- TGPL1	12
- TGPL2	Not present
- RPP	Mode 0
- ITP	Mode 0
CHOICE UL/DL Mode	UL and DL (depends on UE's Measurement capability)
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	1.0
- DeltaSIRAfter1	0.5
- DeltaSIR2	Not Present
- DeltaSIR2After2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	Not Present
- DPCH compressed mode info	
- TGPSI	2
- TGPS Status Flag	Deactivate
- TGCFN	Not present
- Transmission gap pattern sequence	
configuration parameters	
- TGMP	GSM BSIC identification
- TGPRC	Infinity
- TGSN	4
- TGL1	7
- TGL2	Not present
- TGD	0
- TGPL1	8
- TGPL2	Not present
- RPP	Mode 0
- ITP	Mode 0
CHOICE UL/DL Mode	UL and DL (depends on UE's Measurement capability)
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	1.0
- DeltaSIRAfter1	0.5
- DeltaSIR2	Not Present
- DeltaSIR2After2	Not Present
- N identify abort	12
- T Reconfirm abort	Not Present
- TGPSI	3
- TGPS Status Flag	Deactivate
- TGCFN	Not present
- Transmission gap pattern sequence	
configuration parameters	
- TGMP	GSM BSIC re-confirmation
- TGPRC	Infinity
- TGSN	4

- TGL1	7
- TGL2	Not present
- TGD	0
- TGPL1	8
- TGPL2	Not present
- RPP	Mode 0
- ITP	Mode 0
CHOICE UL/DL Mode	UL and DL(depends on UE's Measurement capability)
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	1.0
- DeltaSIRAfter1	0.5
- DeltaSIR2	Not Present
- DeltaSIR2After2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	5 s

MEASUREMENT CONTROL (Step 4)

Information Element	Value/remark
Measurement Identity	3
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Event triggered
Additional measurements list	Not Present
CHOICE measurement type	
- inter-RAT measurement	
- inter-RAT measurement object list	
CHOICE Inter-RAT Cell Removal	Remove all inter-RAT cells
-Remove all inter-RAT cells	(No Data)
New inter-RAT cells (1 to <MaxCellMeas>)	MaxCellMeas=2
- inter-RAT cell id	Not present
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC1
- Band indicator	DCS 1800 band used
- BCCH ARFCN	1
- inter-RAT cell id	Not present
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC2
- Band indicator	DCS 1800 band used
- BCCH ARFCN	7
- Cell for measurement	Not present
- inter-RAT measurement quantity	
- Measurement quantity for UTRAN quality estimate	Not included
CHOICE system	GSM
- Measurement quantity	GSM carrier RSSI
- Filter coefficient	0
- BSIC verification required	required
- inter-RAT reporting quantity	
CHOICE system	GSM
- Observed time difference to to GSM cell reporting indicator	FALSE
- GSM carrier RSSI reporting indicator	TRUE
CHOICE report criteria	
- Inter-RAT measurements reporting criteria	
- Parameters required for each event (1 to<maxMeasEvent>)	<MaxMeasEvent>=1
- Inter-RAT event identity	3d
- Threshold own system	Not present
- W	Not present

<ul style="list-style-type: none"> <li>- Threshold other system</li> <li>- Hysteresis</li> <li>- Time to Trigger</li> <li>- Reporting cell status</li> </ul>	<p>Not present</p> <p>5</p> <p>200 ms</p> <p>Report cells within active set or within virtual active set or of the other RAT</p> <p>2</p>
<p>Physical channel information elements</p> <ul style="list-style-type: none"> <li>- DPCH compressed mode status info</li> </ul>	<p>If the UE requires compressed mode (refer ICS/IXIT), this IE is present and contains the IEs as follows. If the UE does not require compressed mode (refer ICS/IXIT), this IE is not present.</p> <p>Not present</p> <p>&lt;MaxTGPS&gt;=3</p>
<ul style="list-style-type: none"> <li>- TGPS reconfiguration CFN</li> <li>- Transmission gap pattern sequence (1 to &lt;MaxTGPS&gt;)</li> </ul>	<p>1</p> <p>Activate</p> <p>(Current CFN + (252 – TTI/10msec))mod 256</p>
<ul style="list-style-type: none"> <li>- TGPSI</li> <li>- TGPS status flag</li> <li>- TGCFN</li> </ul>	<p>2</p> <p>Activate</p> <p>(Current CFN + (254 – TTI/10msec))mod 256</p>
<ul style="list-style-type: none"> <li>- TGPSI</li> <li>- TGPS status flag</li> <li>- TGCFN</li> </ul>	<p>3</p> <p>Activate</p> <p>(Current CFN + (250 – TTI/10msec))mod 256</p>

MEASUREMENT REPORT (Step 5)

Information Element	Value/remark
Measurement identity	Check to see if set to 3
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-RAT measured results list"
- Inter-RAT measured result list	
- CHOICE system	GSM
- Measured GSM cells	Check that measurement results for two GSM cells are included
- GSM carrier RSSI	Check that measurement result is reasonable
CHOICE BSIC	Check it is set to verified BSIC
- inter-RAT cell id	Check that it is set to either 0 or 1
- Observed time difference to GSM cell	Check that the IE is not included
- GSM carrier RSSI	Check that measurement result is reasonable
CHOICE BSIC	Verified BSIC
- inter-RAT cell id	Check that is set to 1 if the previous inter-RAT cell id was set to 0 or to 0 if the previous cell id was set to 1.
- Observed time difference to GSM cell	Check that the IE is not present
Measured results on RACH	Check that not present
Additional Measured results	Check that not present
Event results	Check that the IE is included
- CHOICE event result	Check that this is set to inter-RAT measurement event results
- Inter-RAT event identity	Check that this is set to 3d
- Cells to report (1 to <maxCellMeas>)	Check that <maxCellMeas> is set to 1
- CHOICE BSIC	Check that this is set to verified BSIC
- Inter-RAT cell id	Check that this is set to 0.

## MEASUREMENT REPORT (Step 7)

Information Element	Value/remark
Measurement identity	Check to see if set to 3
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-RAT measured results list"
- Inter-RAT measured result list	
- CHOICE system	GSM
- Measured GSM cells	Check that measurement results for two GSM cells are included
- GSM carrier RSSI	Check that measurement result is reasonable
CHOICE BSIC	Check it is set to verified BSIC
- inter-RAT cell id	Check that it is set to either 0 or 1
- Observed time difference to GSM cell	Check that the IE is not included
- GSM carrier RSSI	Check that measurement result is reasonable
CHOICE BSIC	Verified BSIC
- inter-RAT cell id	Check that is set to 1 if the previous inter-RAT cell id was set to 0 or to 0 if the previous cell id was set to 1.
- Observed time difference to GSM cell	Check that the IE is not present
Measured results on RACH	Check that not present
Additional Measured results	Check that not present
Event results	Check that the IE is included
- CHOICE event result	Check that this is set to inter-RAT measurement event results
- Inter-RAT event identity	Check that this is set to 3d
- Cells to report (1 to <maxCellMeas>)	Check that <maxCellMeas> is set to 1
- CHOICE BSIC	Check that this is set to verified BSIC
- Inter-RAT cell id	Check that this is set to 1.

## MEASUREMENT CONTROL (Step 8)

Information Element	Value/remark
Measurement Identity	3
Measurement Command	Release
Physical channel information elements	
- DPCH compressed mode status info	If the UE requires compressed mode (refer ICS/IXIT), this IE is present and contains the IEs as follows. If the UE does not require compressed mode (refer ICS/IXIT), this IE is not present.
- TGPS reconfiguration CFN	(Current CFN + (256 – TTI/10msec))mod 256
- Transmission gap pattern sequence (1 to <MaxTGPS>)	<MaxTGPS>=3
- TGPSI	1
- TGPS status flag	Deactivate
- TGCFN	Not present
- TGPSI	2
- TGPS status flag	Deactivate
- TGCFN	Not present
- TGPSI	3
- TGPS status flag	Deactivate
- TGCFN	Not present

## 8.4.1.36.5 Test requirement

Shortly after the UE has received the first MEASUREMENT CONTROL message it shall transmit a MEASUREMENT REPORT to the SS.

About 200 ms after instant T1, the UE shall begin to transmit a MEASUREMENT REPORT triggered by event 3d to the SS.

After receiving the second MEASUREMENT CONTROL message, the UE shall then stop running compressed mode.

### 8.4.1.37 Measurement Control and Report: UE internal measurement, event 6c

#### 8.4.1.37.1 Definition

#### 8.4.1.37.2 Conformance requirement

When this event is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when the UE Tx power reaches its minimum value.

#### Reference

3GPP TS 25.331 clause 14.6.2.3.

#### 8.4.1.37.3 Test Purpose

1. To confirm that the UE sends a measurement report for event 6c when the UE Tx power reaches its minimum value when event 6c has been configured in the UE through a MEASUREMENT CONTROL message.

#### 8.4.1.37.4 Method of test

#### Initial Condition

System simulator: 1 UTRAN FDD cell.

UE: CELL\_DCH state, state 6-9 as specified in clause 7.4 of TS 34.108.

#### Test procedure

The UE is initially in CELL\_DCH, state 6-9 as specified in clause 7.4 of TS 34.108.

The SS sends a MEASUREMENT CONTROL message to the UE that configures event 6c.

The SS sends TPC\_cmd equal to -1 until the transmitter power of the UE reaches its minimum value. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

#### Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_DCH state in the cell 1.
2		←	MEASUREMENT CONTROL	SS configures event 6c in the UE.
3		←		The SS sends TPC_cmd equal to -1 until the transmitter power of the UE reaches its minimum value, which shall be below -50 dBm.
4		→	MEASUREMENT REPORT	The UE sends a MEASUREMENT REPORT to SS triggered by event 6c.
5		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

Specific message content

#### MEASUREMENT CONTROL (Step 2)

Information Element	Value/remark
Measurement Identity	6
Measurement Command	Setup
Measurement Reporting Mode	Acknowledged Mode RLC
- Measurement Reporting Transfer Mode	Event triggered
- Periodic Reporting / Event Trigger Reporting Mode	Not Present
Additional measurements list	
CHOICE measurement type	
- UE internal measurement	UE Transmitter Power
- UE internal measurement quantity	0
- Filter coefficient	
- UE internal reporting quantity	TRUE
- UE Transmitted power	
CHOICE mode	
- UE Rx-Tx time difference	FALSE
CHOICE report criteria	
- UE internal measurement reporting criteria	
- Parameters sent for each UE internal measurement event	1 event
- UE internal event identity	event 6c
- Time to trigger	0

#### MEASUREMENT REPORT (Step 4)

Information Element	Value/remark
Measurement identity	Check to see if set to 6
Measured Results	
- CHOICE measurement	Check to see if set to "UE internal measurement"
- UE internal measured results	
- UE Transmitted Power	Check that this IE is set a value that is below -50 dBm.
- UE Rx-Tx report entities	Check that this IE is not included
Measured results on RACH	Check that this IE is not included
Additional measured results	Check that this IE is not included
Event Results	
CHOICE <i>event result</i>	Check that this IE is set to UE internal measurement event results
UE internal measurement results	
UE internal event identity	Check that this IE is set to 6c
CHOICE <i>mode</i>	
Primary CPICH info	This IE should not be included

#### 8.4.1.37.5 Test requirement

The UE shall then begin transmitting a MEASUREMENT REPORT message to SS triggered by event 6c when its transmit power has reached its minimum output power. The minimum transmitted power of the UE shall be less than -50dBm.

#### 8.4.1.38 Measurement Control and Report: UE internal measurement, event 6d

##### 8.4.1.38.1 Definition

##### 8.4.1.38.2 Conformance requirement

When this event is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when the UE Tx power reaches its maximum value.

## Reference

3GPP TS 25.331 clause 14.6.2.4

## 8.4.1.38.3 Test Purpose

1. To confirm that the UE sends a measurement report for event 6d when the UE Tx power reaches its maximum value when event 6d has been configured in the UE through a MEASUREMENT CONTROL message.

## 8.4.1.38.4 Method of test

## Initial Condition

System simulator: 1 UTRAN FDD cell .

UE: CELL\_DCH state, state 6-9 as specified in clause 7.4 of TS 34.108.

## Test procedure

The UE is initially in CELL\_DCH, state 6-9 as specified in clause 7.4 of TS 34.108.

The SS sends TPC\_cmd equal to +1 until the transmitter power of the UE reaches its maximum value. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_DCH state in the cell 1.
2		←	MEASUREMENT CONTROL	SS configures event 6d in the UE.
3		←		The SS sends TPC_cmd equal to +1 until the transmitter power of the UE reaches its maximum value.
4		→	MEASUREMENT REPORT	After about 200 ms, the UE sends a MEASUREMENT REPORT to SS triggered by event 6d.
5		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## MEASUREMENT CONTROL (Step 1)

Information Element	Value/remark
Measurement Identity	6
Measurement Command	Setup
Measurement Reporting Mode	Acknowledged Mode RLC
- Measurement Reporting Transfer Mode	Event triggered
- Periodic Reporting / Event Trigger Reporting Mode	Not Present
Additional measurements list	
CHOICE measurement type	
- UE internal measurement	
- UE internal measurement quantity	UE Transmitter Power
- Filter coefficient	0
- UE internal reporting quantity	
- UE Transmitted power	TRUE
- CHOICE mode	
- UE Rx-Tx time difference	FALSE
CHOICE report criteria	
- UE internal measurement reporting criteria	
- Parameters sent for each UE internal measurement event	1 event
- UE internal event identity	event 6d
- Time to trigger	200

## MEASUREMENT REPORT (Step 3)

Information Element	Value/remark
Measurement identity	Check to see if set to 6
Measured Results	
- CHOICE measurement	Check to see if set to "UE internal measurement"
- UE internal measured results	
- UE Transmitted Power	Check that this IE is set to the maximum outpower of the UE.
- UE Rx-Tx report entities	Check that this IE is not included
Measured results on RACH	Check that this IE is not included
Additional measured results	Check that this IE is not included
Event Results	
CHOICE <i>event result</i>	Check that this IE is set to UE internal measurement event results
UE internal measurement results	
UE internal event identity	Check that this IE is set to 6d
CHOICE <i>mode</i>	
Primary CPICH info	This IE should not be included

## 8.4.1.38.5 Test requirement

The UE shall then begin transmitting a MEASUREMENT REPORT message to SS triggered by event 6d when its transmit power has reached its maximum. The maximum transmitted power of the UE shall be according to the class of the UE.

## 8.4.1.39 Measurement Control and Report: UE internal measurement, event 6e

## 8.4.1.39.1 Definition

## 8.4.1.39.2 Conformance requirement

When this event is ordered by UTRAN in a measurement control message, the UE shall send a measurement report when the UE RSSI reaches the UE's dynamic receiver range.

## Reference

3GPP TS 25.331 clause 14.6.2.5

8.4.1.39.3 Test Purpose

1. To confirm that the UE sends a measurement report for event 6e when the UE RSSI reaches the UE's dynamic receiver range when event 6e has been configured in the UE through a MEASUREMENT CONTROL message.

8.4.1.39.4 Method of test

Initial Condition

System simulator: 1 UTRAN FDD cell .

UE: CELL\_DCH state, state 6-9 as specified in clause 7.4 of TS 34.108.

Test procedure

The UE is initially in CELL\_DCH, state 6-9 as specified in clause 7.4 of TS 34.108.

The SS increases its output power by 0.5 dB step until the UE RSSI reaches the UE's receiver dynamic range. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

Expected sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_DCH state in the cell 1.
2		←	MEASUREMENT CONTROL	SS configures event 6e in the UE.
3		←		The SS increases its output power by 0.5 dB steps until the UE RSSI reaches the UE's receiver dynamic range.
4		→	MEASUREMENT REPORT	The UE sends a MEASUREMENT REPORT to SS triggered by event 6e.
5		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

MEASUREMENT CONTROL (Step 1)

Information Element	Value/remark
Measurement Identity	6
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Event triggered
Additional measurements list	Not Present
CHOICE measurement type	
- UE internal measurement	
- UE internal measurement quantity	UTRA Carrier RSSI
- Filter coefficient	0
- UE internal reporting quantity	Not included
CHOICE report criteria	
- UE internal measurement reporting criteria	
- Parameters sent for each UE internal measurement event	1 event
- UE internal event identity	event 6e
- Time to trigger	0

## MEASUREMENT REPORT (Step 3)

Information Element	Value/remark
Measurement identity	Check to see if set to 6
Measured Results	Check that this IE is not included
Measured results on RACH	Check that this IE is not included
Additional measured results	Check that this IE is not included
Event Results	
CHOICE <i>event result</i>	Check that this IE is set to UE internal measurement event results
UE internal measurement results	
UE internal event identity	Check that this IE is set to 6e
CHOICE <i>mode</i>	
Primary CPICH info	This IE should not be included

## 8.4.1.39.5 Test requirement

The UE shall then begin transmitting a MEASUREMENT REPORT message to SS triggered by event 6e when the UE RSSI reaches the UE's receiver dynamic range.

## 8.4.1.40 Measurement Control and Report: Inter-RAT measurement, event 3C, in CELL\_DCH state using sparse compressed mode pattern

## 8.4.1.40.1 Definition

## 8.4.1.40.2 Conformance requirement

1. Upon reception of a MEASUREMENT CONTROL message the UE shall perform actions specified in 3GPP TS 25.331 clause 8.6 unless otherwise specified below.

The UE shall:

- read the IE "Measurement command";
- if the IE "measurement command" has the value "setup":
  - store this measurement in the variable MEASUREMENT\_IDENTITY according to the IE "measurement identity", possibly overwriting the measurement previously stored with that identity;
  - for measurement types "inter-RAT measurement" or "inter-frequency measurement":
    - if, according to its measurement capabilities, the UE requires compressed mode to perform the measurements and a compressed mode pattern sequence with an appropriate measurement purpose is simultaneously activated by the IE "DPCH compressed mode status info"; or
    - if, according to its measurement capabilities, the UE does not require compressed mode to perform the measurements:
      - begin measurements according to the stored control information for this measurement identity;
- 2. Event 3c: The estimated quality of other system is above a certain threshold. When this event is ordered by UTRAN in a measurement control message the UE shall send a report when the estimated quality of the other system is above the value of the IE "Threshold other system" and the hysteresis and time to trigger conditions are fulfilled. The corresponding report contains information specific for the other system.

## Reference

3GPP TS 25.331 clause 8.4.1.3, 14.3.1.3.

## 8.4.1.40.3 Test Purpose

1. To verify that the UE performs Inter-RAT measurement using a sparse compressed mode pattern as specified in the MEASUREMENT CONTROL message.
2. To verify that the UE send MEASUREMENT REPORT message when event 3C is triggered, and if the quality of the other system becomes better than the given threshold for event 3c.
3. To confirm that no other UE MEASUREMENT REPORT message is sent by the UE for a cell that has already triggered event 3c as long as the hysteresis condition for triggering once again event 3c has not been fulfilled.

## 8.4.1.40.4 Method of test

**Table 8.4.1.40.4.1 Sparse compressed mode pattern for Inter.RAT measurement**

TGMP	TGCFN	TGPRC	TGSM	TGL1	TGL2	TGD	TGPL1	TGPL2	Comment
GSM carrier RSSI measurement	Note 1	Inf.	4	7	Not sent	0	12		Set-up to monitor 12 GSM neighbours every second measurement period, i.e. every second 480ms period.
GSM Initial BSIC identification	Note 1	Inf.	4	7	Not sent	0	8		Equal to Pattern 6 in TS 25.133 table 8.7.
GSM BSIC re-confirmation	Note 1	Inf.	4	7	Not sent	0	8		Equal to Pattern 12 in TS 25.133 table 8.8.

NOTE 1: TGCFN can be found in the MEASUREMENT CONTROL message.

## Initial Condition

System simulator: 1 UTRAN FDD cell and 2 GSM cells. The initial configurations of the 2 cells in the SS shall follow the values indicated in the column marked T0. The table is found in "Test procedure".

UE: CELL\_DCH state, state 6-9 as specified in clause 7.4 of TS 34.108.

## Related ICS/IXIT statements

- Compressed mode required                    yes/no

## Test procedure

**Table 8.4.1.40.4.2 Inter-RAT cell specific data**

Parameter	Unit	Cell 1 (GSM)				Cell 2 (GSM)			
		T0	T1	T2	T3	T0	T1	T2	T3
Test Channel	#	GSM Ch.1				GSM Ch.2			
BCCH ARFCN	#	1				7			
CELL identity	#	1				2			
BSIC	#	BSIC 1				BSIC 2			
RF Signal Level	dBm	-90	-80	-90	-80	-80	-80	-80	-80

GSM cell 3 to 12 as indicated in the a MEASUREMENT CONTROL message shall not be active in the test, i.e. no BCCH carrier shall be transmitted for GSM cell 3 to 12 in this test.

The table above illustrate the downlink power to be applied for the two cells at various instants of the test execution. Column marked "T0" denotes the initial conditions, while column marked "T1", "T2" and "T3" indicate the values to be applied subsequently.

The UE is initially in CELL\_DCH, state 6-9 as specified in clause 7.4 of TS 34.108. UTRA cell 1 is the only cell in the active set of the UE. If the UE requires compressed mode (refer ICS/IXIT), the SS sends a PHYSICAL CHANNEL RECONFIGURATION message to the UE to configure the compressed mode pattern sequence parameters to the UE. Three compressed mode patterns are configured, according to the message specified below. When the PHYSICAL CHANNEL RECONFIGURATION COMPLETE is received from the UE, the SS sends a MEASUREMENT CONTROL message to the UE, to set up inter-RAT measurements on 12 GSM cells. Event 3c is set up in this message, and if the UE requires compressed mode (refer ICS/IXIT), compressed mode is activated.

At instant T1, the RF signal strength for GSM cell 1 increases as described in table 8.4.1.40.4.2, since the cell individual offset for GSM cell 1 is 10 dB, event 3c shall be triggered in the UE. A MEASUREMENT REPORT shall be sent to the SS. Note that GSM cell 2 has not triggered event 3c even though the RF signal strength for GSM cell 2 is the same as for cell 1, because the cell individual offset for GSM cell 2 is 0 dB.

At instant T2, the RF signal strength for GSM cell 1 drops as described in table 8.4.1.40.4.2, and at instant T3, it increases again to its previous level. No MEASUREMENT REPORT shall be received from the UE, since GSM cell 1 has already triggered event 3c, and since the RF signal strength has not dropped enough for it to trigger the event once again. SS calls for generic procedure C.3 to check that UE is in CELL\_DCH state.

## Expected Sequence

Step	Direction		Message	Comment
	UE	SS		
1				The UE is brought to the CELL_DCH state in the cell 1. If the UE does not require compressed mode (refer ICS/IXIT), then goto step 4.
2		←	PHYSICAL CHANNEL RECONFIGURATION	If the UE requires compressed mode (refer ICS/IXIT), compressed mode pattern sequence parameters are loaded to UE.
3		→	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
4		←	MEASUREMENT CONTROL	SS configures event 3c in the UE. If the UE requires compressed mode (refer ICS/IXIT), compressed mode is started.
5				SS waits for approximately 10 seconds and verifies that no MEASUREMENT REPORT messages are detected on uplink DCCH.
6				SS re-adjusts the downlink transmission power settings according to columns "T1" in table 8.4.1.40.4.2.
7		→	MEASUREMENT REPORT	After about 2 s, the UE sends a MEASUREMENT REPORT to SS triggered by event 3c.
8				SS re-adjusts the downlink transmission power settings according to columns "T2" in table 8.4.1.40.4.2.
9				SS re-adjusts the downlink transmission power settings according to columns "T3" in table 8.4.1.40.4.2.
10				SS waits for approximately 10 seconds and verifies that no MEASUREMENT REPORT messages are detected on uplink DCCH.
11		↔	CALL C.3	If the test result of C.3 indicates that UE is in CELL_DCH state, the test passes, otherwise it fails.

## Specific Message Content

## PHYSICAL CHANNEL RECONFIGURATION (Step 2)

Use the same message sub-type in Annex A titled "Speech in CS", with the following exceptions:

Information Element	Value/remark
Downlink information common for all radio links	
- DPCH compressed mode info	1
- TGPSI	Deactivate
- TGPS Status Flag	Not present
- TGCFN	
- Transmission gap pattern sequence	
configuration parameters	
- TGMP	GSM Carrier RSSI Measurement
- TGPRC	Infinity
- TGSN	4
- TGL1	7
- TGL2	Not present
- TGD	0
- TGPL1	12
- TGPL2	Not present
- RPP	Mode 0
- ITP	Mode 0
CHOICE UL/DL Mode	UL and DL
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	1.0
- DeltaSIRAfter1	0.5
- DeltaSIR2	Not Present
- DeltaSIR2After2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	Not Present
- DPCH compressed mode info	
- TGPSI	2
- TGPS Status Flag	Deactivate
- TGCFN	Not present
- Transmission gap pattern sequence	
configuration parameters	
- TGMP	GSM BSIC identification
- TGPRC	Infinity
- TGSN	4
- TGL1	7
- TGL2	Not present
- TGD	0
- TGPL1	8
- TGPL2	Not present
- RPP	Mode 0
- ITP	Mode 0
CHOICE UL/DL Mode	UL and DL
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	1.0
- DeltaSIRAfter1	0.5
- DeltaSIR2	Not Present
- DeltaSIR2After2	Not Present
- N identify abort	21
- T Reconfirm abort	Not Present
- TGPSI	3
- TGPS Status Flag	Deactivate
- TGCFN	Not present
- Transmission gap pattern sequence	
configuration parameters	
- TGMP	GSM BSIC re-confirmation
- TGPRC	Infinity
- TGSN	4

- TGL1	7
- TGL2	Not present
- TGD	0
- TGPL1	8
- TGPL2	Not present
- RPP	Mode 0
- ITP	Mode 0
CHOICE UL/DL Mode	UL and DL
- Downlink compressed mode method	SF/2
- Uplink compressed mode method	SF/2
- Downlink frame type	A
- DeltaSIR1	1.0
- DeltaSIRAfter1	0.5
- DeltaSIR2	Not Present
- DeltaSIR2After2	Not Present
- N identify abort	Not Present
- T Reconfirm abort	4.8 s

## MEASUREMENT CONTROL (Step 4)

Information Element	Value/remark
Measurement Identity	3
Measurement Command	Setup
Measurement Reporting Mode	
- Measurement Reporting Transfer Mode	Acknowledged Mode RLC
- Periodic Reporting / Event Trigger Reporting Mode	Event triggered
Additional measurements list	Not Present
CHOICE measurement type	
- inter-RAT measurement	
- inter-RAT measurement object list	
CHOICE Inter-RAT Cell Removal	Remove all inter-RAT cells (No Data)
- Remove all inter-RAT cells	MaxCellMeas=12
New inter-RAT cells (1 to <MaxCellMeas>)	
- inter-RAT cell id	0
CHOICE Radio Access Technology	GSM
- Cell individual offset	10
- Cell selection and re-selection info	Not present
- BSIC	BSIC1
- Band indicator	DCS 1800 band used
- BCCH ARFCN	1
- inter-RAT cell id	1
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC2
- Band indicator	DCS 1800 band used
- BCCH ARFCN	3
- inter-RAT cell id	1
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC2
- Band indicator	DCS 1800 band used
- BCCH ARFCN	7
- inter-RAT cell id	2
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC3
- Band indicator	DCS 1800 band used
- BCCH ARFCN	5
- inter-RAT cell id	3
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC4
- Band indicator	DCS 1800 band used
- BCCH ARFCN	7
- inter-RAT cell id	4
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC5
- Band indicator	DCS 1800 band used
- BCCH ARFCN	9
- inter-RAT cell id	5
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC6
- Band indicator	DCS 1800 band used
- BCCH ARFCN	11
- inter-RAT cell id	6
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC7
- Band indicator	DCS 1800 band used

- BCCH ARFCN	13
- inter-RAT cell id	7
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC8
- Band indicator	DCS 1800 band used
- BCCH ARFCN	15
- inter-RAT cell id	8
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC9
- Band indicator	DCS 1800 band used
- BCCH ARFCN	17
- inter-RAT cell id	9
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC10
- Band indicator	DCS 1800 band used
- BCCH ARFCN	19
- inter-RAT cell id	10
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC11
- Band indicator	DCS 1800 band used
- BCCH ARFCN	21
- inter-RAT cell id	11
CHOICE Radio Access Technology	GSM
- Cell individual offset	0
- Cell selection and re-selection info	Not present
- BSIC	BSIC12
- Band indicator	DCS 1800 band used
- BCCH ARFCN	7
- Cell for measurement	Not present
- inter-RAT measurement quantity	
- Measurement quantity for UTRAN quality estimate	Not included
CHOICE system	GSM
- Measurement quantity	GSM carrier RSSI
- Filter coefficient	0
- BSIC verification required	required
- inter-RAT reporting quantity	
CHOICE system	GSM
- Observed time difference to to GSM cell reporting indicator	FALSE
- GSM carrier RSSI reporting indicator	TRUE
CHOICE report criteria	
- Inter-RAT measurements reporting criteria	
- Parameters required for each event (1 to<maxMeasEvent>)	<MaxMeasEvent>=1
- Inter-RAT event identity	3c
- Threshold own system	Not included
- W	Not included
- Threshold other system	-80
- Hysteresis	5
- Time to Trigger	100 ms
- Reporting cell status	Report cells within active set or within virtual active set or of the other RAT
- Maximum number of reported cells	2
Physical channel information elements	
- DPCH compressed mode status info	If the UE requires compressed mode (refer ICS/IXIT), this IE is present and contains the IEs as follows. If the UE does not require compressed mode (refer ICS/IXIT), this IE is not present.
- TGPS reconfiguration CFN	Not present

- Transmission gap pattern sequence (1 to <MaxTGPS>)	<MaxTGPS>=3
- TGPSI	1
- TGPS status flag	Activate
- TGCFN	(Current CFN + (252 – TTI/10msec))mod 256
- TGPSI	2
- TGPS status flag	Activate
- TGCFN	(Current CFN + (254 – TTI/10msec))mod 256
- TGPSI	3
- TGPS status flag	Activate
- TGCFN	(Current CFN + (250 – TTI/10msec))mod 256

MEASUREMENT REPORT (Step 7)

Information Element	Value/remark
Measurement identity	Check to see if set to 3
Measured Results	
- CHOICE measurement	Check to see if set to "Inter-RAT measured results list"
- Inter-RAT measured result list	
- CHOICE system	GSM
- Measured GSM cells	Check that measurement results for two GSM cells are included
- GSM carrier RSSI	Check that measurement result is reasonable
CHOICE BSIC	Check it is set to verified BSIC
- inter-RAT cell id	Check that it is set to either 0 or 1
- Observed time difference to GSM cell	Check that the IE is not included
- GSM carrier RSSI	Check that measurement result is reasonable
CHOICE BSIC	Verified BSIC
- inter-RAT cell id	Check that is set to 1 if the previous inter-RAT cell id was set to 0 or to 0 if the previous cell id was set to 1.
- Observed time difference to GSM cell	Check that the IE is not present
Measured results on RACH	Check that not present
Additional Measured results	Check that not present
Event results	Check that the IE is included
- CHOICE event result	Check that this is set to inter-RAT measurement event results
- Inter-RAT event identity	Check that this is set to 3c
- Cells to report (1 to <maxCellMeas>)	Check that <maxCellMeas> is set to 1
- CHOICE BSIC	Check that this is set to verified BSIC
- Inter-RAT cell id	Check that this is set to 0.

8.4.1.40.5 Test Requirement

About 2 s after instant T1, since the cell individual offset for GSM cell 1 is +10 dB, event 3c shall be triggered in the UE, i.e the UE shall begin to transmit a MEASUREMENT REPORT to the SS. Note that GSM cell 2 has not triggered event 3c even though the RF signal strength for GSM cell 2 is the same as for cell 1, because the cell individual offset for GSM cell 2 is 0 dB.

After instant T2, no MEASUREMENT REPORT shall be received from the UE, since GSM cell 1 has already triggered event 3c, and since the RF signal strength has not dropped enough for it to trigger the event once again.

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## 9 Elementary procedures of mobility management

The tests are based on TS 24.008.

In this clause, when the expected sequence require that "a mobile originated CM connection is attempted", it shall be for a service other than emergency call.

In this clause, a initial CM message is either a SETUP message, a REGISTER message or a CP-DATA message (in that case the acknowledged mode of operation on SAPI 3 will have be established and this message will be sent on SAPI 3).

### 9.1 TMSI reallocation

The intention of the TMSI Reallocation procedure is to assign a new temporary identity for the UE. If the message is not understood by the UE, the network could not establish a link to the UE. As this is a common MM procedure, it can be initiated at any time.

#### 9.1.1 Definition

#### 9.1.2 Conformance requirement

- 1) A UE shall acknowledge a new TMSI when explicitly allocated during a location updating procedure or an incoming call.
- 2) The TMSI shall be updated on the USIM when the UE is correctly deactivated in accordance with the manufacturer's instructions.
- 3) A UE shall answer paging with this TMSI and includes it in the PAGING RESPONSE message.

#### Reference(s)

TS 24.008 clause 4.3.1.

#### 9.1.3 Test purpose

To verify that the UE is able to receive and acknowledge a new TMSI by means of an explicit TMSI reallocation procedure.

To verify that the UE has stored the TMSI in a non-volatile memory.

The implicit reallocation procedure is tested in clause 9.4.1.

#### 9.1.4 Method of test

##### Initial conditions

- System Simulator:
  - two cells A and B, belonging to different location areas a and b, default parameters.
- User Equipment:
  - the UE has valid TMSI (= TMSI1), CKSN, CK, IK. It is "idle updated" on cell B.

##### Related ICS/IXIT statement(s)

Switch off button Yes/No.

Way to bring the UE into service.

### Test Procedure

The UE is paged in cell B and the security mode is established. An explicit TMSI reallocation procedure is performed. The RRC CONNECTION is released. The UE is switched off and then its power supply is interrupted for 10 s. The power supply is resumed and then the UE is switched on and allowed sufficient time to guarantee that the UE is in service (listening to its paging subchannel). The system simulator then checks, by paging, whether the UE has stored the received TMSI.

The UE is made to select cell A. A normal location updating procedure is performed in cell A. An explicit TMSI reallocation procedure is performed and then the location updating procedure is accepted by the SS. The system simulator checks, by paging, whether the UE has stored the allocated TMSI.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
The following messages are sent and shall be received on cell B.				
1	←		Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 "Initial UE identity" = TMSI1. Establishment Cause: Terminating Conversation Call.
2	→		PAGING RESPONSE	"Mobile identity" =TMSI1
2a	←		AUTHENTICATION REQUEST	
2b	→		AUTHENTICATION RESPONSE	
3	SS			The SS starts integrity protection.
4			Void	
5	←		TMSI REALLOCATION COMMAND	"Mobile identity" = new TMSI (TMSI2) different from TMSI 1.
6	→		TMSI REALLOCATION COMPLETE	
7	SS			The SS releases the RRC connection.
8			Void	
9	UE			If possible (see ICS), the UE is switched off.
9a	UE			The power supply is interrupted for 10 s.
10	UE			The UE is switched on.
11	SS			The SS waits for 5 seconds to guarantee that the UE is in service (listening to its paging subchannel).
12	←		Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 "Initial UE identity" = TMSI2. Establishment Cause: Terminating Conversation Call.
13	→		PAGING RESPONSE	"Mobile identity" =TMSI2.
14	SS			The SS releases the RRC connection. The following messages are sent and shall be received on cell A
15			Void	
16	SS			Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "non-suitable cell" (see note)
17	SS		RRC CONNECTION REQUEST	The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
18			Void	
19			Void	
20	→		LOCATION UPDATING REQUEST	location updating type = normal, "ciphering key sequence number" = CKSN, LAI = b, "mobile identity" = TMSI2.
20a	←		AUTHENTICATION REQUEST	
20b	→		AUTHENTICATION RESPONSE	
20c	SS			The SS starts integrity protection.
20d			Void	
21	←		TMSI REALLOCATION COMMAND	TMSI = TMSI1.
22	→		TMSI REALLOCATION COMPLETE	
23	←		LOCATION UPDATING ACCEPT	This message does not contain the optional Mobile Identity field.
24	SS			The SS releases the RRC connection.
25			Void	
25a				The SS waits for 5 seconds to allow the UE to become "idle updated" on cell A.
26	←		Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 "Initial UE identity" IE contains the new TMSI (= TMSI1). "Establishment cause": Terminating Conversational Call.
27	→		PAGING RESPONSE	"Mobile identity" IE contains the new TMSI (= TMSI1).
28	SS			The SS releases the RRC connection.
29			Void	
NOTE: The definitions for "Serving cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

Specific message contents

None.

#### 9.1.5 Test requirement

At step 5 the UE shall receive and acknowledge a new TMSI (TMSI2) and has stored that in the USIM, and the UE is switched off and on after step 9 and 10.

At step 13 the UE shall transmit a new TMSI2 and includes it in the PAGING RESPONSE message.

At step 27 the UE shall answer paging with this TMSI1 and includes it in the PAGING RESPONSE message.

## 9.2 Authentication

The purpose of this procedure is to verify the user identity. A correct response is essential to guarantee the establishment of the connection. If not, the connection will drop.

The SS shall be able to handle vectors of AUTN, RAND, CK, IK, AUTS and XRES in a similar way as the MSC/BSS entities. The SS and test USIM shall incorporate a test algorithm for generating RES and CK, IK from RAND, AUTN and IK which operates as described in TS 34.108 clause 8.1.2.

### 9.2.1 Authentication accepted

#### 9.2.1.1 Definition

#### 9.2.1.2 Conformance requirement

- 1) A UE shall correctly respond to an AUTHENTICATION REQUEST message by sending an AUTHENTICATION RESPONSE message with the RES information field set to the same value as the one produced by the authentication algorithm in the network.
- 2) A UE shall indicate in a PAGING RESPONSE message the ciphering key sequence number which was allocated to it through the authentication procedure.

#### Reference(s)

TS 24.008 clauses 4.3.2.2 and 4.3.2.4.

#### 9.2.1.3 Test purpose

- 1) To check that a UE correctly responds to an AUTHENTICATION REQUEST message by sending an AUTHENTICATION RESPONSE message with the RES information field set to the same value as the one produced by the authentication algorithm in the network.
- 2) To check that a UE indicates in a PAGING RESPONSE message the ciphering key sequence number which was allocated to it through the authentication procedure.

#### 9.2.1.4 Method of test

##### Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE has valid TMSI, CKSN (CKSN1), CK, IK. It is "idle updated" on the cell.

Related ICS/IXIT statement(s)

None.

### Test Procedure

The UE is paged. After the UE has sent a PAGING RESPONSE message to the SS, the SS initiates an authentication procedure and checks the value RES sent by the UE in the AUTHENTICATION RESPONSE message. The RRC CONNECTION is released. The UE is paged and the SS checks the value of the ciphering key sequence number sent by the UE in the PAGING RESPONSE message.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2
2		→	PAGING RESPONSE	Establishment Cause: Terminating Conversational Call. CKSN = CKSN1
3		←	AUTHENTICATION REQUEST	The SS initiates authentication with CKSN2 different from CKSN1.
4		→	AUTHENTICATION RESPONSE	"Auth. parameter RES" IE shall be bit exact with the value as produced by the authentication algorithm.
5		SS		The SS releases the RRC connection.
6			Void	
6a				The SS waits for 5 seconds to guarantee that the UE is in service.
7			Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2
8		→	PAGING RESPONSE	Establishment Cause: Terminating Conversational Call. "Ciphering key sequence number" shall be the same as the value that was sent in the last AUTHENTICATION REQUEST message (= CKSN2).
9		SS		The SS releases the RRC connection.
10			Void	

Specific message contents

None.

#### 9.2.1.5 Test requirement

- 1) At step 4 the UE shall send an AUTHENTICATION RESPONSE message with the RES information field set to the same value as the XRES calculated by the SS.
- 2) At step 8 the UE shall indicate in a PAGING RESPONSE message the ciphering key sequence number which was allocated to it through the authentication procedure.

## 9.2.2 Authentication rejected by the network

### 9.2.2.1 Definition

#### 9.2.2.2 Conformance requirement

- 1) After reception of an AUTHENTICATION REJECT message the UE shall:
  - 1.1 not perform normal location updating;
  - 1.2 not perform periodic location updating;
  - 1.3 not respond to paging with TMSI;
  - 1.4 reject any request from CM entity for MM connection except for emergency call;

1.5 not perform IMSI detach if deactivated.

- 2) After reception of an AUTHENTICATION REJECT message the UE, if it supports speech, shall accept a request for an emergency call by sending a RRC CONNECTION REQUEST message with the establishment cause set to "emergency call" and include an IMEI as mobile identity in the CM SERVICE REQUEST message.
- 3) After reception of an AUTHENTICATION REJECT message the UE shall delete the stored LAI, CKSN and TMSI.

#### Reference(s)

TS 24.008 clause 4.3.2.5.

#### 9.2.2.3 Test purpose

- 1) To check that ,after reception of an AUTHENTICATION REJECT message, the UE:
  - 1.1 does not perform normal location updating;
  - 1.2 does not perform periodic location updating;
  - 1.3 does not respond to paging with TMSI;
  - 1.4 rejects any request from CM entity for MM connection except for emergency call;
  - 1.5 does not perform IMSI detach if deactivated.
- 2) To check that, after reception of an AUTHENTICATION REJECT message the UE, if it supports speech, accepts a request for an emergency call by sending a RRC CONNECTION REQUEST message with the establishment cause set to "emergency call" and includes an IMEI as mobile identity in the CM SERVICE REQUEST message.
- 3) To check that, after reception of an AUTHENTICATION REJECT message and after having been deactivated and reactivated, the UE performs location updating using its IMSI as mobile identity and indicates deleted LAI and CKSN.

#### 9.2.2.4 Method of test

##### Initial conditions

- System Simulator:
  - two cells: A and B, belonging to different location areas a and b;
  - IMSI attach/detach is allowed in both cells;
  - the T3212 time-out value is 1/10 hour in both cells.
- User Equipment:
  - the UE has valid TMSI, CKSN (CKSN2) , CK and IK. It is "idle updated" on cell B.

##### Related ICS/IXIT statement(s)

USIM removal possible while UE is powered Yes/No.

Switch off on button Yes/No.

Support of speech Yes/No.

##### Test procedure

The SS rejects an authentication. The RRC CONNECTION is released. The SS checks that the UE has entered the state MM IDLE substate NO IMSI, i.e. does not perform normal location updating, does not perform periodic updating, does

not respond to paging, rejects any requests from CM entities except emergency calls and does not perform IMSI detach if USIM detachment is performed, switch off is performed, or the power is removed, depending on the UE (see ICS/IXIT).

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
The following messages are sent and shall be received on cell B				
1			Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2
2	→		PAGING RESPONSE	Establishment Cause: Terminating Conversational Call.. "Cipherring key sequence number" shall be the same as the value that was sent in the last AUTHENTICATION REQUEST message (= CKSN2).
3	←		AUTHENTICATION REQUEST	
4	→		AUTHENTICATION RESPONSE	
5	←		AUTHENTICATION REJECT	
6	SS			The SS releases the RRC connection.
7			Void	
8	←		PAGING TYPE 1	The UE is paged in cell B. "UE identity " IE contains TMSI. Paging Cause: Terminating Conversational Call.
9	UE			The UE shall ignore this message. This is verified during 3 s.
10	SS			The SS waits for at least for 15 s.
11	UE			A MO CM connection is attempted.
12	UE			The UE shall not initiate an RRC connection establishment on cell A or cell B. This is checked during 3 s.
13	UE			If the UE supports speech (see ICS), an emergency call is attempted.
14	SS			The SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Emergency call".
15			Void	
16			Void	
17	→		CM SERVICE REQUEST	"CM service type": Emergency call establishment. "Mobile identity": type of identity is set to IMEI.
18	←		CM SERVICE ACCEPT	
19	→		EMERGENCY SETUP	
20	←		RELEASE COMPLETE	"Cause" = unassigned number.
21	SS			The SS releases the RRC connection.
22			Void	
The following messages are sent and shall be received on cell A.				
23	SS			Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "non-suitable cell". (see note)
24	UE			The UE performs cell reselection according to procedure as specified in (this however is not checked until step 29). The UE shall not initiate an RRC connection establishment on cell A or on cell B.
25	SS			The SS waits at least 7 minutes for a possible periodic updating.
26	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B.
27	UE			If possible (see ICS) USIM detachment is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
28	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is checked during 3 s.
29	UE			Depending on what has been performed in step 26 the UE is brought back to operation.
30	SS			The SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
31			Void	
32			Void	
33	→		LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = no key available, "Mobile Identity" = IMSI, "LAI" = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE).
34	←		AUTHENTICATION REQUEST	"CKSN" = CKSN1.

Step	Direction		Message	Comments
	UE	SS		
35	→		AUTHENTICATION RESPONSE	"Mobile Identity" = TMSI.
36	←		LOCATION UPDATING ACCEPT	
37	→		TMSI REALLOCATION COMPLETE	
38		SS	Void	The SS releases the RRC connection.
39			Void	
NOTE: The definitions for "Serving cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

### Specific message contents

None.

#### 9.2.2.5 Test requirement

1)

1.1 At step 24 the UE shall not send any RRC CONNECTION REQUEST on cell A or on cell B.

1.2 At step 25 the UE shall not send any RRC CONNECTION REQUEST on cell A or on cell B.

1.3 At step 9 the UE shall not respond to paging.

1.4 At step 12 the UE shall not send any RRC CONNECTION REQUEST on cell A or on cell B.

1.5 At step 28 the UE shall not send any RRC CONNECTION REQUEST on cell A or on cell B.

2) At step 14 the UE shall send a RRC CONNECTION REQUEST message with the establishment cause set to "emergency call"; and at step 17 the UE shall send a CM SERVICE REQUEST message with the "CM service type" set to "Emergency call establishment".

3) At step 33 the UE shall perform location updating using its IMSI as mobile identity and indicates deleted LAI and CKSN.

## 9.2.3 Authentication rejected by the UE (MAC code failure)

### 9.2.3.1 Definition

Following a UMTS authentication challenge, the UE may reject the core network, on the grounds of an incorrect AUTN parameter (see TS 33.102).

If the UE considers the MAC code (supplied by the core network in the AUTN parameter) to be invalid, it shall send an AUTHENTICATION FAILURE message to the network, with the reject cause 'MAC failure'.

### 9.2.3.2 Conformance requirement

- 1) The UE shall respond to an AUTHENTICATION REQUEST message, with a MAC code failure in the AUTN parameter, by sending an AUTHENTICATION FAILURE message with the reject cause 'MAC failure' and start timer T3214. When an AUTHENTICATION REQUEST message containing an invalid MAC has been received by the UE from the network, the UE shall stop any of the retransmission timers that are running (i.e. T3210, T3220 or T3230).
- 2) Upon receipt of an AUTHENTICATION FAILURE message from the UE, with reject cause 'MAC failure' the network may initiate the identification procedure. Upon reception of an IDENTITY REQUEST message, the UE shall identify itself by sending an IDENTITY RESPONSE message including the IMSI to the network. The network may then check that the TMSI originally used in the authentication challenge corresponded to the correct IMSI.

- 3) If the TMSI/IMSI mapping in the network was incorrect, the network should respond by sending a new AUTHENTICATION REQUEST message to the UE. Upon receiving the second AUTHENTICATION REQUEST message from the network, the UE shall stop the timer T3214, if running, and then process the challenge information as normal. Upon successfully validating the network (an AUTHENTICATION REQUEST that contains a valid MAC in the AUTN parameter is received), the UE shall send the AUTHENTICATION RESPONSE message to the network and shall start any retransmission timers (e.g. T3210, T3220 or T3230) , if they were running and stopped when the UE received the first AUTHENTICATION REQUEST message containing an incorrect MAC.

#### Reference(s)

TS 24.008 clauses 4.3.2.5.1 and 4.3.2.6 (c)

#### 9.2.3.3 Test purpose

- 1) To check that a UE shall correctly respond to an AUTHENTICATION REQUEST message, with a MAC code failure in the AUTN parameter, by sending an AUTHENTICATION FAILURE message with the reject cause 'MAC failure'.
- 2) To check that upon reception of an IDENTITY REQUEST message, requesting for IMSI, the UE identifies itself by sending an IDENTITY RESPONSE message including the IMSI to the network.
- 3) To check that upon receiving the second AUTHENTICATION REQUEST message from the network, the UE shall stop the timer T3214, if running, and then process the challenge information as normal. To check that upon successfully validating the network (an AUTHENTICATION REQUEST that contains a valid MAC is received), the UE sends the AUTHENTICATION RESPONSE message to the network.

#### 9.2.3.4 Method of test

##### Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE has valid TMSI, CKSN (CKSN1), CK, IK. It is "idle updated" on the cell.

##### Related ICS/IXIT statement(s)

None.

##### Test procedure

The UE rejects an authentication. The AUTHENTICATION FAILURE is sent by UE. Upon receipt of the AUTHENTICATION FAILURE message the SS initiates identification procedure. The UE responds to the SS by sending IDENTITY RESPONSE message. The SS sends AUTHENTICATION REQUEST message with correct AUTN parameter.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2
2		→	PAGING RESPONSE	Establishment Cause: Terminating Conversational Call. CKSN = CKSN1
3		←	AUTHENTICATION REQUEST	With AUTN parameter having a MAC value different from what is calculated in 34.108 clause 8.1.2.1 step 4.
4		→	AUTHENTICATION FAILURE	With reject cause "MAC failure"
5		←	IDENTITY REQUEST	With identity type IMSI
6		→	IDENTITY RESPONSE	With IMSI in Mobile Identity IE
7		←	AUTHENTICATION REQUEST	With the AUTN parameter having a valid MAC code, see 34.108 clause 8.1.2.1 step 4.
8		→	AUTHENTICATION RESPONSE	Authentication Response Parameter IE (RES) shall be bit exact with the value as produced by the authentication algorithm.
9		←	RRC CONNECTION RELEASE	
10		→	RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

#### 9.2.3.5 Test requirement

- 1) At step 4 the UE shall send AUTHENTICATION FAILURE message with reject cause set to "MAC failure".
- 2) At step 6 the UE shall send an IDENTITY RESPONSE message including the IMSI.
- 3) At step 8 the UE shall send an AUTHENTICATION RESPONSE message.

## 9.2.4 Authentication rejected by the UE (SQN failure)

### 9.2.4.1 Definition

Following a UMTS authentication challenge, the UE may reject the core network, on the grounds of an incorrect AUTN parameter (see TS 33.102).

If the UE considers the SQN (supplied by the core network in the AUTN parameter) to be out of range, it shall send an AUTHENTICATION FAILURE message to the network, with the reject cause 'Synch failure' and a re-synchronisation token AUTS provided by the USIM (see TS 33.102).

### 9.2.4.2 Conformance requirement

- 1) The UE shall respond to an AUTHENTICATION REQUEST message, with an SQN failure in the AUTN parameter, by sending an AUTHENTICATION FAILURE message with the reject cause 'Synch failure' and start the timer T3216 and stop any of the retransmission timers that are running (i.e. T3210, T3220 or T3230). Upon receipt of an AUTHENTICATION FAILURE message from the UE with the reject cause 'synch failure,' the network shall use the returned AUTS parameter from the authentication failure parameter IE in the AUTHENTICATION FAILURE message, to re-synchronise.
- 2) Upon successfully validating the network (a second AUTHENTICATION REQUEST is received which contains a valid SQN in the AUTN parameter) while T3216 is running, the UE shall send the AUTHENTICATION RESPONSE message to the network and shall start any retransmission timers (e.g. T3210, T3220 or T3230), if they were running and stopped when the UE received the first AUTHENTICATION REQUEST message containing an invalid SQN.

Reference(s)

TS 24.008 clause 4.3.2.5.1, 4.3.2.6 (d)

## 9.2.4.3 Test purpose

- 1) To check that a UE shall correctly respond to an AUTHENTICATION REQUEST message, with an SQN failure in the AUTN parameter, by sending an AUTHENTICATION FAILURE message with the reject cause 'Synch failure'.
- 2) To check that upon successfully validating the network (a second AUTHENTICATION REQUEST is received which contains a valid SQN) while T3216 is running, the UE shall send the AUTHENTICATION RESPONSE message to the network.

## 9.2.4.4 Method of test

## Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE has valid TMSI, CKSN (CKSN1), CK, IK. It is "idle updated" on the cell.

## Related ICS/IXIT statement(s)

None.

## Test procedure

The SS sends an AUTHENTICATION REQUEST having an invalid SQN code (i.e. uses the predefined AMF<sub>RESYNCH</sub> value to trigger the SQN re-synchronisation procedure, see TS 34.108 clause 8.1.2.2) to the UE. The SS verifies that the UE rejects the authentication.

The SS sends a second AUTHENTICATION REQUEST with a valid SQN code (i.e. uses an AMF value different from AMF<sub>RESYNCH</sub> value, see TS 34.108 clause 8.1.2.2). The SS checks that the UE accepts the authentication request.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 Establishment Cause: Terminating Conversational Call.
2	→		PAGING RESPONSE	CKSN = CKSN1
3	←		AUTHENTICATION REQUEST	with the AMF information field set to AMF <sub>RESYNCH</sub> value to trigger SQN re-synchronisation procedure in test USIM, see TS 34.108 clause 8.1.2.2.
4	→		AUTHENTICATION FAILURE	including the AUTS parameter and with the reject cause set to 'Synch failure'
5	←		AUTHENTICATION REQUEST	with the AMF information field set to value different from AMF <sub>RESYNCH</sub> value to cause test USIM to treat SQN value as valid, see TS 34.108 clause 8.1.2.2.
6	→		AUTHENTICATION RESPONSE	"Auth. parameter RES" IE shall be bit exact with the value as produced by the authentication algorithm.
7	←		RRC CONNECTION RELEASE	
8	→		RRC CONNECTION RELEASE COMPLETE	

## Specific message contents

None.

#### 9.2.4.5 Test requirement

- 1) At step 4 the UE shall reject an authentication and the AUTHENTICATION FAILURE is sent to SS with reject cause "Synch failure".
- 2) At step 6 the UE shall send an AUTHENTICATION RESPONSE message with the RES information field set to the same value as the XRES calculated by SS.

## 9.3 Identification

The purpose of this procedure is to check that the UE gives its identity as requested by the network. If this procedure does not work, it will not be possible for the network to rely on the identity claimed by the UE.

### 9.3.1 General Identification

#### 9.3.1.1 Definition

#### 9.3.1.2 Conformance requirement

- 1) When requested by the network the UE shall send its IMSI.
- 2) When requested by the network the UE shall send the TMSI which it was previously allocated.
- 3) When requested by the network the UE shall send its IMEI as stored in the UE.
- 4) When requested by the network the UE shall send its IMEISV as stored in the UE.

#### Reference(s)

TS 24.008 clause 4.3.3.

#### 9.3.1.3 Test purpose

- 1) To verify that the UE sends identity information as requested by the system in the following cases: IMSI and TMSI are requested in non-security mode, IMEI is requested in security mode.
- 2) To verify that the UE sends its IMEI, when requested to do so, in non- security mode.
- 3) To verify that the UE sends its IMEISV, when requested to do so, in non- security mode.

#### 9.3.1.4 Method of test

##### 9.3.1.4.1 Identification / test 1

#### Initial conditions

- System Simulator:
  - 1 cell, default values.
- User Equipment:
  - the UE has a valid TMSI. It is "idle updated" on the cell.

#### Related ICS/IXIT statement(s)

IMEI of the UE.

#### Test Procedure

The SS requests identity information from the UE:

- IMSI in non security mode;
- allocated TMSI in non security mode;
- IMEI in security mode.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 Establishment Cause: Terminating Conversational Call.
2		→	PAGING RESPONSE	
3		←	IDENTITY REQUEST	"Identity type" IE is IMSI.
4		→	IDENTITY RESPONSE	"Mobile identity" IE specifies the IMSI of the UE.
5		←	IDENTITY REQUEST	"Identity type" IE is TMSI.
6		→	IDENTITY RESPONSE	"Mobile identity" IE specifies the allocated TMSI of the UE.
7		SS		The SS starts ciphering and integrity protection.
8			Void	
9		←	IDENTITY REQUEST	"Identity type" IE is IMEI.
10		→	IDENTITY RESPONSE	"Mobile identity" IE specifies the IMEI stored in the UE.
11		SS		The SS releases the RRC connection.
12			Void	

#### Specific message contents

None.

#### 9.3.1.4.2 Identification / test 2

##### Initial conditions

- System Simulator:
  - 1 cell, default values.
- User Equipment:
  - the UE has a valid TMSI. It is in "idle updated".

##### Related ICS/IXIT statement(s)

IMEI of the UE.

IMEISV of the UE.

##### Test Procedure

The SS requests identity information from the UE:

- IMEI in non security mode;
- IMEISV in non security mode.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 Establishment Cause: Terminating Conversational Call.
2		→	PAGING RESPONSE	
3		←	IDENTITY REQUEST	"Identity type" IE is IMEI.
4		→	IDENTITY RESPONSE	"Mobile identity" IE specifies the IMEI of the UE.
5		←	IDENTITY REQUEST	"Identity type" IE is IMEISV.
6		→	IDENTITY RESPONSE	"Mobile identity" IE specifies the IMEISV of the UE.
7		SS		The SS releases the RRC connection.
8			Void	

Specific message contents

None.

#### 9.3.1.5 Test requirement

- 1) At step 4 in test 1 and test 2 the UE shall send its IMSI.
- 2) At step 6 in test 1 the UE shall send the TMSI which it was previously allocated.
- 3) At step 10 in test 1 the UE shall send its IMEI as stored in the UE.
- 4) At step 6 in test 2 the UE shall send its IMEISV as stored in the UE.

## 9.3.2 Handling of IMSI shorter than the maximum length

### 9.3.2.1 Definition

### 9.3.2.2 Conformance requirement

The UE shall be capable of handling an IMSI that is not of the maximum length.

Reference(s)

TS 24.008 clause 10.5.1.4.

### 9.3.2.3 Test purpose

To check that the UE behaves correctly when activated with an IMSI of length less than the maximum length.

In this condition, the UE shall:

- perform location updating;
- answer to paging with IMSI;
- give the correct IMSI when asked by an IDENTITY REQUEST;
- attempt CM connection establishment when requested to;
- attempt call re-establishment when needed;
- attempt IMSI detach when needed;
- erase its TMSI when the IMSI is sent by the network in a LOCATION UPDATING ACCEPT or a TMSI REALLOCATION COMMAND message.

### 9.3.2.4 Method of test

#### Initial conditions

- System Simulator:
  - 1 cell, default values;
  - IMSI attach/detach bit set to "1".
- User Equipment:
  - the UE has no valid TMSI;
  - it is "idle updated";
  - the IMSI has the value 001011234.

#### Related ICS/IXIT statement(s)

On/Off switch - Yes/No.

#### Foreseen final state of UE

The UE has no valid TMSI. It is in "idle, updated".

#### Test Procedure

The UE is paged with its IMSI. The UE shall answer to paging and include the correct IMSI in the PAGING RESPONSE message. During call establishment, the SS asks for the IMSI of the UE. The UE shall answer by an IDENTITY RESPONSE message including the correct IMSI. During the active phase of the call, the SS modifies the scrambling code of DL DPCH. The UE performs call re-establishment. The UE shall include the correct IMSI in the CM RE-ESTABLISHMENT message. A TMSI REALLOCATION COMMAND including a TMSI is sent to the UE. The UE acknowledges this message. The call is release.

The UE is paged with its TMSI. The UE shall answer to paging and includes its TMSI in the PAGING RESPONSE message. During call establishment, the SS sends a TMSI REALLOCATION COMMAND including the IMSI to the UE. The UE shall acknowledge this message. The UE shall erase its TMSI. The call is released.

The UE is switched off or has its power source removed. The UE performs IMSI detach. The UE shall include the correct IMSI in the IMSI DETACH INDICATION message.

The UE is switched on or powered on. The UE performs IMSI attach. The UE shall include the correct IMSI in the LOCATION UPDATING REQUEST message. A TMSI is allocated to the UE.

The LAC of the cell is changed. The UE performs location updating. The SS includes the IMSI in the LOCATION UPDATING ACCEPT message.

A mobile originated CM connection is attempted. The UE shall include the correct IMSI in the CM SERVICE REQUEST message.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 "Initial UE identity" IE contains IMSI of UE.
2		→	PAGING RESPONSE	Establishment cause: Terminating Conversational Call.
3		←	IDENTITY REQUEST	"mobile identity" contains the IMSI of the UE.
4		→	IDENTITY RESPONSE	"identity type" IE is IMSI.
5				"mobile identity" IE contains the IMSI of the UE.
6		SS		The call is established using the sequence of the generic terminating call set-up procedure.
6a		→	CELL UPDATE	The SS modifies the scrambling code of DL DPCH for generating lower layer failure.
6b		←	RRC CONNECTION RELEASE	CCCH.
6c		SS		CCCH.
7		→	RRC CONNECTION REQUEST	The SS re-modifies the scrambling code of DL DPCH to the original one.
8		←	RRC CONNECTION SETUP	
9		→	RRC CONNECTION SETUP COMPLETE	
10		→	CM REESTABLISHMENT REQUEST	"mobile identity" IE contains IMSI of the UE.
10a		←	AUTHENTICATION REQUEST	
10b		→	AUTHENTICATION RESPONSE	
10c		←	SECURITY MODE COMMAND	
10d		→	SECURITY MODE COMPLETE	
11		←	TMSI REALLOCATION COMMAND	"mobile identity" contains a TMSI.
12		→	TMSI REALLOCATION COMPLETE	
13		←	RRC CONNECTION RELEASE	After sending this message, the SS waits for the disconnection of the main signalling link.
14		→	RRC CONNECTION RELEASE COMPLETE	
15		←	Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 "Initial UE identity" IE contains TMSI of UE.
16		→	PAGING RESPONSE	Establishment cause: Terminating Conversational Call.
17		←	AUTHENTICATION REQUEST	"mobile identity" contains the TMSI of the UE.
18		→	AUTHENTICATION RESPONSE	
18a		←	SECURITY MODE COMMAND	
18b		→	SECURITY MODE COMPLETE	
19		←	TMSI REALLOCATION COMMAND	"mobile identity" contains a IMSI of UE.
20		→	TMSI REALLOCATION COMPLETE	
21		←	RRC CONNECTION RELEASE	
22		→	RRC CONNECTION RELEASE COMPLETE	
23	UE			If possible (see ICS) the UE is switched off, otherwise the UE has its power source removed.
24		→	RRC CONNECTION REQUEST	If the UE was switched off it performs IMSI detach. "Establishment cause": Detach
25		←	RRC CONNECTION SETUP	
26		→	RRC CONNECTION SETUP COMPLETE	
27		→	IMSI DETACH INDICATION	"mobile identity" contains IMSI of UE.
28		←	RRC CONNECTION RELEASE	
29		→	RRC CONNECTION RELEASE COMPLETE	
30	UE			The UE is switched on or has power restored.
31		→	RRC CONNECTION REQUEST	
32		←	RRC CONNECTION SETUP	
33		→	RRC CONNECTION SETUP COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
34		→	LOCATION UPDATING REQUEST	"mobile identity" contains IMSI of UE.
35		←	LOCATION UPDATING ACCEPT	"mobile identity" contains a TMSI.
36		→	TMSI REALLOCATION COMPLETE	
37		←	RRC CONNECTION RELEASE	
38		→	RRC CONNECTION RELEASE COMPLETE	
39		SS		The SS changes the LAC of the cell.
40		→	RRC CONNECTION REQUEST	Shall be sent within 35s of the LAC being changed.
41		←	RRC CONNECTION SETUP	
42		→	RRC CONNECTION SETUP COMPLETE	
43		→	LOCATION UPDATING REQUEST	"mobile identity" contains TMSI of the UE.
44		←	LOCATION UPDATING ACCEPT	"mobile identity" contains IMSI of the UE.
45		←	RRC CONNECTION RELEASE	
46		→	RRC CONNECTION RELEASE COMPLETE	
47		UE		a mobile originated CM connection is attempted.
48		→	RRC CONNECTION REQUEST	
49		←	RRC CONNECTION SETUP	
50		→	RRC CONNECTION SETUP COMPLETE	
51		→	CM SERVICE REQUEST	"mobile identity" contains IMSI of the UE.
52		←	RRC CONNECTION RELEASE	
53		→	RRC CONNECTION RELEASE COMPLETE	

### Specific message contents

None.

#### 9.3.2.5 Test requirement

At step 34 the UE shall performs location updating.

At step 2 the UE shall answer to paging with IMSI.

At step 4 the UE shall answer the correct IMSI to the SS by an IDENTITY RESPONSE message.

At step 51 the UE shall attempt CM connection establishment and include the correct IMSI in the CM SERVICE REQUEST message.

At step 10 the UE shall perform call re-establishment with the correct IMSI in the CM RE-ESTABLISHMENT message.

At step 19 the IMSI is sent by the network in a TMSI REALLOCATION COMMAND message, at step 27 the UE shall attempt IMSI detach.

At step 44 the IMSI is sent by the network in a LOCATION UPDATING ACCEPT message, at step 51 the UE shall attempt IMSI detach.

## 9.4 Location updating

This procedure is used to register the UE in the network. If it is not performed correctly, no call can be established.

## 9.4.1 Location updating / accepted

### 9.4.1.1 Definition

### 9.4.1.2 Conformance requirement

1.

1.1 if the network accepts a location updating from the UE and reallocates a TMSI in the LOCATION UPDATING ACCEPT message the UE shall acknowledge the reception of the new TMSI;

1.2 the UE shall answer to paging with this TMSI and include it in a PAGING RESPONSE message.

2 If the network accepts a location updating from the UE and the LOCATION UPDATING ACCEPT message contains neither TMSI nor IMSI, the UE shall answer to paging when addressed with the last allocated TMSI and include it in the PAGING RESPONSE message.

3.

3.1 if the network accepts a location updating from the UE by use of a LOCATION UPDATING ACCEPT message containing the IMSI of the UE, the UE shall not answer paging with the last allocated TMSI;

3.2 the UE shall still answer paging with IMSI.

### Reference(s)

TS 24.008 clause 4.4.4.6.

### 9.4.1.3 Test purpose

1) To test the behaviour of the UE if the network accepts the location updating of the UE.

For the network response three different cases are identified:

1.1) TMSI is allocated;

1.2) location updating accept contains neither TMSI nor IMSI;

1.3) location updating accept contains IMSI.

### 9.4.1.4 Method of test

#### Initial conditions:

- System Simulator:
  - two cells, A and B, belonging to different location areas with location area identification a and b of the same PLMN;
  - IMSI attach/detach is allowed in both cells;
  - the T3212 time-out value is 1/10 hour in both cells.
- User Equipment:
  - the UE has a valid TMSI (=TMSI1) and CKSN (=CKSN1). It is "idle updated" on cell A.

#### Related ICS/IXIT statement(s)

None.

## Test Procedure

The UE is made to select cell B. A normal location updating with TMSI reallocation is performed in cell B. The RRC CONNECTION is released. The SS checks, by paging, that the UE has stored the newly allocated TMSI. The RRC CONNECTION is released. The UE is made to select cell A. A normal location updating is performed in cell A. The LOCATION UPDATING ACCEPT message contains neither IMSI nor TMSI. The SS checks, by paging, that the UE has kept the old TMSI. The RRC CONNECTION is released. The UE is made to select cell B. A normal location updating is performed in cell B. The LOCATION UPDATING ACCEPT message contains an IMSI. The SS checks, by paging, that the UE has deleted its TMSI and responds to paging with IMSI.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		Set the cell type of cell B to the "Serving cell". Set the cell type of cell A to the "non-suitable cell". (see note)
2		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to: Registration.
3			Void	
4			Void	
5		→	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = CKSN1, "location area identification" = a, "mobile station classmark 1" as given by the ICS and "mobile identity" = TMSI1. The MM message is included in the RRC message INITIAL DIRECT TRANSFER with the CN domain identity set to CS domain.
5a		SS		The SS starts integrity protection.
5b			Void	
6		←	LOCATION UPDATING ACCEPT	"Mobile identity" = new TMSI (=TMSI2), LAI = b.
7		→	TMSI REALLOCATION COMPLETE	
8		SS		
9			Void	
9a				SS waits 5 seconds to guarantee that the UE is in service.
10		←	Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 "Initial UE identity" IE contains the new TMSI (= TMSI2) and the new LAI (=b). Establishment Cause: Terminating Conversational Call.
11		→	PAGING RESPONSE	"Mobile identity" IE contains the new TMSI (= TMSI2).
12		SS		The SS releases the RRC Connection.
13			Void	
14		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "non-suitable cell". (see note)
15		SS		The SS verifies that the IE "Establishment cause" in the received RRC Connection REQUEST message is set to "Registration".
16			Void	
17			Void	
18a		→	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = CKSN1, "location area identification" = b, "mobile station classmark 1" as given by the ICS and "mobile identity" = TMSI2.
18b		SS		The SS starts integrity protection.
18c			Void	
19		←	LOCATION UPDATING ACCEPT	"Mobile identity" IE not included. LAI = a
20		SS		
21			Void	The SS releases the RRC connection and waits 5 s to guarantee that the UE is in service.
22		←	Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.12.2 "Initial UE identity" IE contains the TMSI (= TMSI2) and LAI (=a). Establishment Cause: Terminating Conversational Call.

Step	Direction		Message	Comments
	UE	SS		
23	→		PAGING RESPONSE	"Mobile identity" IE contains the TMSI (=TMSI2).
24		SS		The SS releases the RRC connection.
25			Void	
26		SS		Set the cell type of cell B to the "Serving cell". Set the cell type of cell A to the "non-suitable cell". (see note)
27		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST is set to "Registration".
28			Void	
29			Void	
30a	→		LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = CKSN1, "location area identification" = a, "mobile station classmark 1" as given by the ICS and "mobile identity" = TMSI2.
30b		SS		The SS starts integrity protection.
30c			Void	
31	←		LOCATION UPDATING ACCEPT	"Mobile identity" IE contains IMSI and LAI (=b).
32		SS		
33			Void	The SS waits 5 s to guarantee that the UE is in service.
34	←		PAGING TYPE 1	"UE identity" IE contains the old TMSI (= TMSI2). Paging Cause: Terminating Conversational Call.
35		UE		The UE shall ignore this message. This is checked during 5 s.
36	←		Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 "Initial UE identity" IE contains the IMSI. Establishment Cause: Terminating Conversational Call.
37	→		PAGING RESPONSE	"Mobile identity" IE contains the IMSI.
38		SS		The SS releases the RRC connection.
39			Void	
NOTE: The definitions for "Serving cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

### Specific message contents

None.

#### 9.4.1.5 Test requirement

At step 7 the UE shall acknowledge the reception of the new TMSI (TMSI2).

At step 11 the UE shall answer to paging with this TMSI (TMSI2).

At step 23 the UE shall answer to paging with the last allocated TMSI (TMSI2).

At step 35 the UE shall not answer paging with the last allocated TMSI, but at step 37 the UE shall still answer paging with IMSI.

## 9.4.2 Location updating / rejected

### 9.4.2.1 Location updating / rejected / IMSI invalid

#### 9.4.2.1.1 Definition

#### 9.4.2.1.2 Conformance requirement

- 1) If the network rejects a location updating from the UE with the cause "IMSI unknown in HLR", "Illegal MS" or "Illegal ME" the UE shall:

1.1 not perform normal location updating;

- 1.2 not perform periodic location updating;
  - 1.3 not respond to paging with IMSI;
  - 1.4 not respond to paging with TMSI;
  - 1.5 reject any request from CM entity for MM connection other than for emergency call;
  - 1.6 not perform IMSI detach if it is switched off or has its power source removed.
- 2) If the network rejects a location updating from the UE with the cause "IMSI unknown in HLR", "Illegal MS" or "Illegal ME" the UE, if it supports speech, shall accept a request for an emergency call by sending a RRC CONNECTION Request message with the establishment cause set to "emergency call" and include an IMEI as mobile identity in the CM SERVICE REQUEST message.
- 3) If the network rejects a location updating from the UE with the cause "IMSI unknown in HLR", "Illegal MS" or "Illegal ME" the UE shall delete the stored LAI, CKSN and TMSI.

#### Reference(s)

TS 24.008 clause 4.4.4.7.

#### 9.4.2.1.3 Test purpose

To test the behaviour of the UE if the network rejects the location updating of the UE with the cause "IMSI unknown in HLR", "illegal MS" or "Illegal ME".

#### 9.4.2.1.4 Method of test

##### Initial conditions

- System Simulator:
  - two cells: A and B, belonging to different location areas of the same PLMN;
  - IMSI attach/detach is allowed in both cells;
  - the T3212 time-out value is 1/10 hour in both cells.
- User Equipment:
  - the UE has valid TMSI(= TMSI1), CKSN(= CKSN1) and CK, IK. It is "idle updated" on cell A.

##### Related ICS/IXIT statement(s)

USIM removal possible while the UE is powered Yes/No.

Switch off on button Yes/No.

Support for speech Yes/No.

##### Test Procedure

The SS rejects a normal location updating with the cause value "IMSI unknown in HLR". The RRC CONNECTION is released. The SS checks that the UE has entered the state MM IDLE and the substate NO IMSI, i.e. does not perform normal location updating when a new cell of the same or another PLMN is entered, does not perform periodic updating, does not respond to paging, rejects any requests from CM entities except emergency calls, does not perform IMSI detach if it is switched off or has its power source removed and deletes the stored LAI, CKSN and TMSI.

The test is repeated with cause value "Illegal MS" and with cause value "Illegal ME".

## Expected sequence

The sequence is executed for execution counter  $k = 1, 2, 3$ .

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell B to the "Serving cell". Set the cell type of cell A to the "non-suitable cell". (see note)
2		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST is set to "Registration".
3			Void	
4			Void	
5	→		LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = CKSN1, "LAI" = a, "Mobile Identity" = TMSI1
6	←		LOCATION UPDATING REJECT	"Reject cause" IE is "IMSI unknown in HLR" for $k = 1$ , "Illegal MS" for $k = 2$ , "Illegal ME" for $k = 3$ .
7		SS		The SS releases the RRC Connection.
8			Void	
9		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "non-suitable cell". (see note)
10		UE		The UE performs cell reselection according to procedure as specified in (this however is not checked until step 23). The UE shall not initiate an RRC connection establishment on cell A or on cell B.
11		SS		The SS waits at least 7 minutes for a possible periodic updating.
12		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B.
13	←		PAGING TYPE 1	The UE is paged in cell A. "UE identity" IE contains IMSI. Paging Cause: Terminating Conversational Call.
14		UE		The UE shall ignore this message. This is verified during 3 s.
15	←		PAGING TYPE 1	The UE is paged in cell A. "UE identity" IE contains TMSI. Paging Cause: Terminating Conversational Call.
16		UE		The UE shall ignore this message. This is verified during 3 s.
17		UE		A MO CM connection is attempted.
18		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is checked during 3 s.
19		UE		If the UE supports speech (see ICS), it is made to perform an emergency call.
20		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST is set to "Emergency call".
This message is sent in cell A.				
21			Void	
22			Void	
23	→		CM SERVICE REQUEST	"CM service type": Emergency call establishment. "Mobile identity": type of identity is set to IMEI.
24	←		CM SERVICE ACCEPT	
25	→		EMERGENCY SETUP	
26	←		RELEASE COMPLETE	"Cause" = unassigned number.
27		SS		The SS releases the RRC connection.
28			Void	
29		UE		If possible (see ICS) USIM detachment is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.

Step	Direction		Message	Comments
	UE	SS		
30	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is checked during 3 s.
31	UE			Depending on what has been performed in step 29 the UE is brought back to operation.
32	SS			The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST is set to "Registration".
33			Void	
34			Void	
35		→	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = no key available, "mobile station classmark 1" as given by the ICS, "Mobile Identity" = IMSI, "LAI" = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE).
36		←	AUTHENTICATION REQUEST	"CKSN" = CKSN2.
37		→	AUTHENTICATION RESPONSE	
37a	SS			The SS starts integrity protection.
38		←	LOCATION UPDATING ACCEPT	"Mobile Identity" = TMSI.
39		→	TMSI REALLOCATION COMPLETE	
40	SS			The SS releases the RRC connection.
41			Void	
NOTE: The definitions for "Serving cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

#### Specific message contents

None.

#### 9.4.2.1.5 Test requirement

- 1) 1.1 At step 10 the UE shall not perform normal location updating.
- 1.2 At step 12 the UE shall not perform periodic location updating.
- 1.3 At step 14 the UE shall not respond to paging with IMSI.
- 1.4 At step 16 the UE shall not respond to paging with TMSI.
- 1.5 At step 18 the UE shall reject a MO CM connection.
- 1.6 At step 30 the UE shall not initiate an RRC connection establishment on cell A or on cell B.
- 2) At step 20 the UE shall accept a request for an emergency call with the establishment cause set to "Emergency call".
- 3) At step 35 the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the LAI IE set to "deleted LAI" on cell A.

#### 9.4.2.2 Location updating / rejected / PLMN not allowed

##### 9.4.2.2.1 Definition

##### 9.4.2.2.2 Conformance requirement

- 1) If the network reject a location updating from the UE with the cause "PLMN not allowed" the UE shall:
  - 1.1 not perform periodic updating;
  - 1.2 not perform IMSI detach when switched off;

- 1.3 not perform IMSI attach when switched on in the same location area;
  - 1.4 not perform normal location updating when in the same PLMN and when that PLMN is not selected manually;
  - 1.5 reject any request from CM entity for MM connection other than for emergency call.
- 2) If the network rejects a location updating from the UE with the cause "PLMN not allowed" the UE shall:
    - 2.1 perform normal location updating when a new PLMN is entered;
    - 2.2 accept a request for an emergency call, if it supports speech, by sending a RRC CONNECTION REQUEST message with the establishment cause set to "emergency call".
  - 3) If the network rejects a location updating from the UE with the cause "PLMN not allowed" and if after that the PLMN from which this rejection was received, is manually selected, the UE shall perform a normal location updating procedure.
  - 4) If the network rejects a location updating from the UE with the cause "PLMN not allowed" the UE shall delete the stored LAI, CKSN and TMSI.

#### Reference(s)

TS 24.008 clause 4.4.4.7.

#### 9.4.2.2.3 Test purpose

To test the behaviour of the UE if the network rejects the location updating of the UE with the cause "PLMN not allowed".

#### 9.4.2.2.4 Method of test

##### 9.4.2.2.4.1 Location updating / rejected / PLMN not allowed / test 1

#### Initial conditions

- System Simulator:
  - one cell: C, belonging to PLMN1;
  - two cells: A and B, belonging to different location areas a and b and belonging to PLMN2. PLMN2 is different from HPLMN and from PLMN1;
  - IMSI attach/detach is allowed in cells A and B but not in cell C;
  - the T3212 time-out value is 1/10 hour in cells A and B.
- User Equipment:
  - the UE has a valid TMSI(= TMSI1) and CKSN(= CKSN1). It is "idle updated" on cell C;
  - the UE is in manual mode for PLMN selection.

#### Related ICS/IXIT statement(s)

USIM removal possible while the UE is powered Yes/No.

Switch off on button Yes/No.

The UE is automatically in automatic mode after switch on Yes/No.

Support for speech Yes/No.

## Test Procedure

The SS rejects a normal location updating with the cause value "PLMN not allowed". The RRC CONNECTION is released. The SS checks that the UE does not perform periodic updating, does not perform IMSI detach, does not perform IMSI attach if activated in the same location area, rejects any request for CM connection establishment other than emergency call, accepts a request for an emergency call, performs normal location updating only when a new PLMN is entered and deletes the stored LAI, CKSN and TMSI.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			<p>The following messages are sent and shall be received on cell B.</p> <p>The UE is switched off (or power is removed). Set the cell type of cell B to the "Serving cell". Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell C to the "non-suitable cell". (see note)</p> <p>The UE is switched on. (or power is reapplied) If necessary the UE is put in manual selection mode. The UE shall offer the new PLMN as available to the user. The PLMN is manually selected.</p> <p>The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".</p> <p>"location updating type" = normal, "CKSN" = CKSN1, "LAI" = c, "Mobile Identity" = TMSI1 "Reject cause" = PLMN not allowed. The SS releases the RRC connection.</p>
2	SS			
3	UE			
4	SS			
5			Void	
6			Void	
7	→		LOCATION UPDATING REQUEST	
8	←		LOCATION UPDATING REJECT	
9	SS			
10			Void	
11	SS			The SS waits for a possible periodic updating for 7 minutes.
12	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B.
13	UE			<p>If possible (see ICS) USIM detachment is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.</p> <p>The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is checked during 3 s.</p>
14	UE			
15	UE			Depending on what has been performed in step 13 the UE is brought back to operation. The UE is not made to select PLMN 2.
16	UE			The UE shall not initiate an RRC connection establishment. This is checked during 3 s.
17	SS			<p>The following message are sent and shall be received on cell A.</p> <p>Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)</p> <p>No access to the network shall be registered by the SS within one minute.</p>
18	UE			
19	UE			<p>If the UE supports speech (see ICS) it is made to perform an emergency.</p> <p>The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Emergency Call".</p> <p>"CM service type" = Emergency call establishment. Cause IE: "unassigned number".</p>
20	SS			
21			Void	
22			Void	
23	→		CM SERVICE REQUEST	
24	←		CM SERVICE ACCEPT	
25	→		EMERGENCY SETUP	
26	←		RELEASE COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
27		SS		The SS releases the RRC connection.
28			Void	
29 30	UE UE			A MO CM connection is attempted. The UE shall not initiate an RRC connection establishment. This is checked during 3 s.
31 32	UE SS			The following messages are sent and shall be received on cell C. The UE is switched off. Set the cell type of cell C to the "Serving cell". Set the cell type of cell A to the "non-suitable cell". Set the cell type of cell B to the "non-suitable cell". (see note)
33	UE			The UE is switched on. If necessary the UE is placed into the automatic mode.
34	SS			The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST is set to "Registration".
35			Void	
36			Void	
37		→	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = no key available, "LAI" = deleted LAI (the MCC and MNC hold the values of PLMN1, the LAC is coded FFFE) "mobile identity" = IMSI.
37a	SS			The SS starts integrity protection.
38	←		LOCATION UPDATING ACCEPT	"Mobile identity" = TMSI.
39	→		TMSI REALLOCATION COMPLETE	
40	SS			The SS releases the RRC connection.
41			Void	
NOTE: The definitions for "Serving cell", "Suitable neighbour cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

Specific message contents:

None.

#### 9.4.2.2.4.2 Location updating / rejected / PLMN not allowed / test 2

Initial conditions

- System Simulator:
  - one cell C, belonging to PLMN1;
  - two cells A and B, belonging to different location areas a and b and belonging to PLMN2. PLMN2 is different from HPLMN;
  - IMSI attach/detach is allowed in cells A and B but not in cell C;
  - the T3212 time-out value is 1/10 hour in cells A and B.
- User Equipment:
  - the UE has a valid TMSI. It is "idle updated" on cell C.

Related ICS/IXIT statement(s)

USIM removal possible while UE is powered Yes/No.

Switch off on button Yes/No.

The UE is automatically in automatic mode after switch on Yes/No.

### Test Procedure

The SS rejects a normal location updating with the cause value "PLMN not allowed". The RRC CONNECTION is released. Then the PLMN from which this rejection was received is manually selected and the SS checks that a normal location updating is performed.

Expected sequence

Step	Direction		Message	Comments	
	UE	SS			
1	UE			<p>The following messages are sent and shall be received on cell B.</p> <p>The UE is switched off (or power is removed). Set the cell type of cell B to the "Serving cell". Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell C to the "non-suitable cell". (see note)</p> <p>The UE is switched on (or power is reapplied). If the UE is in manual mode, it shall offer the new PLMN as available to the user. In this case the PLMN is manually selected.</p> <p>The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".</p> <p>Void</p> <p>Void</p> <p>→ LOCATION UPDATING REQUEST</p> <p>← LOCATION UPDATING REJECT "Reject cause" = PLMN not allowed.</p> <p>SS Void The SS releases the RRC connection.</p> <p>Void</p> <p>UE The UE is made to search for PLMNs and the PLMN indicated by the SS is manually selected.</p> <p>SS The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".</p> <p>Void</p> <p>Void</p> <p>→ LOCATION UPDATING REQUEST "location updating type" = normal, "CKSN" = no key available, "LAI" = deleted LAI (the MCC and MNC hold the values of PLMN1, the LAC is coded FFFE) "mobile identity" = IMSI.</p> <p>SS The SS starts integrity protection.</p> <p>← LOCATION UPDATING ACCEPT</p> <p>SS The SS releases the RRC connection.</p> <p>Void</p>	
2	SS				
3	UE				
3a	UE				
4	SS				
5			Void		
6			Void		
7			→ LOCATION UPDATING REQUEST		
8			← LOCATION UPDATING REJECT		
9	SS		Void		
10			Void		
11	UE				
12	SS				
13			Void		
14			Void		
15			→ LOCATION UPDATING REQUEST		
15a	SS				
15b	←		LOCATION UPDATING ACCEPT		
16	SS				
17			Void		
The following messages are sent and shall be received on cell C.					
18	UE			<p>The UE is switched off. Set the cell type of cell C to the "Serving cell". Set the cell type of cell A to the "non-suitable cell". Set the cell type of cell B to the "non-suitable cell". (see note)</p> <p>The UE is switched on. If necessary, the UE is put into the automatic mode.</p> <p>The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".</p> <p>Void</p> <p>Void</p> <p>→ LOCATION UPDATING REQUEST "location updating type" = normal, "CKSN" = no key available, "LAI" = deleted LAI (the MCC and MNC hold the values of PLMN1, the LAC is coded FFFE) "mobile identity" = IMSI.</p> <p>SS The SS starts integrity protection.</p> <p>← LOCATION UPDATING ACCEPT "Mobile identity" = TMSI.</p> <p>→ TMSI REALLOCATION COMPLETE</p> <p>SS The SS releases the RRC connection.</p> <p>Void</p>	
19	SS				
20	UE				
21	SS				
22			Void		
23			Void		
24			→ LOCATION UPDATING REQUEST		
24a	SS				
25	←		LOCATION UPDATING ACCEPT		
26	→		TMSI REALLOCATION COMPLETE		
27	SS				
28			Void		
NOTE: The definitions for "Serving cell", "Suitable neighbour cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".					

Specific message contents

None.

#### 9.4.2.2.5 Test requirement

- 1) 1.1 At step 12 in test 1 the UE shall not perform periodic updating.
  - 1.2 At step 14 in test 1 the UE shall not initiate an RRC connection establishment (IMSI detach).
  - 1.3 At step 16 in test 1 the UE shall not initiate an RRC connection establishment (IMSI attach).
  - 1.4 At step 16 in test 1 the UE shall not perform normal location updating.
  - 1.5 At step 30 in test 1 the UE shall reject a MO CM connection.
- 2) 2.1 At step 37 in test 1 the UE shall perform normal location updating.
  - 2.2 At step 20 in test 1 the UE shall accept a request for an emergency call with the establishment cause set to "Emergency call".
- 3) At step 11 in test 2 the UE is made to search for PLMNs and the PLMN indicated by the SS is manually selected, and at step 15 the UE shall perform a normal location updating procedure.
- 4) At step 37 in test 1 the UE shall send a LOCATION UPDATING REQUEST message with Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and LAI IE set to "deleted LAI" on cell C.

#### 9.4.2.3 Location updating / rejected / location area not allowed

##### 9.4.2.3.1 Definition

##### 9.4.2.3.2 Conformance requirement

- 1) If the network rejects a location updating from the UE with the cause "Location Area not allowed" the UE shall:
  - 1.1 not perform periodic updating;
  - 1.2 not respond to paging with TMSI;
  - 1.3 reject any request from CM entity for MM connection other than for emergency call;
  - 1.4 not perform IMSI detach.
  - 1.5 not delete the list of "equivalent PLMNs".
- 2) If the network rejects a location updating from the UE with the cause "Location Area not allowed" the UE shall:
  - 2.1 perform normal location updating when a new location area is entered;
  - 2.2 accept a request for an emergency call, if it supports speech, by sending a RRC CONNECTION REQUEST message with the establishment cause set to "emergency call";
  - 2.3 delete the list of forbidden LAs after switch off (power off).
- 3) If the network rejects a location updating from the UE with the cause "Location Area not allowed" the UE shall delete the stored LAI, CKSN and TMSI.

Reference(s)

TS 24.008 clause 4.4.4.7.

##### 9.4.2.3.3 Test purpose

To test the behaviour of the UE if the network rejects the location updating of the UE with the cause "Location Area not allowed".

To test that the UE deletes the list of forbidden LAs after switch off (power off).

#### 9.4.2.3.4 Method of test

##### Initial conditions

- System Simulator:
  - three cells: A, B and C, belonging to different location areas a, b and c. Cell A and B belongs to PLMN1. Cell C belongs to PLMN2.
  - IMSI attach/detach is allowed in both cells;
  - the T3212 time-out value is 1/10 hour in both cells.
- User Equipment:
  - the UE has a valid TMSI(= TMSI1) and CKSN(= CKSN1). It is "idle updated" on cell A.
  - the UE has a list of "equivalent PLMNs" containing PLMN1 and PLMN2.

##### Related ICS/IXIT statement(s)

Switch off on button Yes/No.

Support for speech Yes/No.

Method to clear the list of forbidden location areas periodically.

##### Test Procedure

The SS rejects a normal location updating with the cause value "Location Area not allowed". The RRC CONNECTION is released. The SS checks that the UE does not perform periodic updating, does not respond to paging with TMSI, rejects any requests from CM entities for MM-connections except emergency calls, does not perform IMSI detach, does not delete the list of "equivalent PLMNs", performs normal location updating when a new location area is entered, deletes the list of forbidden LAs when switched off and deletes the stored LAI, CKSN and TMSI.

Different types of UE may use different methods to periodically clear the list of forbidden location areas (e.g. every day at 12am). If the list is cleared while the test is being run, it may be necessary to re-run the test.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell B to the "Serving cell". Set the cell type of cell A to the "non-suitable cell". Set the cell type of cell C to the "non-suitable cell". (see note).
2		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3			Void	
4			Void	
5	→		LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = CKSN1, "LAI" = a, "Mobile Identity" = TMSI1
6	←		LOCATION UPDATING REJECT	"Reject cause" = "Location Area not allowed".
7		SS		After the sending of this message, the SS waits for the disconnection of the mainsignalling link. The SS releases the RRC connection.
8			Void	
9		SS		SS waits for a possible location updating for 7 minutes.
10		UE		The UE shall not initiate an RRC-connection establishment either on cell A or cell B.
11	←		PAGING TYPE 1	The UE is paged in cell B. "UE identity" = TMSI. Paging Cause: Terminating Conversational Call.
12		UE		The UE shall ignore this message. This is checked during 3 s.
13		UE		A MO CM connection is attempted.
14		UE		The UE shall not initiate an RRC connection establishment on cell A or cell B. This is checked during 3 s.
15		UE		If the UE supports speech (see ICS), it is made to perform an emergency call.
16		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Emergency call".
17			Void	
18			Void	
19	→		CM SERVICE REQUEST	"CM service type": Emergency call establishment.
20	←		CM SERVICE ACCEPT	
21	→		EMERGENCY SETUP	
22	←		RELEASE COMPLETE	Cause: "unassigned number".
23		SS		The SS releases the RRC connection.
24			Void	
25		UE		If possible (see ICS) switch off is performed. Otherwise the power is removed.
26		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B (check for IMSI detach) This is checked during 3 s.
27		UE		Depending on what has been performed in step 25 the UE is brought back to operation.
28		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
29			Void	
30			Void	
31	→		LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = no key available, "LAI" = deleted LAI, "mobile identity" = IMSI (This checks the deletion of the forbidden lists)
32	←		LOCATION UPDATING REJECT	"Reject cause" = "Location Area not allowed".
33		SS		The SS releases the RRC connection.
34			Void	

The following messages are sent and shall be received on cell C.

Step	Direction		Message	Comments
	UE	SS		
35		SS		Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "non-suitable cell". Set the cell type of cell C to the "Serving cell". (see note).
36		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
37			Void	
38			Void	
39		→	LOCATION UPDATING REQUEST	
40		←	AUTHENTICATION REQUEST	
41		→	AUTHENTICATION RESPONSE	
41a		SS		The SS starts integrity protection.
42		←	LOCATION UPDATING ACCEPT	Mobile identity = TMSI.
43		→	TMSI REALLOCATION COMPLETE	
44		SS		The SS releases the RRC connection.
45			Void	
NOTE: The definitions for "Serving cell", "Suitable neighbour cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

#### Specific message contents

None.

#### 9.4.2.3.5 Test requirement

- 1) 1.1 At step 10 the UE shall not perform periodic updating.
- 1.2 At step 12 the UE shall not respond to paging with TMSI.
- 1.3 At step 14 the UE shall not initiate an RRC connection establishment.
- 1.4 At step 26 the UE shall not initiate an RRC connection establishment (IMSI detach).
- 1.5 At step 39 the UE shall perform normal location updating on cell C.
- 2) 2.1 At step 39 the UE shall perform normal location updating.
- 2.2 At step 16 the UE shall accept a request for an emergency call.
- 2.3 At step 31 the UE shall send a LOCATION UPDATING REQUEST message on cell B.
- 3) At step 31 the UE shall send a LOCATION UPDATING REQUEST message with Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and LAI IE set to "deleted LAI" on cell B.

#### 9.4.2.4 Location updating / rejected / roaming not allowed in this location area

##### 9.4.2.4.1 Definition

##### 9.4.2.4.2 Conformance requirement

- 1) If the network rejects a location updating from the UE with the cause "Roaming not allowed in this location area" the UE shall:
  - 1.1 not perform periodic updating;
  - 1.2 not respond to paging with TMSI;
  - 1.3 reject any request from CM entity for MM connection other than for emergency call;

- 1.4 not perform IMSI detach.
- 2) If the network rejects a location updating from the UE with the cause "Roaming not allowed in this location area" the UE shall:
  - 2.1 perform normal location updating when a new location area is entered;
  - 2.2 accept a request for an emergency call, if it supports speech, by sending a RRC CONNECTION Request message with the establishment cause set to "emergency call";
  - 2.3 periodically search for its HPLMN.
- 3) The UE shall reset the list of "Forbidden location areas for roaming" when it is switched off or has its power source removed or when the USIM is removed.
- 4) The UE shall contain a list of "forbidden location areas for roaming". The location area identification received on the BCCH that triggered the location updating request shall be added to the suitable list whenever a LOCATION UPDATE REJECT message is received with the cause "Roaming not allowed in this location area". The lists shall accommodate each 10 or more location area identifications.

#### Reference(s)

TS 24.008 clause 4.4.4.7.

#### 9.4.2.4.3 Test purposes

##### Test purpose 1

To test that on receipt of a rejection using the Roaming cause code, the UE ceases trying to update on that cell, that this situation continues for at least one periodic location interval period, and that the corresponding list is re-set by switching off the UE or removing its power source.

##### Test purpose 2

To test that if no cell is available, the UE does not answer to paging with TMSI, rejects a request from CM entity other than for emergency calls.

##### Test purpose 3

To test that at least 6 entries can be held in the list of "forbidden location areas for roaming" (the requirement is to store at least 10 entries. This is not fully tested by the third procedure).

##### Test purpose 4

To test that if a cell of the Home PLMN is available then the UE returns to it in preference to any other available cell.

##### Test purpose 5

To test that if the USIM is removed the list of "forbidden location areas for roaming" is cleared.

#### 9.4.2.4.4 Method of test

##### Initial conditions

The initial conditions shall be met before each of the different procedures.

- System Simulator:
  - for procedures 1, 2, 3 and 5: Two cells A and B, belonging to different location areas of the same PLMN with LAI a and b. The MCC of that PLMN is the same as that of the HPLMN. The MNC of that PLMN is different from that of the HPLMN;

- for procedure 4: three cells A, B, C of the same PLMN which is not the HPLMN with 3 different location area codes. Cells should differ in signal strength by 10 dB with cell A being the strongest and cell C the weakest. There should be a 20 dB range between A and C. A should be set to a level of - 40 dBm;
- IMSI attach/detach is allowed in every cell;
- the T3212 time-out value is 1/10 hour in every cell.
- User Equipment:
  - procedures 1, 2, 3 and 5: The UE has valid TMSI, CKSN and CK, IK. It is "idle updated" on cell B;
  - procedure 4: The UE has valid TMSI, CKSN and CK, IK. It is "idle updated" on cell A;
  - the list of "forbidden location areas for roaming" shall be empty (this may be achieved by either removing the USIM or switching the UE OFF then ON or removing the UE power source depending on ICS).

#### Related ICS/IXIT statement(s)

USIM removal possible while UE is powered Yes/No.

Switch off on button Yes/No.

Support of speech Yes/No.

Method to clear the list of location areas for roaming periodically.

The UE is automatically in automatic mode after switch on Yes/No.

#### Test Procedures

##### Procedure 1:

- The SS rejects a normal location updating with the cause value "Roaming not allowed in this location area". The RRC CONNECTION is released. The SS checks that the UE does not perform periodic location updating procedure. The UE is turned off and then on. The SS checks that the UE performs location updating on the cell on which its location update request had been rejected (this checks that the LA is not the forbidden list after switch on). This procedure is performed another time but the deletion of the list is checked while removing the USIM (instead of turning off the UE).

##### Procedure 2:

- The SS rejects a normal location updating with the cause value "Roaming not allowed in this location area". The RRC CONNECTION is released. The SS checks that the UE does not answer to a paging message with TMSI, rejects a request from CM entity but supports an emergency call.

##### Procedure 3:

- The SS rejects a normal location updating with the cause value "Roaming not allowed in this location area". This is done for 6 different location areas. Then the SS checks that the UE does not attempt to begin a location updating procedure on the non-allowed location areas.

##### Procedure 4:

- The SS accepts a periodic location updating on a cell not belonging to the HPLMN. Then when the UE attempts to perform a periodic location updating to this cell, the SS rejects this location updating with the cause value "Roaming not allowed in this location area". Two cells are then available, one belonging to the HPLMN but with the weakest level. It is checked that the UE returns to its HPLMN.

##### Procedure 5: If USIM removal is possible while UE is powered:

- The SS rejects a normal location updating with the cause value "Roaming not allowed in this location area". The RRC CONNECTION is released. The SS checks that the UE does not perform periodic location updating procedure. The USIM is removed and inserted in the UE. The SS checks that the UE performs location updating on the cell on which its location update request had been rejected (this checks that the LA is not the forbidden list after switch on).

Different types of UE may use different methods to periodically clear the list of forbidden areas (e.g. every day at 12am) for roaming. If the list is cleared while the test is being run, it may be necessary to re-run the test.

### Expected sequence

The following procedure is used during the test:

- change\_LAI (x):
  - the purpose of this procedure is to change the value of Location Area Identifier of cell x;
  - the Location Area Identifier of cell x shall be changed. The code shall be chosen arbitrarily but shall be different from any previously used in this procedure. The code shall have the same MCC as the Home PLMN and shall not have the same MNC as the Home PLMN.

### Procedure 1

Step	Direction		Message	Comments
	UE	SS		
1		SS		<p>The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "non-suitable cell". (see note). The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".</p> <p>Location Updating Type = normal.</p> <p>"Reject cause" IE is "Roaming not allowed in this location area". The SS releases the RRC connection</p>
2		SS		
3			Void	
4			Void	
5	→		LOCATION UPDATING REQUEST	
6	←		LOCATION UPDATING REJECT	
7		SS		
8			Void	
9		SS		The SS waits at least 7 minutes for a possible location updating.
10		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B.
11		UE		<p>If possible (see ICS) the UE is switched off. Otherwise if possible the power is removed. Depending on what has been performed in step 11 the UE is brought back to operation and placed in an automatic mode. The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".</p> <p>Location Updating Type = normal.</p> <p>The SS starts integrity protection. "Mobile Identity" not IE included. The SS releases the RRC connection.</p>
12		UE		
13		SS		
14			Void	
15			Void	
16	→		LOCATION UPDATING REQUEST	
16a		SS		
17	←		LOCATION UPDATING ACCEPT	
18		SS		
19			Void	
NOTE: The definitions for "Serving cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

## Procedure 2

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note).
2		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration". This message is sent on cell A.
3			Void	
4			Void	
5		→	LOCATION UPDATING REQUEST	
6		←	LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
7		SS		The SS releases the RRC connection.
8			Void	
9		SS		The following messages are sent and shall be received on cell B. The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
10			Void	
11			Void	
12		→	LOCATION UPDATING REQUEST	
13		←	LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
14		SS		The SS releases the RRC connection.
15			Void	
16		SS		The SS waits for a possible location updating procedure on both cells A and B for 2 minutes.
17		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B within 2 minutes after the end of step 15.
18		←	PAGING TYPE 1	"UE identity" = TMSI. This message is sent on cell A and on cell B.
19		UE		Paging Cause: Terminating Conversational Call. The UE shall not initiate an RRC connection on cell A or on cell B. This is checked during 3 s.
20		UE		A MO CM connection is attempted.
21		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is checked during 3 s.
The following messages are sent and shall be received on cell A. Steps 22 to 31 are performed if the UE supports speech.				
22		UE		An emergency call is attempted.
23		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Emergency Call".
24			Void	
25			Void	
26		→	CM SERVICE REQUEST	"CM service type": Emergency call establishment.
27		←	CM SERVICE ACCEPT	
28		→	EMERGENCY SETUP	
29		←	RELEASE COMPLETE	"Cause" = unassigned number.
30		SS		The SS releases the RRC connection.
31			Void	
NOTE: The definitions for "Serving cell" and "Suitable neighbour cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

## Procedure 3

Step	Direction		Message	Comments
	UE	SS		
The following messages are sent and shall be received on cell A				
1		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	
6	←		LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
7	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
The following messages are sent and shall be received on cell B.				
9	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
10	←		RRC CONNECTION SETUP	
11	→		RRC CONNECTION SETUP COMPLETE	
12	→		LOCATION UPDATING REQUEST	
13	←		LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
14	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
15	→		RRC CONNECTION RELEASE COMPLETE	
16	SS			Change_LAI (A) within 5 s after step 13.
The following messages are sent and shall be received on cell A.				
17	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
18	←		RRC CONNECTION SETUP	
19	→		RRC CONNECTION SETUP COMPLETE	
20	→		LOCATION UPDATING REQUEST	
21	←		LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
22	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
23	→		RRC CONNECTION RELEASE COMPLETE	
24	SS			Change_LAI (B) within 5 s after step 21.
The following messages are sent and shall be received on cell B.				
25	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
26	←		RRC CONNECTION SETUP	
27	→		RRC CONNECTION SETUP COMPLETE	
28	→		LOCATION UPDATING REQUEST	
29	←		LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
30	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
31	→		RRC CONNECTION RELEASE COMPLETE	
32	SS			Change_LAI (A) within 5 s after step 29.
The following messages are sent and shall be received on cell A.				
33	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
34	←		RRC CONNECTION SETUP	
35	→		RRC CONNECTION SETUP COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
36		→	LOCATION UPDATING REQUEST	
37		←	LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
38		←	RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
39		→	RRC CONNECTION RELEASE COMPLETE	
40		SS		Change_LAI (B) within 5 s after step 37.
The following messages are sent and shall be received on cell B.				
41		→	RRC CONNECTION REQUEST	"Establishment cause": Registration.
42		←	RRC CONNECTION SETUP	
43		→	RRC CONNECTION SETUP COMPLETE	
44		→	LOCATION UPDATING REQUEST	
45		←	LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
46		←	RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
47		→	RRC CONNECTION RELEASE COMPLETE	
48		SS		The SS waits for a possible location updating procedure on both cells A and B for 7 minutes.
49		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B within 7 minutes after the end of step 47.
NOTE: The definitions for "Serving cell" and "Suitable neighbour cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

## Procedure 4

Step	Direction		Message	Comments
	UE	SS		
The following messages are sent and shall be received on cell A.				
1		SS		The SS waits for a periodic location updating procedure on cell A for 7 minutes after the initial conditions have been established.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	Location Updating Type = periodic.
6	←		LOCATION UPDATING ACCEPT	"Mobile Identity" not IE included.
7	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9		SS		The location area identity of cell C shall be changed to that of a location area in the Home PLMN.
10		SS		The SS waits for a periodic location updating procedure on cell A for 7 minutes.
11	→		RRC CONNECTION REQUEST	"Establishment cause": Registration. This message is sent on cell A within 7 minutes after the end of step 8.
12	←		RRC CONNECTION SETUP	
13	→		RRC CONNECTION SETUP COMPLETE	
14	→		LOCATION UPDATING REQUEST	"Location updating type" = periodic.
15	←		LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
16	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
17	→		RRC CONNECTION RELEASE COMPLETE	
The following messages are sent and shall be received on cell C.				
18	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
19	←		RRC CONNECTION SETUP	
20	→		RRC CONNECTION SETUP COMPLETE	
21	→		LOCATION UPDATING REQUEST	"Location updating type" = periodic.
22	←		LOCATION UPDATING ACCEPT	"Mobile Identity" not IE included.
23	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
24	→		RRC CONNECTION RELEASE COMPLETE	

## Procedure 5

Step	Direction		Message	Comments
	UE	SS		
The following messages are sent and shall be received on cell A.				
1		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "non-suitable cell". (see note)
2		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3			Void	
4			Void	
5	→		LOCATION UPDATING REQUEST	
6	←		LOCATION UPDATING REJECT	"Reject cause" IE is "Roaming not allowed in this location area".
7				The SS releases the RRC connection.
8			Void	
9		SS		The SS waits at least 7 minutes for a possible location updating.
10		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B.
11		UE		The USIM is removed.
12		UE		The USIM is inserted into the ME.
13		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
14			Void	
15			Void	
16	→		LOCATION UPDATING REQUEST	Location Updating Type = normal.
16a		SS		The SS starts integrity protection.
17	←		LOCATION UPDATING ACCEPT	"Mobile Identity" not IE included.
18		SS		The SS releases the RRC connection.
19			Void	
NOTE: The definitions for "Serving cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

## Specific message contents

None.

## 9.4.2.4.5 Test requirement

- 1) 1.1 At step 10 in Procedure 1 the UE shall not perform periodic updating.
- 1.2 At step 19 in Procedure 2 the UE shall not respond to paging with TMSI.
- 1.3 At step 21 in procedure 2 the UE shall not initiate an RRC connection establishment.
- 1.4 After step 13 in Procedure 5 the UE shall perform location updating (at step 16; not perform IMSI detach).
- 2) 2.1 After step 9 in Procedure 2 the UE perform normal location updating (at step 12).
- 2.2 At step 23 in Procedure 2 the UE shall initiate a RRC CONNECTION REQUEST message with the establishment cause set to "Emergency call";
- 2.3 After step 14 in Procedure 4 the UE shall attempt to location updating with location updating type "periodic" (at step 21: periodically search for its HPLMN).
- 3) After step 12 in Procedure 5 the UE shall perform location updating (at step 16) when the USIM is removed.
- 4) At step 49 in Procedure 3 the UE shall not attempt to begin a location updating procedure.

## 9.4.2.5 Location updating / rejected / No Suitable Cells In Location Area

### 9.4.2.5.1 Definition

### 9.4.2.5.2 Conformance requirement

- 1) If the network rejects a location updating from the UE with the cause " No Suitable Cells In Location Area " the UE shall:
  - 1.1 perform normal location updating at a suitable cell in another location area in the same PLMN,
  - 1.2 not delete the list of "equivalent PLMNs".

### Reference(s)

TS 24.008 clause 4.4.4.7.

### 9.4.2.5.3 Test purpose

To test the behaviour of the UE if the network rejects the location updating of the UE with the cause "No Suitable Cells In Location Area".

### 9.4.2.5.4 Method of test

#### Initial conditions

- System Simulator:
  - two cells: A and B, belonging to different location areas a and b and belonging to PLMN1;
  - one cell: C, belonging to PLMN2;
  - one cell: D, belonging to PLMN3;
  - IMSI attach/detach is allowed in cells A, B, C and D;
- User Equipment:
  - the UE has a valid TMSI(= TMSI1) and CKSN(= CKSN1). It is "idle updated" on cell A.
  - the UE has a list of "equivalent PLMNs" containing PLMN1 and PLMN2.

#### Related ICS/IXIT statement(s)

None.

#### Test Procedure

The SS rejects a normal location updating with the cause value "No Suitable Cells In Location Area". The RRC CONNECTION is released. The SS checks that the UE shall search for a suitable cell in a different location area on the same PLMN, and shall perform normal location updating procedure in that cell

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
The following messages are sent and shall be received on cell B.				
1		SS		Set the cell type of cell B to the "Serving cell". Set the cell type of cell A to the "non-suitable cell". Set the cell type of cell C to the "Suitable neighbour cell". Set the cell type of cell D to the "Suitable neighbour cell". (see note)
2		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3			Void	
4			Void	
5		→	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = CKSN1, "LAI" = a, "mobile station classmark 1" as given by the ICS and "Mobile Identity" = TMSI1.
6		←	LOCATION UPDATING REJECT	"Reject cause" = "No Suitable Cells In Location Area".
7		SS		The SS releases the RRC connection.
8			Void	
The following messages are sent and shall be received on cell C.				
9		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
10			Void	
11			Void	
12		→	LOCATION UPDATING REQUEST	"location updating type" = normal, "CKSN" = CKSN1, "LAI" = a, "mobile station classmark 1" as given by the ICS, "Mobile Identity" = TMSI1.
13			Void	
14			Void	
15		SS		The SS starts integrity protection.
16			Void	
17		←	LOCATION UPDATING ACCEPT	Mobile identity = TMSI, LAI = c.
18		→	TMSI REALLOCATION COMPLETE	
19		SS		The SS releases the RRC connection.
20			Void	
NOTE: The definitions for "Serving cell", "Suitable neighbour cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

Specific message contents

None.

9.4.2.5.5 Test requirement

At step 12 the UE shall perform normal location updating on cell C.

### 9.4.3 Location updating / abnormal cases

#### 9.4.3.1 Void

#### 9.4.3.2 Location updating / abnormal cases / attempt counter less or equal to 4, LAI different

##### 9.4.3.2.1 Definition

##### 9.4.3.2.2 Conformance requirement

- 1) When a failure such as cases d), f), g) and h) of clause 4.4.4.9 of TS 24.008 has occurred during a normal location updating procedure, if the attempt counter is smaller than 4 and after expiry of T3211, the UE shall resend its LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating Type IE set to "normal location updating".
- 2) When a failure such as cases d), f), g) and h) of clause 4.4.4.9 of TS 24.008 has occurred during a normal location updating procedure the UE shall:
  - 2.1 not answer to paging with the previously allocated TMSI;
  - 2.2 not perform the IMSI detach procedure, when switched off.
- 3) When a failure such as case e) of clause 4.4.4.9 of TS 24.008 has occurred during a normal location updating procedure and when an emergency call establishment is requested by the user the UE, if it supports speech, shall send a CM SERVICE REQUEST message with CM Service Type IE set to "emergency call establishment", CKSN IE set to "no key available" and Mobile Identity IE set to its IMSI and after acceptance by the network it shall send an EMERGENCY SETUP message.
- 4) When a failure such as cases d), f), g) and h) of clause 4.4.4.9 of TS 24.008 has occurred during a normal location updating procedure the UE shall use a request from CM entity other than emergency call as a trigger for a normal location updating procedure and shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating Type IE set to "normal location updating".
- 5) When a failure such as cases d), f), g) and h) of clause 4.4.4.9 of TS 24.008 has occurred during a normal location updating procedure the UE shall answer to paging with IMSI and shall send a PAGING RESPONSE message with CKSN IE set to "no key available" and Mobile Identity IE set to its IMSI.
- 6) When a failure such as cases d), f), g) and h) of clause 4.4.4.9 of TS 24.008 has occurred during a normal location updating procedure the UE shall perform a normal location updating procedure as soon as it enters a new cell.

#### References

TS 24.008 clauses 4.4.4.2, 4.4.4.9.

##### 9.4.3.2.3 Test purpose

To verify that the UE performs normal location updating procedures when its attempt counter is smaller than 4.

To check that the UE does not perform the IMSI detach procedure when "idle not updated".

To verify that when "idle not updated" the UE can perform an emergency call.

To verify that when "idle not updated" the UE uses requests from CM layer other than emergency call as triggering of a normal location updating procedure.

To verify that the UE performs a normal location updating procedure if it enters a new cell while being "idle not updated".

#### 9.4.3.2.4 Method of test

##### Initial conditions

- System Simulator:
  - two cells: A and B of the same PLMN, belonging to different location areas with LAI a and b;
  - ATT flag shall be set to IMSI attach/detach allowed.
- User Equipment:
  - the UE is "idle updated" on cell A. A valid CKSN value is stored in the USIM and is noted "initial CKSN". A TMSI is allocated.

##### Related ICS/IXIT statements

USIM removal possible while UE is powered Yes/No.

Switch off on button Yes/No.

Support for speech Yes/No.

##### Test Procedure

The UE is made to perform a normal location updating procedure. Five types of failure cases are triggered:

- sending of a Location Updating Reject with cause randomly chosen between all defined cause values except 2, 3, 6, 11, 12 and 13 (which trigger a different action) (case g of TS 24.008 clause 4.4.4.9);
- RRC connection failure (case d);
- sending of a RRC CONNECTION RELEASE message before the normal end of the procedure (case f);
- T3210 time-out (case e);
- RR connection establishment failure (case h).

As there is no stored LAI or the stored LAI is different from the broadcast LAI, and the attempt counter in the UE shall be lower than 4, the UE enters the state MM IDLE and substate ATTEMPTING TO UPDATE and waits for T3211 seconds before trying again a location updating procedure.

Then the behaviour of the UE in the MM IDLE state and ATTEMPTING TO UPDATE substate is checked, that is:

- not answer to paging with TMSI;
- not perform an IMSI detach procedure;
- support request for emergency call;
- use requests from CM layer other than emergency call as triggering of a normal location updating procedure;
- perform normal location updating procedure when a new cell is entered.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
The following messages are sent and shall be received on cell B.				
1		SS		Set the cell type of cell B to the "Serving cell". Set the cell type of cell A to the "non-suitable cell". (see note)
2	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = a, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
6	←		LOCATION UPDATING REJECT	IE Reject cause is set to #X in table 10.5.95 of TS 24.008, causes #2, #3, #6, #11, #12, #13 and #15 being excluded.
7	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC connection is released.
8	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
9	←		RRC CONNECTION SETUP	
12	→		RRC CONNECTION SETUP COMPLETE	
13	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
14		SS		The SS modifies the scrambling code of DL DPCH for generating lower layer failure.
15			(void)	
15a	→		CELL UPDATE	CCCH.
15b	←		RRC CONNECTION RELEASE	CCCH.
15c		SS		The SS re-modifies the scrambling code of DL DPCH to the original one.
15d		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC connection is released.
16	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
17	←		RRC CONNECTION SETUP	
18	→		RRC CONNECTION SETUP COMPLETE	
19	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
20	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
21	→		RRC CONNECTION RELEASE COMPLETE	
22		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC connection is released.
23	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
24	←		RRC CONNECTION SETUP	
25	→		RRC CONNECTION SETUP COMPLETE	
26	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
27	←		AUTHENTICATION REQUEST	CKSN = initial CKSN.
28	→		AUTHENTICATION RESPONSE	

Step	Direction		Message	Comments
	UE	SS		
28a	←		SECURITY MODE COMMAND	IE mobile Identity = new TMSI.
28b	→		SECURITY MODE COMPLETE	
29	←		LOCATION UPDATING ACCEPT	
30	→		TMSI REALLOCATION COMPLETE	
31	←		RRC CONNECTION RELEASE	
32	→		RRC CONNECTION RELEASE COMPLETE	
The following messages are sent and shall be received on cell A.				
33		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "non-suitable cell". (see note)
34	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
35	←		RRC CONNECTION SETUP	
36	→		RRC CONNECTION SETUP COMPLETE	
37	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
38		SS		performs step 6 with reject cause #100 and step 7.
38a		UE		performs step8.
39	←		PAGING TYPE 1	UE identity = old TMSI of the UE. This message is sent continuously to the UE during 8 s. Paging Cause: Terminating Conversational Call.
40		SS		The SS checks that there is no answer from the UE during 12 s.
41		SS		If during steps 39 and 40 the UE attempts to perform a location updating procedure the SS will perform step 38 and then continue the procedure.
42		UE		If possible (see ICS) USIM detachment is performed. Otherwise if possible (see ICS) mobile switch off is performed. Otherwise the power is removed.
43		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B during 30 s.
44		UE		Depending on what has been performed in step 42 the UE is brought back to operation.
45	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
46	←		RRC CONNECTION SETUP	
47	→		RRC CONNECTION SETUP COMPLETE	
48	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
49	←		AUTHENTICATION REQUEST	CKSN = initial CKSN.
50	→		AUTHENTICATION RESPONSE	
50a	←		SECURITY MODE COMMAND	IE mobile Identity = new TMSI.
50b	→		SECURITY MODE COMPLETE	
51	←		LOCATION UPDATING ACCEPT	After the sending of this message, the SS waits for the disconnection of the main signalling link. UE is now "idle updated" in cell A.
52	→		TMSI REALLOCATION COMPLETE	
53	←		RRC CONNECTION RELEASE	
54	→		RRC CONNECTION RELEASE COMPLETE	
The following messages are sent and shall be received on cell B.				
55		SS		Set the cell type of cell B to the "Serving cell". Set the cell type of cell A to the "non-suitable cell". (see note).
56	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
57	←		RRC CONNECTION SETUP	
58	→		RRC CONNECTION SETUP COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
59	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = a, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
60	←		AUTHENTICATION REQUEST	Steps 60 and 61 are performed N times. N shall be chosen in such a way that T3210 expires.
61	→		AUTHENTICATION RESPONSE	
62	UE			The UE shall cease transmission and then shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the expiry of T3210.
63	UE			If the UE supports speech it is made to perform an emergency call.
64	→		RRC CONNECTION REQUEST	Establishment cause: Emergency call.
65	←		RRC CONNECTION SETUP	
66	→		RRC CONNECTION SETUP COMPLETE	
67	→		CM SERVICE REQUEST	CM service type = Emergency call establishment; CKSN = no key available; Mobile Identity = IMSI.
68	←		CM SERVICE ACCEPT	
69	→		EMERGENCY SETUP	
70	←		RELEASE COMPLETE	Cause = unassigned number.
71	←		RRC CONNECTION RELEASE	
72	→		RRC CONNECTION RELEASE COMPLETE	
72a	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC connection is released.
73	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
74	←		RRC CONNECTION SETUP	
75	→		RRC CONNECTION SETUP COMPLETE	
76	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
77	←		AUTHENTICATION REQUEST	CKSN = initial CKSN.
78	→		AUTHENTICATION RESPONSE	
78a	←		SECURITY MODE COMMAND	
78b	→		SECURITY MODE COMPLETE	
79	←		LOCATION UPDATING ACCEPT	IE mobile Identity = new TMSI.
80	→		TMSI REALLOCATION COMPLETE	
81	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. UE is now "idle updated" in cell B.
82	→		RRC CONNECTION RELEASE COMPLETE	
The following messages are sent and shall be received on cell A.				
83	SS			Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "non-suitable cell". (see note).
84	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
85	←		RRC CONNECTION SETUP	
86	→		RRC CONNECTION SETUP COMPLETE	
87	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
88	SS			performs step 14.
88a			(void)	
88b	→		CELL UPDATE	CCCH.
88c	←		RRC CONNECTION RELEASE	CCCH.
88d	SS			performs step 15c.
89	UE			A MO CM connection is attempted before T3211 expiry.
90	→		RRC CONNECTION REQUEST	Establishment cause: Registration.

Step	Direction		Message	Comments
	UE	SS		
91	←		RRC CONNECTION SETUP	
92	→		RRC CONNECTION SETUP COMPLETE	
93	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
94	←		LOCATION UPDATING ACCEPT	IE mobile Identity = new TMSI.
95	→		TMSI REALLOCATION COMPLETE	
96	←		RRC CONNECTION RELEASE	Steps 98 to 103 are optional as the UE may have memorized the request for CM connection attempt.
97	→		RRC CONNECTION RELEASE COMPLETE	
97a	SS			Wait 10 s to decide whether to go directly to step 104.
98	→		RRC CONNECTION REQUEST	Establishment cause: Not checked.
99	←		RRC CONNECTION SETUP	
100	→		RRC CONNECTION SETUP COMPLETE	
101	→		CM SERVICE REQUEST	CKSN = no key available, Mobile identity = TMSI.
102	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. UE is now "idle updated" in cell A.
103	→		RRC CONNECTION RELEASE COMPLETE	
The following messages are sent and shall be received on cell B.				
104	SS			Set the cell type of cell B to the "Serving cell". Set the cell type of cell A to the "non-suitable cell". (see note).
105	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
106	←		RRC CONNECTION SETUP	
107	→		RRC CONNECTION SETUP COMPLETE	
108	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available LAI = a, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
109	SS			performs step 14.
109a			(void)	
109b	→		CELL UPDATE	CCCH.
109c	←		RRC CONNECTION RELEASE	CCCH.
109d	SS			performs step 15c.
The following messages are sent and shall be received on cell A.				
110	SS			Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "non-suitable cell". (see note).
110a	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
110b	←		RRC CONNECTION SETUP	
110c	→		RRC CONNECTION SETUP COMPLETE	
110d	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), mobile station classmark 1 as given by the ICS and mobile identity = IMSI.
110e	SS			performs step 14.
110f	→		CELL UPDATE	CCCH.
110g	←		RRC CONNECTION RELEASE	CCCH.
110h	SS			performs step 15c.
111	←		Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 "Initial UE identity" = IMSI.
112	→		PAGING RESPONSE	Establishment Cause: Terminating Conversation Call.
113	←		RRC CONNECTION RELEASE	"Mobile identity" = IMSI, CKSN = no key available.
114	→		RRC CONNECTION RELEASE COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
NOTE:	The definitions for "Serving cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

### Specific message contents

None.

#### 9.4.3.2.5 Test requirement

- 1) At step 13 the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key available" and the Location Updating Type IE set to "normal location updating".
- 2)
  - 2.1 At step 40 the UE shall not answer to paging with the previously allocated TMSI.
  - 2.2 At step 43 the UE shall not perform the IMSI detach procedure.
- 3) At step 67 the UE shall send a CM SERVICE REQUEST message with CM Service Type IE set to "emergency call establishment", CKSN IE set to "no key available" and Mobile Identity IE set to its IMSI.  
At step 69 the UE shall send an EMERGENCY SETUP message.
- 4) At step 93 the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating Type IE set to "normal location updating".
- 5) At step 112 the UE shall send a PAGING RESPONSE message with CKSN IE set to "no key available" and Mobile Identity IE set to its IMSI.
- 6) At step 110d the UE shall perform a normal location updating procedure.

#### 9.4.3.3 Location updating / abnormal cases / attempt counter equal to 4

##### 9.4.3.3.1 Definition

##### 9.4.3.3.2 Conformance requirement

- 1) When four failures such as cases d) to h) of clause 4.4.4.9 of TS 24.008 have occurred during a normal location updating procedure the UE shall:
  - 1.1 perform location updating after T3212 expiry by sending a LOCATION UPATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating Type set to "normal location updating";
  - 1.2 if the T3212 initiated location updating was unsuccessful, then after T3211 expiry the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating Type IE set to "normal location updating".

- 2) When four failures such as cases d), f), g) and h) of clause 4.4.4.9 of TS 24.008 have occurred during a normal location updating procedure the UE shall not perform the IMSI detach procedure, when switched off.
- 3) When four failures such as cases d), f), g) and h) of clause 4.4.4.9 of TS 24.008 have occurred during a normal location updating procedure the UE, if it supports speech, shall be able to perform an emergency call i.e. the UE is able to send a CM SERVICE REQUEST message with the CM Service Type IE set to "emergency call establishment", CKSN IE set to "no key is available" and Mobile Identity IE set to its IMSI and then send an EMERGENCY SETUP message.
- 4) When four failures such as cases d), f), g) and h) of clause 4.4.4.9 of TS 24.008 have occurred during a normal location updating procedure:
  - 4.1 the UE shall use a request from CM entity for MM connection for a service other than emergency call as a trigger for a normal location updating procedure and shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating Type IE set to "normal location updating";
  - 4.2 after a location updating triggered by a request from the CM layer which was unsuccessful, after T3211 expiry the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating Type IE set to "normal location updating".
- 5) When four failures such as cases d), f), g) and h) of clause 4.4.4.9 of TS 24.008 have occurred during a normal location updating procedure:
  - 5.1 the UE shall perform a normal location updating procedure if it enters a new cell;
  - 5.2 if this location updating is unsuccessful, after T3211 expiry the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type IE set to "normal location updating".

## References

TS 24.008 clause 4.4.4.9.

### 9.4.3.3.3 Test purpose

To verify that the UE performs normal location updating procedures after T3212 expiry, when its attempt counter has reached value 4 and that the UE reset its attempt counter after a timer T3212 expiry.

To verify that the UE still follows the MM IDLE state and ATTEMPTING TO UPDATE substate requirements after its attempt counter has reached value 4.

To verify that the attempt counter is reset in the cases where it has to be done.

### 9.4.3.3.4 Method of test

#### Initial conditions

- System Simulator:
  - two cells: A and B, belonging to different location areas a and b;
  - IMSI attach/detach is allowed in both cells;
  - T3212 is set to 6 minutes.
- User Equipment:
  - the UE is "Idle updated" on cell B with a valid CKSN and a TMSI.

#### Related ICS/IXIT statements

USIM removal possible while UE is powered Yes/No.

Switch off on button Yes/No.

Support of speech Yes/No.

### Test Procedure

The UE is made to perform a normal location updating. The SS triggers a failure in this procedure by modifying scrambling code of DL DPCH. After T3211 expiry the UE will try again the location updating procedure. The SS triggers again a failure by modifying it. This is done again 2 times. At this point the attempt counter shall be equal to 4. It is then checked that T3212 has been started and that at its expiry the UE will try a normal location updating procedure. It is verified that the UE has reset its attempt counter after timer T3212 expiry.

Then it is checked that, when the attempt counter has reached the value of 4, the UE is in the MM IDLE state and ATTEMPTING TO UPDATE substate, that is:

- not perform an IMSI detach procedure;
- support request for emergency call;
- use requests from CM layer other than emergency call as triggering of a normal location updating procedure;
- perform normal location updating procedure when a new cell is entered.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
The following messages are sent and shall be received on cell A.				
1		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "non-suitable cell". (see note).
2	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	
6	←		LOCATION UPDATING REJECT	location updating type = normal, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI. IE Reject cause is set to #22 in table 10.5.95 of TS 24.008, causes #2, #3, #6, #11, #12, #13 and #15 being excluded.
7	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC connection is released.
10	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
11	←		RRC CONNECTION SETUP	
12	→		RRC CONNECTION SETUP COMPLETE	
13	→		LOCATION UPDATING REQUEST	
14		SS		The SS modifies the scrambling code of DL DPCH for generating lower layer failure.
15			(void)	
15a	→		CELL UPDATE	CCCH.
15b	←		RRC CONNECTION RELEASE	CCCH.
15c		SS		The SS re-modifies the scrambling code of DL DPCH to the original one.
15d		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC connection is released.
16	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
17	←		RRC CONNECTION SETUP	
18	→		RRC CONNECTION SETUP COMPLETE	
19	→		LOCATION UPDATING REQUEST	
20	←		AUTHENTICATION REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
21	→		AUTHENTICATION RESPONSE	
22		UE		Steps 20 and 21 are performed N times. N shall be chosen in such a way that T3210 expires. The UE shall cease transmission and then shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the expiry of T3210.
23	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
24	←		RRC CONNECTION SETUP	
25	→		RRC CONNECTION SETUP COMPLETE	
26	→		LOCATION UPDATING REQUEST	
27	←		RRC CONNECTION RELEASE	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI. The SS waits for the disconnection of the main signalling link.

Step	Direction		Message	Comments
	UE	SS		
28	→		RRC CONNECTION RELEASE COMPLETE	
29		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3212 (tolerance -15s; 45s) at least after the RRC connection is released.
30	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
31	←		RRC CONNECTION SETUP	
32	→		RRC CONNECTION SETUP COMPLETE	
33	→		LOCATION UPDATING REQUEST	location updating type: "normal location update" CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the ICS and mobile identity = IMSI.
34	←		LOCATION UPDATING REJECT	IE Reject cause = #17 "network failure".
35	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.
36	→		RRC CONNECTION RELEASE COMPLETE	
37		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC connection is released.
38	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
39	←		RRC CONNECTION SETUP	
40	→		RRC CONNECTION SETUP COMPLETE	
41	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the ICS and mobile identity = IMSI.
42	←		AUTHENTICATION REQUEST	CKSN = initial CKSN.
43	→		AUTHENTICATION RESPONSE	
43a	←		SECURITY MODE COMMAND	IE mobile Identity = new TMSI.
43b	→		SECURITY MODE COMPLETE	
44	←		LOCATION UPDATING ACCEPT	
45	→		TMSI REALLOCATION COMPLETE	
46	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. UE is now "idle, updated" in cell A.
47	→		RRC CONNECTION RELEASE COMPLETE	
The following messages are sent and shall be received on cell B.				
48		SS		Set the cell type of cell B to the "Serving cell". Set the cell type of cell A to the "non-suitable cell". (see note).
49	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
50	←		RRC CONNECTION SETUP	
51	→		RRC CONNECTION SETUP COMPLETE	
52	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = initial value, LAI = a, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
53	←		LOCATION UPDATING REJECT	IE Reject cause is set to #X in table 10.5.95 of TS 24.008, causes #2, #3, #6, #11, #12, #13 and #15 being excluded.
54	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.
55	→		RRC CONNECTION RELEASE COMPLETE	
56		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC connection is released.
57	→		RRC CONNECTION REQUEST	Establishment cause: Registration.

Step	Direction		Message	Comments
	UE	SS		
58	←		RRC CONNECTION SETUP	
59	→		RRC CONNECTION SETUP COMPLETE	
60	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
61		SS		The SS modifies the scrambling code of DL DPCH for generating lower layer failure.
61a			(void)	
61b	→		CELL UPDATE	CCCH.
61c	←		RRC CONNECTION RELEASE	CCCH.
61d		SS		The SS re-modifies the scrambling code of DL DPCH to the original one.
61e		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC connection is released.
62	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
63	←		RRC CONNECTION SETUP	
64	→		RRC CONNECTION SETUP COMPLETE	
65	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
66	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.
67	→		RRC CONNECTION RELEASE COMPLETE	
68		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC connection is released.
69	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
70	←		RRC CONNECTION SETUP	
71	→		RRC CONNECTION SETUP COMPLETE	
72	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the ICS and mobile identity = IMSI.
73		SS		performs step 53 and 54.
74		UE		performs step 55. If the UE supports speech, it is made to perform an emergency call.
75	→		RRC CONNECTION REQUEST	Establishment cause: Emergency call.
76	←		RRC CONNECTION SETUP	
77	→		RRC CONNECTION SETUP COMPLETE	
78	→		CM SERVICE REQUEST	CM service type = Emergency call establishment; CKSN = no key available; Mobile Identity = IMSI.
79	←		CM SERVICE ACCEPT	
80	→		EMERGENCY SETUP	
81	←		RELEASE COMPLETE	Cause = unassigned number.
82	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.
83	→		RRC CONNECTION RELEASE COMPLETE	
84		UE		If possible (see ICS) USIM detachment is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
85		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is checked during 30 s.
86		UE		Depending on what has been performed in step 84 the UE is brought back to operation.

Step	Direction		Message	Comments
	UE	SS		
87	→		RRC CONNECTION REQUEST	Establishment cause: Registration.  location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI. CKSN = initial CKSN.  IE mobile Identity = new TMSI.  After the sending of this message, the SS waits for the disconnection of the main signalling link. UE is now "idle, updated" in cell B.
88	←		RRC CONNECTION SETUP	
89	→		RRC CONNECTION SETUP COMPLETE	
90	→		LOCATION UPDATING REQUEST	
91	←		AUTHENTICATION REQUEST	
92	→		AUTHENTICATION RESPONSE	
92a	←		SECURITY MODE COMMAND	
92b	→		SECURITY MODE COMPLETE	
93	←		LOCATION UPDATING ACCEPT	
94	→		TMSI REALLOCATION COMPLETE	
95	←		RRC CONNECTION RELEASE	
96	→		RRC CONNECTION RELEASE COMPLETE	
The following messages are sent and shall be received on cell A.				
97		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "non-suitable cell". (see note).
98	→		RRC CONNECTION REQUEST	Establishment cause: Registration.  location updating type = normal, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI. IE Reject cause is set to #38 in table 10.5.95 of TS 24.008, causes #2, #3, #6, #11, #12, #13 and #15 being excluded. The SS waits for the disconnection of the main signalling link.  The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC connection is released. Establishment cause: Registration.  location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI. The SS modifies the scrambling code of DL DPCH for generating lower layer failure. CCCH. CCCH. The SS re-modifies the scrambling code of DL DPCH to the original one. The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC connection is released. Establishment cause: Registration.
99	←		RRC CONNECTION SETUP	
100	→		RRC CONNECTION SETUP COMPLETE	
101	→		LOCATION UPDATING REQUEST	
102	←		LOCATION UPDATING REJECT	
103	←		RRC CONNECTION RELEASE	
104	→		RRC CONNECTION RELEASE COMPLETE	
105		UE		
106	→		RRC CONNECTION REQUEST	
107	←		RRC CONNECTION SETUP	
108	→		RRC CONNECTION SETUP COMPLETE	
109	→		LOCATION UPDATING REQUEST	
110		SS		
111			(void)	
111a	→		CELL UPDATE	
111b	←		RRC CONNECTION RELEASE	
111c		SS		
111d		UE		
112	→		RRC CONNECTION REQUEST	
113	←		RRC CONNECTION SETUP	
114	→		RRC CONNECTION SETUP COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
115	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
116	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.
117	→		RRC CONNECTION RELEASE COMPLETE	
118	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC connection is released.
119	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
120	←		RRC CONNECTION SETUP	
121	→		RRC CONNECTION SETUP COMPLETE	
122	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the ICS and mobile identity = IMSI.
123			(void)	
123a	UE			performs step 61a.
123b	→		CELL UPDATE	CCCH.
123c	←		RRC CONNECTION RELEASE	CCCH.
123d	SS			performs step 61d.
124	UE			A MO CM connection is attempted before T3212 expiry.
125	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
126	←		RRC CONNECTION SETUP	
127	→		RRC CONNECTION SETUP COMPLETE	
128	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
129			(void)	
129a	UE			performs step 61a.
129b	→		CELL UPDATE	CCCH.
129c	←		RRC CONNECTION RELEASE	CCCH.
129d	SS			performs step 61d.
130	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC connection is released.
131	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
132	←		RRC CONNECTION SETUP	
133	→		RRC CONNECTION SETUP COMPLETE	
134	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
135	←		AUTHENTICATION REQUEST	CKSN = initial CKSN.
136	→		AUTHENTICATION RESPONSE	
136a	←		SECURITY MODE COMMAND	
136b	→		SECURITY MODE COMPLETE	
137	←		LOCATION UPDATING ACCEPT	IE mobile Identity = new TMSI.
138	→		TMSI REALLOCATION COMPLETE	
139	←		RRC CONNECTION RELEASE	
140	→		RRC CONNECTION RELEASE COMPLETE	UE is now "idle, updated" in cell A. The UE may or may not have memorised the request for CM connection. The steps 141 to 147 are therefore optional for the UE. The SS waits 10 s whether to decide to go directly to step 148.
141	→		RRC CONNECTION REQUEST	
142	←		RRC CONNECTION SETUP	

Step	Direction		Message	Comments
	UE	SS		
143	→		RRC CONNECTION SETUP COMPLETE	CKSN = initial value, Mobile identity = TMSI. cause #17 (network failure). The SS waits for the disconnection of the main signalling link.
144	→		CM SERVICE REQUEST	
145	←		CM SERVICE REJECT	
146	←		RRC CONNECTION RELEASE	
147	→		RRC CONNECTION RELEASE COMPLETE	
The following messages are sent and shall be received on cell B.				
148		SS		Set the cell type of cell B to the "Serving cell". Set the cell type of cell A to the "non-suitable cell". (see note).
149	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
150	←		RRC CONNECTION SETUP	
151	→		RRC CONNECTION SETUP COMPLETE	location updating type = normal, CKSN = initial value, LAI = a, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
152	→		LOCATION UPDATING REQUEST	
153	←		LOCATION UPDATING REJECT	
154	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link
155	→		RRC CONNECTION RELEASE COMPLETE	The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC connection is released.
156	UE			
157	→		RRC CONNECTION REQUEST	
158	←		RRC CONNECTION SETUP	
159	→		RRC CONNECTION SETUP COMPLETE	Establishment cause: Registration.
160	→		LOCATION UPDATING REQUEST	
161		SS		location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
162			(void)	The SS modifies the scrambling code of DL DPCH for generating lower layer failure.
162a	→		CELL UPDATE	CCCH.
162b	←		RRC CONNECTION RELEASE	CCCH.
162c		SS		The SS re-modifies the scrambling code of DL DPCH to the original one.
162d		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC connection is released.
163	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
164	←		RRC CONNECTION SETUP	
165	→		RRC CONNECTION SETUP COMPLETE	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
166	→		LOCATION UPDATING REQUEST	
167	←		RRC CONNECTION RELEASE	
168	→		RRC CONNECTION RELEASE COMPLETE	The SS waits for the disconnection of the main signalling link.
169		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC connection is released.
170	→		RRC CONNECTION REQUEST	
171	←		RRC CONNECTION SETUP	
172	→		RRC CONNECTION SETUP COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
173	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the ICS and mobile identity = IMSI.
174	←		LOCATION UPDATING REJECT	IE Reject cause = "retry upon entry into a new cell".
174a	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.
174b	→		RRC CONNECTION RELEASE COMPLETE	
The following messages are sent and shall be received on cell A.				
175		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "non-suitable cell". (see note).
176	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
177	←		RRC CONNECTION SETUP	
178	→		RRC CONNECTION SETUP COMPLETE	
179	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the ICS and mobile identity = IMSI.
180		SS		performs the step 61.
181			(void)	
181a	→		CELL UPDATE	CCCH.
181b	←		RRC CONNECTION RELEASE	CCCH.
181c		SS		The SS re-modifies the scrambling code of DL DPCH to the original one.
181d		UE		The UE shall not initiate an RRC connection establishment on cell A or on cell B during T3211 seconds at least after the RRC connection is released.
182	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
183	←		RRC CONNECTION SETUP	
184	→		RRC CONNECTION SETUP COMPLETE	
185	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE), Mobile Identity = IMSI.
186	←		AUTHENTICATION REQUEST	CKSN = initial CKSN.
187	→		AUTHENTICATION RESPONSE	
187a	←		SECURITY MODE COMMAND	
187b	→		SECURITY MODE COMPLETE	
188	←		LOCATION UPDATING ACCEPT	IE mobile Identity = new TMSI.
189	→		TMSI REALLOCATION COMPLETE	
190	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link. UE is now "idle, updated" in cell A.
191	→		RRC CONNECTION RELEASE COMPLETE	
NOTE: The definitions for "Serving cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

## Specific message contents

None.

## 9.4.3.3.5 Test requirement

- 1) 1.1 At step 33 the UE shall perform location updating procedure.

1.2 At step 41 the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type IE set to "normal location updating".

2) At step 85 the UE shall not perform the IMSI detach procedure.

3) At step 78 the UE shall send a CM SERVICE REQUEST message with the CM Service Type IE set to "emergency call establishment", CKSN IE set to "no key is available" and Mobile Identity IE set to its IMSI.

At step 80 the UE shall send an EMERGENCY SETUP message.

4)

4.1 At step 128 the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type IE set to "normal location updating";

4.2 At step 134 the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type IE set to "normal location updating".

5)

5.1 At step 179 the UE shall perform a normal location updating procedure if it enters a new cell;

5.2 At step 185 the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type IE set to "normal location updating".

#### 9.4.3.4 Location updating / abnormal cases / attempt counter less or equal to 4, stored LAI equal to broadcast LAI

##### 9.4.3.4.1 Definition

##### 9.4.3.4.2 Conformance requirement

1) When a failure such as cases d), f), g) and h) of clause 4.4.4.9 of TS 24.008 has occurred during a periodic location updating procedure (the broadcast LAI is equal to the stored LAI):

1.1 the UE shall be able to establish an MM connection i.e. send a RRC CONNECTION REQUEST message and then a CM SERVICE REQUEST message, CKSN and LAI set to those which have been allocated to the UE, Mobile Identity IE set to the TMSI which has been allocated to the UE;

1.2 then the UE shall not attempt a location updating procedure.

2) When a failure such as cases d), f), g) and h) of clause 4.4.4.9 of TS 24.008 has occurred during an IMSI attach procedure (the broadcast LAI is equal to the stored LAI):

2.1 the UE shall be able to establish an MM connection i.e. send a RRC CONNECTION REQUEST message and then a CM SERVICE REQUEST message, CKSN and LAI set to those which have been allocated to the UE, Mobile Identity IE set to the TMSI which has been allocated to the UE;

2.2 then the UE shall not attempt a location updating procedure.

3) When a failure such as cases d), f), g) and h) of clause 4.4.4.9 of TS 24.008 has occurred during a periodic location updating procedure and the attempt counter is smaller than 4 the UE shall send, after T3211 expiry, a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to the TMSI which has been allocated to the UE, CKSN IE and LAI set to those which have been allocated to the UE and the Location Updating Type IE set to "periodic updating".

3.1 When the UE's attempt counter reaches the value 4 (four failures such as cases d), f), g) and h) of clause 4.4.4.9 of TS 24.008 have occurred during a periodic location updating procedure) after T3212 expiry it shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating Type IE set to "normal".

- 4) When the UE's attempt counter reaches the value 4 (four failures such as cases d), f), g) and h) of clause 4.4.4.9 of TS 24.008 have occurred during a periodic location updating procedure) it shall use a request for a CM connection other than emergency call as a trigger for a location updating procedure.
- 5) When a failure such as cases d), f), g) and h) of clause 4.4.4.9 of TS 24.008 has occurred during an IMSI attach procedure and the attempt counter is smaller than 4 the UE shall send, after T3211 expiry, a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to the TMSI which has been allocated to the UE, CKSN IE and LAI set to those which have been allocated to the UE and the Location Updating type set to "IMSI attach".
  - 5.1 When the UE's attempt counter reaches the value 4 (four failures such as cases d), f), g) and h) of clause 4.4.4.9 of TS 24.008 have occurred during an IMSI attach procedure) after T3212 expiry it shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type set to "normal".
- 6) When the UE's attempt counter reaches the value 4 (four failures such as cases d), f), g) and h) of clause 4.4.4.9 of TS 24.008 have occurred during an IMSI attach procedure) it shall use a request for a CM connection other than emergency call as a trigger for a location updating procedure.

## References

TS 24.008 clause 4.4.4.9.

### 9.4.3.4.3 Test purpose

To verify that in the case when the attempt counter is smaller than 4 and the broadcast LAI is equal to the stored LAI, the UE is in the MM IDLE state and NORMAL SERVICE substate. To verify that timer T3211 is stopped after a MM connection establishment.

To verify that the UE uses the T3211 timer, and that it enters the MM IDLE state and NORMAL SERVICE substate when its attempt counter reaches value 4 even in the case where the stored LAI is equal to the broadcast LAI.

### 9.4.3.4.4 Method of test

#### Initial conditions

- System Simulator:
  - one cell: B, belonging to location area b;
  - IMSI attach/detach is allowed;
  - T3212 is set to 6 minutes.
- User Equipment:
  - the UE is "Idle updated" on cell B with a valid CKSN and a TMSI.

#### Related ICS/IXIT statements

USIM removal possible while UE is powered Yes/No.

Switch off on button Yes/No.

#### Test Procedure

A failure during the periodic location updating is triggered: as the broadcast LAI is equal to the stored LAI, the UE is still in the MM IDLE state and NORMAL SERVICE substate and timer T3211 is started. A CM connection other than for emergency call is attempted. It is checked that this is possible and that T3211 is stopped. Same test is performed with a failure during an IMSI attach procedure.

Then failures are triggered during the periodic location updating to let the attempt counter to reach the value of 4. The UE shall enter the MM IDLE state and ATTEMPTING TO UPDATE substate and delete any TMSI, stored LAI, ciphering key sequence number and ciphering key. When the attempt counter reaches the value of 4, timer T3212 shall be started. At timer T3212 expiry a location updating procedure is started. A request for CM connection other than emergency call shall trigger a location updating procedure.

Same tests are performed when the failures are triggered during an IMSI attach procedure.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The SS shall wait at most T3212 + 45 s.
2	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
6		SS		performs step 6, of 9.4.3.2 with cause #17 and step 7 of 9.4.3.2.
6a		UE		performs step 8 of 9.4.3.2.
7		UE		A MO CM connection is attempted before T3211 expiry.
8	→		RRC CONNECTION REQUEST	
9	←		RRC CONNECTION SETUP	
10	→		RRC CONNECTION SETUP COMPLETE	
11	→		CM SERVICE REQUEST	CKSN = initial CKSN, Mobile Identity = TMSI.
12	←		CM SERVICE ACCEPT	
13	→		An initial CM message	
14	←		RRC CONNECTION RELEASE	The SS waits for the disconnection of the main signalling link.
15	→		RRC CONNECTION RELEASE COMPLETE	
16		SS		The UE shall not initiate an RRC connection establishment. This is checked during T3211.
17		UE		If possible (see ICS) USIM detachment is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
Steps 18 to 23 are optional.				
18	→		RRC CONNECTION REQUEST	Establishment Cause: Detach
19	←		RRC CONNECTION SETUP	
20	→		RRC CONNECTION SETUP COMPLETE	
21	→		IMSI DETACH INDICATION	
22	←		RRC CONNECTION RELEASE	
23	→		RRC CONNECTION RELEASE COMPLETE	
24		UE		Depending on what has been performed in step 17 the UE is brought back to operation.
25	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
26	←		RRC CONNECTION SETUP	
27	→		RRC CONNECTION SETUP COMPLETE	
28	→		LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
29		SS		performs step 14 of 9.4.3.2.
29a			(void)	
29b	→		CELL UPDATE	CCCH.
29c	←		RRC CONNECTION RELEASE	CCCH.
29d		SS		performs step 15c of 9.4.3.2.
30		UE		A MO CM connection is attempted before T3211 expiry.
31	→		RRC CONNECTION REQUEST	
32	←		RRC CONNECTION SETUP	

Step	Direction		Message	Comments
	UE	SS		
33	→		RRC CONNECTION SETUP COMPLETE	CKSN = initial CKSN, Mobile Identity = TMSI.  The SS waits for the disconnection of the main signalling link.  The UE shall not initiate an RRC connection establishment. This is checked during T3211 UE is "idle, updated" in cell B.
34	→		CM SERVICE REQUEST	
35	←		SECURITY MODE COMMAND	
36	→		SECURITY MODE COMPLETE	
37	→		An initial CM message	
38	←		RRC CONNECTION RELEASE	
39	→		RRC CONNECTION RELEASE COMPLETE	
40		SS		
40/1		UE		If possible (see ICS) USIM detachment is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
Steps 40/2 to 40/7 are optional.				
40/2	→		RRC CONNECTION REQUEST	Establishment Cause: Detach  Depending on what has been performed in step 40/1, the UE is brought back to operation. Establishment cause: Registration.  location updating type = IMSI attach, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI. without mobile identity
40/3	←		RRC CONNECTION SETUP	
40/4	→		RRC CONNECTION SETUP COMPLETE	
40/5	→		IMSI DETACH INDICATION	
40/6	←		RRC CONNECTION RELEASE	
40/7	→		RRC CONNECTION RELEASE COMPLETE	
40/8		UE		
40/9	→		RRC CONNECTION REQUEST	The SS shall wait at most T3212 + 15 s. Establishment cause: Registration.  location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI. performs step 14 of 9.4.3.2.  CCCH. CCCH. performs step 15c of 9.4.3.2. The UE shall not initiate an RRC connection establishment during T3211 at least after the RRC connection is released. Establishment cause: Registration.  location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI. performs step 6 of 9.4.3.2 with cause #17 and step 7 of 9.4.3.2. performs step 8 of 9.4.3.2.
40/10	←		RRC CONNECTION SETUP	
40/11	→		RRC CONNECTION SETUP COMPLETE	
40/12	→		LOCATION UPDATING REQUEST	
40/13	←		LOCATION UPDATING ACCEPT	
40/14	←		RRC CONNECTION RELEASE	
40/15	→		RRC CONNECTION RELEASE COMPLETE	
41		SS		
42	→		RRC CONNECTION REQUEST	
43	←		RRC CONNECTION SETUP	
44	→		RRC CONNECTION SETUP COMPLETE	
45	→		LOCATION UPDATING REQUEST	
46		SS	(void)	
46a				
46b	→		CELL UPDATE	
46c	←		RRC CONNECTION RELEASE	
46d		SS		
47		UE		
48	→		RRC CONNECTION REQUEST	
49	←		RRC CONNECTION SETUP	
50	→		RRC CONNECTION SETUP COMPLETE	
51	→		LOCATION UPDATING REQUEST	
52		SS		
52a		UE		

Step	Direction		Message	Comments	
	UE	SS			
53	UE			The UE shall not initiate an RRC connection establishment during T3211 at least after the RRC connection is released.	
54	→		RRC CONNECTION REQUEST	Establishment cause: Registration.	
55	←		RRC CONNECTION SETUP		
56	→		RRC CONNECTION SETUP COMPLETE		
57	→		LOCATION UPDATING REQUEST		
58	SS			location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.	
59			(void)	performs step 14 of 9.4.3.2.	
59a	→		CELL UPDATE	CCCH.	
59b	←		RRC CONNECTION RELEASE	CCCH.	
59c	SS			The SS re-modifies the scrambling code of DL DPCH to the original one.	
59d	UE			The UE shall not initiate an RRC connection establishment during T3211 at least after the RRC connection is released.	
60	→		RRC CONNECTION REQUEST	Establishment cause: Registration.	
61	←		RRC CONNECTION SETUP		
62	→		RRC CONNECTION SETUP COMPLETE		
63	→		LOCATION UPDATING REQUEST		
64	SS			location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.	
64a			(void)	performs step 14 of 9.4.3.2.	
64b	→		CELL UPDATE	CCCH.	
64c	←		RRC CONNECTION RELEASE	CCCH.	
64d	SS			performs step 15c of 9.4.3.2.	
65	UE			The UE shall not initiate an RRC connection establishment during T3212 seconds at least after the RRC connection is released.	
66	→		RRC CONNECTION REQUEST	Establishment cause: Registration.	
67	←		RRC CONNECTION SETUP		
68	→		RRC CONNECTION SETUP COMPLETE		
69	→		LOCATION UPDATING REQUEST		
70	←		AUTHENTICATION REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the ICS and mobile identity = IMSI. CKSN = initial CKSN.	
71	→		AUTHENTICATION RESPONSE		
71a	←		SECURITY MODE COMMAND		
71b	→		SECURITY MODE COMPLETE		
72			(void)		
72a	←		LOCATION UPDATING ACCEPT		IE mobile Identity = TMSI.
72b	→		TMSI REALLOCATION COMPLETE		
73	←		RRC CONNECTION RELEASE		The SS waits for the disconnection of the main signalling link.
74	→		RRC CONNECTION RELEASE COMPLETE		
75	UE				The UE shall not initiate an RRC connection establishment during than T3212 seconds at least after the RRC connection is released.
76	→		RRC CONNECTION REQUEST	Establishment cause: Registration.	
77	←		RRC CONNECTION SETUP		
78	→		RRC CONNECTION SETUP COMPLETE		
79	→		LOCATION UPDATING REQUEST		location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.

Step	Direction		Message	Comments
	UE	SS		
80		SS		performs step 6 of 9.4.3.2 with cause #17 and step 7 of 9.4.3.2.
80a		UE		performs step 8 of 9.4.3.2.
81		UE		The UE shall not initiate an RRC connection establishment during T3211 at least after the RRC connection is released.
82		→	RRC CONNECTION REQUEST	Establishment cause: Registration.
83		←	RRC CONNECTION SETUP	
84		→	RRC CONNECTION SETUP COMPLETE	
85		→	LOCATION UPDATING REQUEST	
86		SS		location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
87			(void)	performs step 14 of 9.4.3.2.
87a		→	CELL UPDATE	CCCH.
87b		←	RRC CONNECTION RELEASE	CCCH.
87c		SS		The SS re-modifies the scrambling code of DL DPCH to the original one.
87d		UE		The UE shall not initiate an RRC connection establishment during T3211 at least after the RRC connection is released.
88		→	RRC CONNECTION REQUEST	Establishment cause: Registration.
89		←	RRC CONNECTION SETUP	
90		→	RRC CONNECTION SETUP COMPLETE	
91		→	LOCATION UPDATING REQUEST	
92		SS		location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
92a			(void)	performs step 14 of 9.4.3.2.
92b		→	CELL UPDATE	CCCH.
92c		←	RRC CONNECTION RELEASE	CCCH.
92d		SS		performs step 15c of 9.4.3.2.
93		UE		The UE shall not initiate an RRC connection establishment during T3211 at least after the RRC connection is released.
94		→	RRC CONNECTION REQUEST	Establishment cause: Registration.
95		←	RRC CONNECTION SETUP	
96		→	RRC CONNECTION SETUP COMPLETE	
97		→	LOCATION UPDATING REQUEST	
98		SS		location updating type = periodic, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
98a		UE		performs step 6 of 9.4.3.2 with cause #17 and step 7 of 9.4.3.2.
99		UE		performs step 8 of 9.4.3.2.
99		UE		A MO CM connection is attempted before T3212 expiry.
100		→	RRC CONNECTION REQUEST	Establishment cause: Registration.
101		←	RRC CONNECTION SETUP	
102		→	RRC CONNECTION SETUP COMPLETE	
103		→	LOCATION UPDATING REQUEST	
104		←	LOCATION UPDATING ACCEPT	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the ICS and mobile identity = IMSI.
105		→	TMSI REALLOCATION COMPLETE	
106		←	RRC CONNECTION RELEASE	IE mobile identity = TMSI.
107		→	RRC CONNECTION RELEASE COMPLETE	

Steps 108 to 114 are optional. Wait 10 s to decide whether to go directly to step 115.

Step	Direction		Message	Comments
	UE	SS		
108	→		RRC CONNECTION REQUEST	CKSN = no key available, Mobile identity = TMSI cause #17 (network failure).
109	←		RRC CONNECTION SETUP	
110	→		RRC CONNECTION SETUP COMPLETE	
111	→		CM SERVICE REQUEST	
112	←		CM SERVICE REJECT	
113	←		RRC CONNECTION RELEASE	
114	→		RRC CONNECTION RELEASE COMPLETE	
115		UE		
Steps 116 to 121 are optional.				
116	→		RRC CONNECTION REQUEST	Establishment Cause: Detach
117	←		RRC CONNECTION SETUP	
118	→		RRC CONNECTION SETUP COMPLETE	
119	→		IMSI DETACH INDICATION	
120	←		RRC CONNECTION RELEASE	
121	→		RRC CONNECTION RELEASE COMPLETE	
122		UE		Depending on what has been performed in step 115 the UE is brought back to operation.
123	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
124	←		RRC CONNECTION SETUP	
125	→		RRC CONNECTION SETUP COMPLETE	
126	→		LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = no key available, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
127		SS		performs step 14 of 9.4.3.2.
128			(void)	
128a	→		CELL UPDATE	CCCH.
128b	←		RRC CONNECTION RELEASE	CCCH.
128c		SS		The SS re-modifies the scrambling code of DL DPCH to the original one.
128d		UE		The UE shall not initiate an RRC connection establishment during T3211 at least after the RRC connection is released.
129	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
130	←		RRC CONNECTION SETUP	
131	→		RRC CONNECTION SETUP COMPLETE	
132	→		LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = no key available, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
133	←		RRC CONNECTION RELEASE	After the sending of the message the SS waits for the disconnection of the main signalling link.
134	→		RRC CONNECTION RELEASE COMPLETE	
135		UE		The UE shall not initiate an RRC connection establishment during T3211 at least after the RRC connection is released.
136	→		RRC CONNECTION REQUEST	Establishment cause: Registration.
137	←		RRC CONNECTION SETUP	
138	→		RRC CONNECTION SETUP COMPLETE	
139	→		LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = no key available, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.
140			(void)	
140a	←		LOCATION UPDATING REJECT	IE Reject cause is set to #X in table 10.5.95 of TS 24.008, causes #2, #3, #6, #11, #12, #13 and #15 being excluded.
140b	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.

Step	Direction		Message	Comments
	UE	SS		
141	→		RRC CONNECTION RELEASE COMPLETE	<p>The UE shall not initiate an RRC connection establishment during T3211 at least after the RRC connection is released.</p> <p>Establishment cause: Registration.</p> <p>location updating type = IMSI attach, CKSN = no key available, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.</p> <p>performs step 14 of 9.4.3.2.</p> <p>CCCH. CCCH.</p> <p>performs step 15c of 9.4.3.2.</p> <p>The UE shall not initiate an RRC connection establishment during T3212 seconds at least after the RRC connection is released.</p> <p>Establishment cause: Registration.</p> <p>location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the ICS and mobile identity = IMSI.</p> <p>CKSN = initial CKSN.</p> <p>IE mobile Identity = TMSI.</p> <p>If possible (see ICS) USIM detachment is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.</p>
142	UE			
143	→		RRC CONNECTION REQUEST	
144	←		RRC CONNECTION SETUP	
145	→		RRC CONNECTION SETUP COMPLETE	
146	→		LOCATION UPDATING REQUEST	
147	SS		(void)	
147a				
147b	→		CELL UPDATE	
147c	←		RRC CONNECTION RELEASE	
147d	SS			
148	UE			
149	→		RRC CONNECTION REQUEST	
150	←		RRC CONNECTION SETUP	
151	→		RRC CONNECTION SETUP COMPLETE	
152	→		LOCATION UPDATING REQUEST	
153	←		AUTHENTICATION REQUEST	
154	→		AUTHENTICATION RESPONSE	
154a	←		SECURITY MODE COMMAND	
154b	→		SECURITY MODE COMPLETE	
155	←		LOCATION UPDATING ACCEPT	
156	→		TMSI REALLOCATION COMPLETE	
157	←		RRC CONNECTION RELEASE	
158	→		RRC CONNECTION RELEASE COMPLETE	
159	UE			
Steps 160 to 165 are optional.				
160	→		RRC CONNECTION REQUEST	Establishment Cause: Detach
161	←		RRC CONNECTION SETUP	
162	→		RRC CONNECTION SETUP COMPLETE	
163	→		IMSI DETACH INDICATION	
164	←		RRC CONNECTION RELEASE	
165	→		RRC CONNECTION RELEASE COMPLETE	
166	UE			<p>Depending on what has been performed in step 159 the UE is brought back to operation.</p> <p>Establishment cause: Registration.</p> <p>location updating type = IMSI attach, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI.</p> <p>performs step 14 of 9.4.3.2.</p> <p>CCCH. CCCH.</p> <p>performs step 15c of 9.4.3.2.</p>
167	→		RRC CONNECTION REQUEST	
168	←		RRC CONNECTION SETUP	
169	→		RRC CONNECTION SETUP COMPLETE	
170	→		LOCATION UPDATING REQUEST	
171	SS		(void)	
171a				
171b	→		CELL UPDATE	
171c	←		RRC CONNECTION RELEASE	
171d	SS			

Step	Direction		Message	Comments
	UE	SS		
172	UE			The UE shall not initiate an RRC connection establishment during T3211 at least after the RRC connection is released.
173	→		RRC CONNECTION REQUEST	Establishment cause: Registration.  location updating type = IMSI attach, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI. performs step 6 of 9.4.3.2 with cause #17 and step 7 of 9.4.3.2. performs step 8 of 9.4.3.2.
174	←		RRC CONNECTION SETUP	
175	→		RRC CONNECTION SETUP COMPLETE	
176	→		LOCATION UPDATING REQUEST	
177		SS		
177a		UE		
178		UE		
179	→		RRC CONNECTION REQUEST	The UE shall not initiate an RRC connection establishment during T3211 at least after the RRC connection is released. Establishment cause: Registration.
180	←		RRC CONNECTION SETUP	
181	→		RRC CONNECTION SETUP COMPLETE	
182	→		LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI. performs step 14 of 9.4.3.2.  CCCH. CCCH. The SS re-modifies the scrambling code of DL DPCH to the original one. The UE shall not initiate an RRC connection establishment during T3211 at least after the RRC connection is released. Establishment cause: Registration.
183		SS	(void)	
184			(void)	
184a	→		CELL UPDATE	
184b	←		RRC CONNECTION RELEASE	
184c		SS		
184d		UE		
185	→		RRC CONNECTION REQUEST	
186	←		RRC CONNECTION SETUP	
187	→		RRC CONNECTION SETUP COMPLETE	
188	→		LOCATION UPDATING REQUEST	location updating type = IMSI attach, CKSN = initial value, LAI = b, mobile station classmark 1 as given by the ICS and mobile identity = TMSI. performs step 14 of 9.4.3.2.  CCCH. CCCH. performs step 15c of 9.4.3.2. A MO CM connection id attempted before T3212 expiry Establishment cause: Registration.
189		SS	(void)	
189a			(void)	
189b	→		CELL UPDATE	
189c	←		RRC CONNECTION RELEASE	
189d		SS		
190		UE		
191	→		RRC CONNECTION REQUEST	
192	←		RRC CONNECTION SETUP	
193	→		RRC CONNECTION SETUP COMPLETE	
194	→		LOCATION UPDATING REQUEST	location updating type = normal, CKSN = no key available, LAI = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE) mobile station classmark 1 as given by the ICS and mobile identity = IMSI. CKSN = initial CKSN.
195	←		AUTHENTICATION REQUEST	
196	→		AUTHENTICATION RESPONSE	
196a	←		SECURITY MODE COMMAND	
196b	→		SECURITY MODE COMPLETE	
197	←		LOCATION UPDATING ACCEPT	
198	→		TMSI REALLOCATION COMPLETE	IE mobile Identity = TMSI.
199	←		RRC CONNECTION RELEASE	
200	→		RRC CONNECTION RELEASE COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
Steps 202 to 208 are optional.				
201			(void)	
202	→		RRC CONNECTION REQUEST	
203	←		RRC CONNECTION SETUP	
204	→		RRC CONNECTION SETUP COMPLETE	
205	→		CM SERVICE REQUEST	CKSN = initial value, Mobile identity = TMSI. cause #17 (network failure).
206	←		CM SERVICE REJECT	
207	←		RRC CONNECTION RELEASE	
208	→		RRC CONNECTION RELEASE COMPLETE	

### Specific message contents

None.

#### 9.4.3.4.5 Test requirement

1)

1.1 At step 8 the UE shall send a RRC CONNECTION REQUEST message and at step 11 the UE shall send a CM SERVICE REQUEST message, CKSN and LAI set to those which have been allocated to the UE, Mobile Identity IE set to the TMSI which has been allocated to the UE;

1.2 At step 11 the UE shall not attempt a location updating procedure.

2)

2.1 At step 31 the UE shall send a RRC CONNECTION REQUEST message and at step 34 the UE shall send a CM SERVICE REQUEST message, CKSN and LAI set to those which have been allocated to the UE, Mobile Identity IE set to the TMSI which has been allocated to the UE;

2.2 At step 39 the UE shall not attempt a location updating procedure.

3) At step 51 the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to the TMSI which has been allocated to the UE, CKSN IE and LAI set to those which have been allocated to the UE and the Location Updating Type IE set to "periodic updating".

3.1 At step 69 the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating Type IE set to "normal".

4) At step 103 the UE shall send a LOCATION UPDATING REQUEST message.

5) At step 132 the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to the TMSI which has been allocated to the UE, CKSN IE and LAI set to those which have been allocated to the UE and the Location Updating Type IE set to "IMSI attach".

5.1 At step 152 the UE shall send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating Type IE set to "normal".

6) At step 194 the UE shall send a LOCATION UPDATING REQUEST message.

### 9.4.4 Location updating / release / expiry of T3240

#### 9.4.4.1 Definition

#### 9.4.4.2 Conformance requirement

The UE receiving a LOCATION UPDATING ACCEPT message shall start T3240: it shall abort the RR connection at the expiry of timer T3240.

## References

TS 24.008 clauses 4.4.4.8 and 11.2.

## 9.4.4.3 Test purpose

To verify that the UE aborts the RR-connection at the expiry of timer T3240.

## 9.4.4.4 Method of test

## Initial conditions

- System Simulator:
  - two cells: A and B, belonging to different location areas a and b.
- User Equipment:
  - the UE has a valid TMSI. It is "idle updated" on cell A.

## Related ICS/IXIT statements

None.

## Test Procedure

A normal location updating procedure is performed. The RR-connection is not released by the SS within the timer T3240. It is checked that the UE aborts the RR-connection.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		Set the cell type of cell B to the "Serving cell". Set the cell type of cell A to the "non-suitable cell". (see note 1)
2		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3			Void	
4			Void	
5	→		LOCATION UPDATING REQUEST	
6	←		LOCATION UPDATING ACCEPT	
7		SS		The SS waits T3240 expiry.
8	→		SIGNALLING CONNECTION RELEASE INDICATION	The UE shall abort the RR connection. (see note 2) CN domain identity = CS domain
9		SS		The SS releases the RRC connection.
10			Void	Send only if RRC Connection Release is send.
NOTE1: The definitions for "Serving cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				
NOTE2: At the expiration of T3240, as per TS 24.008, RR connection shall be aborted. In UMTS, UE cannot release RRC connection on its own. Instead, UE can abort the RR connection ("CS signalling connection") and send a Signalling Connection Release Indication to the UTRAN, in order to initiate the release of RRC connection.				

## Specific message contents

None.

#### 9.4.4.5 Test requirement

At step 10 the UE shall abort the RRC connection.

### 9.4.5 Location updating / periodic

#### 9.4.5.1 Location updating / periodic spread

##### 9.4.5.1.1 Definition

##### 9.4.5.1.2 Conformance requirement

- 1) The UEs shall perform spreading of the time before performing a periodic location updating when the location updating timer value is reduced.
- 2) The UE shall reset timer T3212 when the UE is deactivated, and shall start with a value between zero and the broadcasted value when reactivated in the same cell, IMSI attach being forbidden.
- 3) When activated the UE shall start timer T3212 with a value randomly drawn in the allowed range.

NOTE: This conformance requirement is not covered by a test purpose. It is intended to be covered by a manufacturer declaration.

#### References

TS 24.008 clause 4.4.2.

##### 9.4.5.1.3 Test purpose

- 1) To check that when the location updating timer is reduced, the timer running in the UE is started with a value depending on the current timer value and the new broadcasted T3212 value.
- 2) To verify that when the UE is reactivated in the same cell (as the one in which it was deactivated), IMSI attach being forbidden, the UE starts the timer T3212 with a value between zero and the broadcasted value.

NOTE: It is not tested that the value is random.

##### 9.4.5.1.4 Method of test

#### Initial conditions

- System Simulator:
  - one cell, T3212 is set to 30 minutes;
  - IMSI attach is allowed in the cell;
- User Equipment:
  - the UE is deactivated. The stored MCC, MNC and LAC correspond to the broadcasted values. The stored update status is "updated".

#### Related ICS/IXIT statements

None.

#### Test procedure

The UE is activated. It performs IMSI attach. 3 minutes after the end of the IMSI attach procedure, the value of T3212 is set to 6 minutes. The UE shall perform periodic location updating 6 minutes after the end of the IMSI attach procedure.

Then, the IMSI attach/detach is forbidden. T3212 is still set to 6 minutes.

The UE is deactivated. The UE is reactivated. It is checked that the UE performs a periodic location updating during the 6 minutes following activation.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is activated.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	"location updating type": IMSI attach.
6	←		LOCATION UPDATING ACCEPT	
7	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9	SS			3 minutes after step 8 the value of T3212 is set to 6 minutes.
10	→		RRC CONNECTION REQUEST	"Establishment cause": Registration. This message shall be sent by the UE between 5 minutes 45 s and 6 minutes 15 s after step 8.
11	←		RRC CONNECTION SETUP	
12	→		RRC CONNECTION SETUP COMPLETE	
13	→		LOCATION UPDATING REQUEST	"location updating type": periodic updating.
14	←		LOCATION UPDATING ACCEPT	
15	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
16	→		RRC CONNECTION RELEASE COMPLETE	
17	SS			IMSI attach/detach is not allowed.
18	UE			The UE is deactivated.
19	UE			The UE is activated.
20	SS			The SS waits until the periodic location updating.
21	→		RRC CONNECTION REQUEST	"Establishment cause": Registration. This message shall arrive during the 6 minutes following the UE activation.
22	←		RRC CONNECTION SETUP	
23	→		RRC CONNECTION SETUP COMPLETE	
24	→		LOCATION UPDATING REQUEST	"Location updating type" = periodic.
25	←		LOCATION UPDATING ACCEPT	
26	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
27	→		RRC CONNECTION RELEASE COMPLETE	

#### Specific message contents

None.

#### 9.4.5.1.5 Test requirement

At step 10 the UE shall send an RRC CONNECTION REQUEST for a periodic location updating.

At step 21 the UE shall send an RRC CONNECTION REQUEST for a periodic location updating.

## 9.4.5.2 Location updating / periodic normal / test 1

### 9.4.5.2.1 Definition

### 9.4.5.2.2 Conformance requirement

- 1 The UE shall stop and reset the timer T3212 of the periodic location updating procedure when the first MM message is received or SECURITY mode setting is completed in the case of MM connection establishment.
- 2 The UE shall stop and reset the timer T3212 of the periodic location updating procedure when the UE has responded to paging and thereafter has received the first correct L3 message that is not an RRC message.

### References

TS 24.008 clause 4.4.2.

### 9.4.5.2.3 Test purpose

To verify that the UE stops and resets the timer T3212 of the periodic location updating procedure when:

- the first MM-message is received in the case of MM-connection establishment, security mode being not set;
- the UE has responded to paging and the first correct L3 message that is not an RRC message is received.

NOTE: T3212 is stopped when the MM-idle state is left and restarted when the MM sublayer returns to that state, substate NORMAL SERVICE or ATTEMPTING TO UPDATE. As a consequence, the exact time when T3212 is reset between those two events cannot be tested.

### 9.4.5.2.4 Method of test

#### Initial conditions

- System Simulator:
  - 1 cell, default parameters;
  - IMSI attach/detach is not allowed;
  - the T3212 time-out value is 2/10 hour.
- User Equipment:
  - the UE has a valid TMSI. It is "idle updated".

#### Related ICS/IXIT statements

None.

#### Test procedure

An UE originated MM connection is established and cleared. The RRC CONNECTION is released. It is checked that the UE performs a periodic location updating 12 minutes after the release of the RRC CONNECTION.

One minute after the periodic location updating, the UE is paged, it sends a RRC CONNECTION REQUEST message and the SS responds with an RRC CONNECTION SETUP message, a call is established and then cleared. It is checked that the UE performs a periodic location updating 12 minutes after the release of the link.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		UE		A MO CM connection is attempted.
2			Void	
3			Void	
4			Void	
5	→		CM SERVICE REQUEST	
6	←		CM SERVICE REJECT	cause #17 (network failure).
7		SS		The SS releases the RRC connection.
8			Void	
9		SS		The SS waits until the periodic location updating.
10		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration". This message shall arrive between 11 minutes 45 s and 12 minutes 15 s after the last release of the RRC connection by the SS.
11			Void	
12			Void	
13	→		LOCATION UPDATING REQUEST	"Location updating type" = periodic.
14	←		LOCATION UPDATING ACCEPT	
15		SS		The SS releases the RRC connection.
16			Void	
17		SS		The SS waits 1 minute.
18	←		Mobile terminated establishment of Radio Resource Connection	See TS 34.108 clause 7.1.2 "Mobile identity" = IMSI. "Establishment cause": Terminating Conversational Call.
19	→		PAGING RESPONSE	
20	←		AUTHENTICATION REQUEST	
21	→		AUTHENTICATION RESPONSE	
22		SS		The SS releases the RRC connection.
23			Void	
24		SS		The SS waits until the periodic location updating.
25		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration". This message shall arrive between 11 minutes 45 s and 12 minutes 15 s after the last release of the RRC connection by the SS.
26			Void	
27			Void	
28	→		LOCATION UPDATING REQUEST	"Location updating type" = periodic.
29	←		LOCATION UPDATING ACCEPT	
30		SS		The SS releases the RRC connection.
31			Void	

## Specific message contents

None.

## 9.4.5.2.5 Test requirement

At step 10 the UE shall initiate an RRC CONNECTION REQUEST 12 minutes after the release of the RRC CONNECTION (at step 7).

At step 25 the UE shall initiate an RRC CONNECTION REQUEST 12 minutes after the release of the RRC CONNECTION (at step 22).

### 9.4.5.3 Location updating / periodic normal / test 2

#### 9.4.5.3.1 Definition

#### 9.4.5.3.2 Conformance requirement

When a LOCATION UPDATING ACCEPT or a LOCATION UPDATING REJECT message is received, the timer T3212 is stopped and reset and the UE shall perform a periodic location updating after T3212 expiry.

#### References

TS 24.008 clause 4.4.2.

#### 9.4.5.3.3 Test purpose

To verify that the UE stops and resets the timer T3212 of the periodic location updating procedure when a LOCATION UPDATING ACCEPT message is received.

NOTE: T3212 is stopped when the MM-idle state is left and restarted when the MM sublayer returns to that state, substate NORMAL SERVICE or ATTEMPTING TO UPDATE. As a consequence, the exact time when T3212 is reset between those two events cannot be tested.

#### 9.4.5.3.4 Method of test

##### Initial conditions

- System Simulator:
  - 2 cells, IMSI attach/detach is allowed in both cells;
  - T3212 is set to 6 minutes.
- User Equipment:
  - the UE has a valid TMSI. It is "idle updated" on cell A.

##### Related ICS/IXIT statements

USIM removal possible while UE is powered Yes/No.

Switch off on button yes/No.

##### Test procedure

A normal location updating is performed. The RRC CONNECTION is released. One minute later, the UE is deactivated, then reactivated in the same cell. It is checked that the UE performs an IMSI attach and a periodic location updating 6 minutes after the IMSI attach.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell B to the "Serving cell". Set the cell type of cell A to the "non-suitable cell". (see note)
2		SS		The SS verifies that the IE "establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3			Void	
4			Void	
5		→	LOCATION UPDATING REQUEST	"location updating type" = normal.
5a		SS		The SS starts integrity protection.
6		←	LOCATION UPDATING ACCEPT	
7		SS		The SS releases the RRC connection.
8			Void	
9		SS		The SS waits until the periodic location updating.
10		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration". This message shall arrive between 5 minutes 45s and 6 minutes 15 s after the last release of the RRC connection by the SS.
11			Void	
12			Void	
13		→	LOCATION UPDATING REQUEST	"Location updating type" = periodic.
14		←	LOCATION UPDATING ACCEPT	
15		SS		The SS releases the RRC connection.
16			Void	
17		UE		If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed. steps 18 to 23 may be performed or not depending on the action made in step 17.
18		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Detach".
19			Void	
20			Void	
21		→	IMSI DETACH INDICATION	
22		SS		The SS releases the RRC connection.
23			Void	
24		UE		Depending on what has been performed in step 17 the UE is brought back to operation.
25		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
26			Void	
27			Void	
28		→	LOCATION UPDATING REQUEST	"Location updating type" = IMSI attach.
28a		SS		The SS starts integrity protection.
29		←	LOCATION UPDATING ACCEPT	
30		SS		The SS releases the RRC connection.
31			Void	
32		SS		The SS waits until the periodic location updating.
33		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration". This message shall arrive between 5 minutes 45 s and 6 minutes 15s after the last release of the RRC connection by the SS.
34			Void	

Step	Direction		Message	Comments
	UE	SS		
35	→		Void	"Location updating type" = periodic.
36			LOCATION UPDATING REQUEST	
37	←	SS	LOCATION UPDATING ACCEPT	The SS releases the RRC connection.
38			Void	
39			Void	
NOTE: The definitions for "Serving cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

### Specific message contents

None.

#### 9.4.5.3.5 Test requirement

After step 28 the UE shall performs an IMSI attach.

After step 33 the UE shall performs periodic location updating 6 minutes after step 28.

#### 9.4.5.4 Location updating / periodic search for HPLMN or higher priority PLMN when in VPLMN

##### 9.4.5.4.1 Location updating / periodic search for HPLMN or higher priority PLMN / UE waits time T

###### 9.4.5.4.1.1 Definition

###### 9.4.5.4.1.2 Conformance requirement

1. In the case that the mobile has a stored "Equivalent PLMNs" list the mobile shall only select a PLMN if it is of a higher priority than those of the same country as the current serving PLMN which are stored in the "Equivalent PLMNs" list.
2. In steps i), ii) and iii) of the Automatic Network Selection Mode Procedure, the MS shall limit its attempts to access higher priority PLMNs to PLMNs of the same country as the current serving VPLMN;
3. If the MS is in idle mode in a VPLMN, the MS shall periodically attempt to obtain service on its HPLMN or higher priority PLMN listed in "user controlled PLMN selector" or "operator controlled PLMN selector". The MS shall make an attempt if the MS is on the VPLMN at time T after the last attempt.

### References

TS 22.011 clause 3.2.2.5. and TS 23.122 4.4.3.3.

###### 9.4.5.4.1.3 Test purpose

To verify that if a UE is camped on a VPLMN it will perform a search for higher priority networks (e.g HPLMN) with a periodicity of T, which is the Search Period stored in the USIM.

This test will confirm that, if a cell from a new PLMN becomes available, within a time T the UE will perform a location updating on it only if the following requirements are met:

- The PLMN of this new cell if from the same country as the VPLMN, and
- This PLMN is the HPLMN stored in the USIM, or has a higher priority than the serving VPLMN or any PLMN from the country of the VPLMN that is stored in the equivalent PLMN list.

## 9.4.5.4.1.4 Method of test

## Initial conditions

- System Simulator:
  - four cells A, B, C and D, belonging to different location areas with location identification a, b, c and d. Their country codes and mobile network codes are defined as follows:

Cell	MCC	MNC
A	001	001
B	022	002
C	001	010
D	001	100

Initially Cells A, B and C shall not be broadcasting. IMSI attach/detach is not allowed on any of other cells.

- User Equipment:
  - the UE is switched off. The HPLMN Search Period on the USIM shall be set to 6 minutes. The location area information on the USIM is "deleted".
  - The following USIM fields are configured:

USIM field	Priority	PLMN
EF <sub>HPLMNwAcT</sub>	1 <sup>st</sup>	A
EF <sub>PLMNwAcT</sub>	1 <sup>st</sup>	B
	2 <sup>nd</sup>	E
EF <sub>OPLMNwAcT</sub>	1 <sup>st</sup>	C
	2 <sup>nd</sup>	D

In the table PLMN X is the PLMN code from cell X (see above). PLMN E is defined as MCC=001, MNC=030.

## Related ICS/IXIT statements

Switch on/off button Yes/No.

## Test Procedure

Only Cell D shall be broadcasting. The UE shall be switched on either by using the Power Switch or by applying power. A normal location updating is performed on Cell D. The SS shall include the PLMN E in the list of equivalent PLMNs that is sent in the Location Update Accept message. Cells B and C shall be made available after 7 minutes from switched on, thus ensuring the UE fails to find any higher priority PLMN during its first attempt. It is verified that the UE does not perform a location update request on Cell B or C (waiting for at least 6 minutes after broadcasting of Cells B and C). Then Cell A is also made available, and it is verified that the UE performs a location update request on Cell A within 6 minutes after broadcasting of Cell A.

## Expected sequence

Step	Direction		Message	Contents
	UE	SS		
1		SS		The following messages shall be sent and received on Cell D. Set the cell type of Cell A to the "non-suitable cell". Set the cell type of Cell B to the "non-suitable cell". Set the cell type of Cell C to the "non-suitable cell". Set the cell type of Cell D to the "Suitable neighbour cell". (see note)
1a	UE			The UE is switched on by either using the Power Switch or by applying power.
2		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3			Void	
4			Void	
5		→	LOCATION UPDATING REQUEST	"Location Update Type": Normal.
5a		SS		The SS starts integrity protection.
6		←	LOCATION UPDATING ACCEPT	"Equivalent PLMNs": PLMN E
7		SS		The SS releases the RRC connection.
8			Void	
8a		SS		The SS waits a period of 7 minutes after the UE is switched on, this allowing the UE to make its first periodic search.
8b		SS		Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". (see note)
8c		SS		The SS shall wait for 7 minutes during which no messages should be received.
9		SS		Set the cell type of cell A to the "Suitable neighbour cell". (see note)
10		SS		Within 6 minutes after step 9, the following messages shall be sent and received on Cell A. The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
11			Void	
12			Void	
13		→	LOCATION UPDATING REQUEST	"Location Update Type": normal.
13a		SS		The SS starts integrity protection.
14		←	LOCATION UPDATING ACCEPT	
15		SS		The SS releases the RRC connection.
16			Void	
NOTE: The definitions for "Suitable neighbour cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

## Specific message contents

None.

## 9.4.5.4.1.5 Test requirement

1. At step 8c, the UE shall not send any LOCATION UPDATING REQUEST on cell C.
2. At step 8c, the UE shall not send any LOCATION UPDATING REQUEST on cell B.
3. At step 13 the UE shall send a LOCATION UPDATING REQUEST message on Cell A.

#### 9.4.5.4.2 Location updating / periodic search for HPLMN or higher priority PLMN / UE in manual mode

##### 9.4.5.4.2.1 Definition

##### 9.4.5.4.2.2 Conformance requirement

The periodic attempts shall only be performed if in automatic mode when the UE is in a VPLMN.

#### References

TS 22.011 clause 3.2.2.5. and TS 23.122 clause 4.4.3.3.

##### 9.4.5.4.2.3 Test purpose

To verify that no Search for HPLMN or Higher Priority PLMN is performed when the UE is not in automatic mode.

##### 9.4.5.4.2.4 Method of test

#### Initial conditions

- System Simulator:
  - two cells A and B, belonging to different location areas with location identification a and b. Cell A shall be a cell of the HPLMN and Cell B shall be a cell of the VPLMN with a Country Code the same as that of Cell A. Initially Cell A shall not be broadcasting. IMSI attach/detach is not allowed on either cell.
- User Equipment:
  - the UE is switched off. The HPLMN Search Period on the USIM shall be set to 6 minutes. The location area information on the USIM is "deleted".

#### Related ICS/IXIT statements

Switch on/off button Yes/No.

#### Test Procedure

Only Cell B shall be broadcasting. The UE shall be switched on either by using the Power Switch or by applying power. A normal location updating is performed on Cell B. The UE is forced into manual selection mode. Cell A is made available. It is verified that the UE does not attempt to perform a location update on Cell A.

## Expected sequence

Step	Direction		Message	Contents
	UE	SS		
1		SS		The following messages shall be sent and received on Cell B. Set the cell type of Cell A to the "non-suitable cell". Set the cell type of Cell B to the "Serving cell". (see note)
1a	UE			The UE is switched on by either using the Power Switch or by applying power.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	"Location Update Type": Normal.
6	←		LOCATION UPDATING ACCEPT	
7	←		RRC CONNECTION RELEASE	After sending this message the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9	UE			The UE is forced into manual selection mode.
10	SS			Set the cell type of cell A to the "Suitable neighbour cell". (see note)
11	SS			The SS waits a period of 6 minutes. During this time no messages shall be received on Cell A.
NOTE: The definitions for "Serving cell", "Suitable neighbour cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

## Specific message contents

None.

## 9.4.5.4.2.5 Test requirement

At step 11 the UE shall not attempt to perform a location update.

## 9.4.5.4.3 Location updating / periodic search for HPLMN or higher priority PLMN / UE waits at least two minutes and at most T minutes

## 9.4.5.4.3.1 Definition

## 9.4.5.4.3.2 Conformance requirement

After switch on, the UE waits at least 2 minutes and at most T minutes before the first Search for HPLMN or higher priority PLMN is attempted.

## References

TS 22.011 clause 3.2.2.5. and TS 23.122 4.4.3.3.

## 9.4.5.4.3.3 Test purpose

To verify that the UE waits at least 2 minutes and at most T minutes before attempting its first Search for HPLMN or higher priority PLMN.

## 9.4.5.4.3.4 Method of test

## Initial Conditions

- System Simulator:

- two cells A and B, belonging to different location areas with location identification a and b. Cell A shall be a cell of the HPLMN and Cell B shall be a cell of the VPLMN with a Country Code the same as that of Cell A. Initially Cell A shall not be broadcasting. IMSI attach/detach is not allowed on either cell.
- User Equipment:
  - the UE is switched off. The HPLMN Search Period on the USIM shall be set to 6 minutes. The location area information on the USIM is "deleted".

#### Related ICS/IXIT statements

Switch on/off button Yes/No.

#### Test Procedure

Only Cell B shall be broadcasting. The UE shall be switched on either by using the Power Switch or by applying power. A normal location updating is performed on Cell B. Cell A is made available. It is verified that the UE attempts to perform a location update on Cell A, after at least 2 minutes and at most T minutes have passed following power on.

#### Expected sequence

Step	Direction		Message	Contents
	UE	SS		
1		SS		The following messages shall be sent and received on Cell B. Set the cell type of Cell A to the "non-suitable cell". Set the cell type of Cell B to the "Serving cell". (see note)
1a		UE		The UE is switched on by either using the Power Switch or by applying power.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	"Location Update Type": Normal.
6	←		LOCATION UPDATING ACCEPT	
7	←		RRC CONNECTION RELEASE	After sending this message the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9		SS		Set the cell type of cell A to the "Suitable neighbour cell". (see note)
10		SS		The SS waits a period of 2 minutes after the UE is switched on. During this time no messages shall be received on Cell A. The following messages shall be sent and received on cell A. Within 6 minutes after the UE is switched on the following messages shall be sent and received on cell A.
11	→		RRC CONNECTION REQUEST	"Establishment cause": Registration. This message shall be sent between 2 and 6 minutes after step 1
12	←		RRC CONNECTION SETUP	
13	→		RRC CONNECTION SETUP COMPLETE	
14	→		LOCATION UPDATING REQUEST	"Location Update Type": normal.
15	←		LOCATION UPDATING ACCEPT	
16	←		RRC CONNECTION RELEASE	After sending this message the SS waits for the disconnection of the main signalling link.
17	→		RRC CONNECTION RELEASE COMPLETE	
NOTE: The definitions for "Serving cell", "Suitable neighbour cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

Specific message contents

None.

#### 9.4.5.4.3.5 Test requirement

At step 11 the UE shall attempt to perform a location update.

### 9.4.6 Location updating / interworking of attach and periodic

#### 9.4.6.1 Definition

#### 9.4.6.2 Conformance requirement

- 1) If the UE is in service state NO CELL AVAILABLE, LIMITED SERVICE, PLMN SEARCH or PLMN SEARCH-NORMAL SERVICE when the timer T3212 expires the location updating procedure is delayed until this service state is left.
- 2) The T3212 time-out value shall not be changed in the NO CELL AVAILABLE, LIMITED SERVICE, PLMN SEARCH and PLMN SEARCH-NORMAL SERVICE states.
- 3) If the selected cell is in the location area where the UE is registered and IMSI ATTACH is not required and timer T3212 has not expired, then the state is NORMAL SERVICE.

#### References

- 1) TS 24.008 clause 4.4.2.
- 2) TS 24.008 clause 4.4.2.
- 3) TS 24.008 clause 4.2.1.1.

#### 9.4.6.3 Test purpose

- 1) To check that if the PLU timer expires while the UE is out of coverage, the UE informs the network of its return to coverage.
- 2) To check that the PLU timer is not disturbed by cells of forbidden PLMNs.
- 3) To check that if the PLU timer does not expire while out of coverage and if the mobile returns to the LA where it is updated, the UE does not inform the network of its return to coverage.

#### 9.4.6.4 Method of test

##### Initial conditions

- System Simulator:
  - two cells, a and b, of different PLMNs;
  - T3212 is set to 12 minutes on cell a;
  - T3212 is set to 6 minutes on cell b;
  - IMSI attach is allowed in both cells.
- User Equipment:
  - the UE is deactivated. The PLMN of cell b is entered in the USIM's forbidden PLMN list.

##### Related ICS/IXIT statements

None.

### Test procedure

The UE is activated and placed in automatic network selection mode. It performs IMSI attach. 1 minute after the end of the IMSI attach procedure, cell a is made unavailable. The UE shall not location update on cell b. 8 minutes after the end of the IMSI attach procedure, cell a is made available. The UE shall not location update on cell a before 11,75 minutes after the end of the IMSI attach procedure. The UE shall perform a periodic location update on cell a between 11,75 minutes and 12,25 minutes after the end of the IMSI attach procedure.

3 minutes after the end of the periodic location updating procedure, cell a is made unavailable. The UE shall not location update on cell b. 14 minutes after the end of the periodic location updating procedure, cell a is made available and cell b is made unavailable. The UE shall perform a location update on cell a before 17 minutes after the end of the periodic location updating procedure.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)
1a	UE			The UE is activated in automatic network selection mode.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	"location updating type": IMSI attach.
6	←		LOCATION UPDATING ACCEPT	
7	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	→		RRC CONNECTION RELEASE COMPLETE	
9	SS			The SS waits 1 minute after step 8. Set the cell type of cell A to the "non-suitable cell". (see note)
10	SS			The SS waits 8 minutes after step 8. Set the cell type of cell A to the "Serving cell". (see note)
11	→		RRC CONNECTION REQUEST	This message shall be sent by the UE between 11 minutes 45s and 12 minutes 15s after step 8.
12	←		RRC CONNECTION SETUP	
13	→		RRC CONNECTION SETUP COMPLETE	
14	→		LOCATION UPDATING REQUEST	"location updating type": periodic.
15	←		LOCATION UPDATING ACCEPT	
16	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
17	→		RRC CONNECTION RELEASE COMPLETE	
18	SS			The SS waits 3 minutes after step 17. Set the cell type of cell A to the "non-suitable cell". (see note)
19	SS			The SS waits 14 minutes after step 17. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "non-suitable cell". (see note)
20	→		RRC CONNECTION REQUEST	This message shall be sent by the UE before 17 minutes after step 17.
21	←		RRC CONNECTION SETUP	
22	→		RRC CONNECTION SETUP COMPLETE	
23	→		LOCATION UPDATING REQUEST	"Location updating type" = periodic.
24	←		LOCATION UPDATING ACCEPT	
25	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
26	→		RRC CONNECTION RELEASE COMPLETE	
27	UE			The UE shall not initiate an RRC connection establishment. This is checked during 12 minutes.
NOTE: The definitions for "Serving cell", "Suitable neighbour cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

## Specific message contents

None.

#### 9.4.6.5 Test requirement

- 1) At step 20 the UE shall send an RRC CONNECTION REQUEST and at step 23 the UE shall attempt to perform a location update.
- 2) At step 11 the UE shall send an RRC CONNECTION REQUEST and at step 14 the UE shall attempt to perform a location update.
- 3) At step 27 the UE shall not initiate an RRC connection during 12minutes.

### 9.4.7 Location Updating / accept with replacement or deletion of Equivalent PLMN list

#### 9.4.7.1 Definition

Test to verify that the UE replaces or deletes its stored Equivalent PLMN list when no Equivalent PLMN list is included in the LOCATION UPDATING ACCEPT message from the network during a Location Update.

#### 9.4.7.2 Conformance requirement

- 1) The stored list in the mobile station shall be replaced on each occurrence of the LOCATION UPDATING ACCEPT message.
- 2) If no equivalent PLMN list is contained in the LOCATION UPDATING ACCEPT message, then the stored equivalent PLMN list in the mobile station shall be deleted.

#### References

TS 24.008 4.4.4.6

#### 9.4.7.3 Test purpose

- 1) To verify that the UE replaces its stored equivalent PLMN list if the equivalent PLMN list is contained in the LOCATION UPDATING ACCEPT message received from the network during a location updating procedure.
- 2) To verify that the UE deletes its stored equivalent PLMN list if no equivalent PLMN list is contained in the LOCATION UPDATING ACCEPT message received from the network during a location updating procedure.

#### 9.4.7.4 Method of test

##### Initial conditions:

- System Simulator:
  - two cells: A and B, with different PLMN Codes (PLMN 1 and PLMN 2 respectively). IMSI attach/detach is not allowed on either cell.
- User Equipment:
  - the UE is switched off. The HPLMN is PLMN 3 and no other information about PLMN priorities or forbidden PLMNs is stored in the USIM. The equivalent PLMN list in the mobile station is empty.

##### Related ICS/IXIT statement(s)

Switch off on button Yes/No.

##### Test procedure

When the UE is initially switched on it will perform a normal location updating in Cell A, which is the only suitable cell available. The LOCATION UPDATING ACCEPT message sent by the SS on reception of the LOCATION UPDATING REQUEST message shall include PLMN 2 in the equivalent PLMN list. When Cell B is made available

and its RF signal level is higher than that of Cell A the UE will perform a normal location updating in this cell. The LOCATION UPDATING ACCEPT message sent by the SS shall include PLMN 1 in the equivalent PLMN list. When Cell B is made unavailable the UE shall perform a normal location updating again in Cell A, but in this occasion the LOCATION UPDATING ACCEPT message shall contain an empty equivalent PLMN list. When Cell B is made available again and its RF signal level is higher than that of Cell A the UE shall not perform a normal location updating in this cell since it is not in the ePLMN list.

#### Expected Sequence

Step	Direction		Message	Contents
	UE	SS		
1		SS		The following messages shall be sent and received on Cell A Set the cell type of Cell A to the "Suitable neighbour cell". Set the cell type of Cell B to the "non-suitable cell". (see note)
2	UE			The UE is switched on by either using the Power Switch or by applying power.
3	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
4	←		RRC CONNECTION SETUP	
5	→		RRC CONNECTION SETUP COMPLETE	
6	→		LOCATION UPDATING REQUEST	"Location Update Type": normal.
7	←		LOCATION UPDATING ACCEPT	Equivalent PLMNs: PLMN 2
8	←		RRC CONNECTION RELEASE	After sending this message the SS waits for the disconnection of the main signalling link.
9	→		RRC CONNECTION RELEASE COMPLETE	
10		SS		The following messages shall be sent and received on Cell B. Set the cell type of Cell B to the "Serving cell". (see note)
11	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
12	←		RRC CONNECTION SETUP	
13	→		RRC CONNECTION SETUP COMPLETE	
14	→		LOCATION UPDATING REQUEST	"Location Update Type": normal.
15	←		LOCATION UPDATING ACCEPT	Equivalent PLMNs : PLMN 1
16	←		RRC CONNECTION RELEASE	After sending this message the SS waits for the disconnection of the main signalling link.
17	→		RRC CONNECTION RELEASE COMPLETE	
18		SS		The following messages shall be sent and received on Cell A. Set the cell type of Cell B to the "non-suitable cell". (see note)
19	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
20	←		RRC CONNECTION SETUP	
21	→		RRC CONNECTION SETUP COMPLETE	
22	→		LOCATION UPDATING REQUEST	"Location Update Type": normal.
23	←		LOCATION UPDATING ACCEPT	Equivalent PLMNs : empty
24	←		RRC CONNECTION RELEASE	After sending this message the SS waits for the disconnection of the main signalling link.
25	→		RRC CONNECTION RELEASE COMPLETE	
26		SS		Set the cell type of Cell B to the "Serving cell". (see note)
27		SS		The SS shall wait for 7 minutes during which no messages should be received.
NOTE: The definitions for "Serving cell", "Suitable neighbour cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

Specific message contents

None.

#### 9.4.7.5 Test requirements

- 1) At step 14 the UE shall perform a normal location updating in Cell B.
- 2) At step 27 the UE shall not perform a normal location updating in Cell B.

### 9.4.8 Location Updating after UE power off

#### 9.4.8.1 Definition

Test to verify that the UE stores the equivalent PLMN list at UE power off and uses the stored equivalent PLMN list after UE switch on.

#### 9.4.8.2 Conformance requirement

The equivalent PLMN list shall be stored in the mobile station while switched off so that it can be used for PLMN selection after switch on.

#### References

TS 24.008 4.4.4.6

#### 9.4.8.3 Test purpose

To verify that the UE stores the equivalent PLMN list at UE switch off and uses the stored equivalent PLMN list after UE switch on.

#### 9.4.8.4 Method of test

##### Initial conditions

- System Simulator:
  - three cells: A, B and C. Cell A belongs to PLMN1 which is HPLMN. Cell B belongs to PLMN2. Cell C belongs to PLMN3.
- User Equipment:
  - the UE is switched off;
  - the UE is in automatic mode for PLMN selection,
  - the UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN
EF <sub>LOCI</sub>		PLMN 1
EF <sub>HPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 1
EF <sub>PLMNwAcT</sub>	Empty	
EF <sub>OPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 3
	2 <sup>nd</sup>	PLMN 2

##### Related ICS/IXIT statement(s)

Switch off on button Yes/No.

## Test procedure

When the UE is initially switched on it will perform a normal location updating in Cell A, which is the only suitable cell available and belongs to the HPLMN. The LOCATION UPDATING ACCEPT message sent by the SS shall include PLMN2 in the equivalent PLMN list. The UE shall be switched-off. Cell A shall be made unavailable and Cells B and C shall be made available. When the UE is switched-on again, the UE shall perform a normal location updating in Cell B and not in Cell C because PLMN2 is stored in the UE equivalent PLMN list.

## Expected Sequence

Step	Direction		Message	Contents
	UE	SS		
1		SS		The following messages shall be sent and received on Cell A Set the cell type of Cell A to the "Serving cell". Set the cell type of Cell B and Cell C to the "non-suitable cell". (see note)
2		UE		The UE is switched on by either using the Power Switch or by applying power.
3		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
4			Void	
5			Void	
6		→	LOCATION UPDATING REQUEST	"Location Update Type": normal.
6a		SS		The SS starts integrity protection.
7		←	LOCATION UPDATING ACCEPT	Equivalent PLMN List: PLMN 2
8		SS		The SS releases the RRC connection.
9			Void	
10		UE		The following messages shall be sent and received on Cell B. The UE is switched-off
11		SS		Set the cell type of Cell A to the "non-suitable cell". Set the cell type of Cell B to the "suitable neighbour cell". Set the cell type of Cell C to the "suitable neighbour cell". (see note)
12		UE		The UE is switched-on, either by using the Power Switch or by applying power.
13		SS		The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
14			Void	
15			Void	
16		→	LOCATION UPDATING REQUEST	"Location Update Type": normal.
16a		SS		The SS starts integrity protection.
17		←	LOCATION UPDATING ACCEPT	
18		SS		The SS releases the RRC connection.
19			Void	
NOTE:	The definitions for "Serving cell", "Suitable neighbour cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

## Specific message contents

None.

## 9.4.8.5 Test requirements

At step 16 the UE shall perform a normal location updating in Cell B.

## 9.4.9 Location Updating / Accept, Interaction between Equivalent PLMNs and Forbidden PLMNs.

### 9.4.9.1 Definition

Test to verify that, before storing the 'equivalent PLMN list' received from the network during a Location Update, the UE removes any PLMN already included in the 'forbidden PLMN list'. Consequently the UE shall not select a PLMN Equivalent to the registered PLMN if it is included in the 'forbidden PLMN list' in the USIM.

### 9.4.9.2 Conformance requirement

The mobile station shall store the equivalent PLMS list, as provided by the network, except that any PLMN code that is already in the "forbidden PLMN list" shall be removed from the "equivalent PLMNs" list before it is stored by the mobile station.

### References

TS 24.008, 4.4.4.6

### 9.4.9.3 Test purpose

To verify that the UE shall not select a forbidden PLMN even though it is included in the equivalent PLMN list provided by the network because forbidden PLMNs shall not be stored in the mobile's equivalent PLMN list.

### 9.4.9.4 Method of test

#### Initial conditions

- System Simulator:
  - two cells: A, and B. Cell A belongs to PLMN1. Cell B belongs to PLMN2.
- User Equipment:
  - the UE is switched off;
  - the UE is in automatic PLMN selection mode.
  - the UE is equipped with a USIM containing default values except for those listed below.

USIM field	Priority	PLMN
EF <sub>LOCI</sub>		PLMN 1
EF <sub>HPLMNwAcT</sub>	1 <sup>st</sup>	PLMN 3
EF <sub>PLMNwAcT</sub>	1 <sup>st</sup>	PLMN 2
EF <sub>FPLMN</sub>		PLMN 2

#### Related ICS/IXIT statement(s)

Switch off on button Yes/No.

#### Test procedure

Cells A and B are made available. When the UE is switched-on it will perform a normal location updating in Cell A, since Cell B belongs to a forbidden PLMN. The SS will respond sending a LOCATION UPDATING ACCEPT message that includes PLMN2 in the equivalent PLMN list. However the UE shall not store PLMN 2 in its equivalent PLMN list as it is a forbidden PLMN. Therefore, when Cell A is made unavailable the UE will not select the only remaining cell (Cell B), remaining in limited service state.

## Expected Sequence

Step	Direction		Message	Contents
	UE	SS		
1		SS		The following messages shall be sent and received on Cell A Set the cell type of Cell A to the "Suitable neighbour cell". Set the cell type of Cell B to the "Suitable neighbour cell". (see note) The UE is switched on by either using the Power Switch or by applying power. The SS verifies that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration". "Location Update Type": normal. The SS starts integrity protection. Equivalent PLMN List: PLMN 2 The SS releases the RRC connection.
2		UE		
3		SS		
4			Void	
5			Void	
6		→	LOCATION UPDATING REQUEST	
6a		SS		
7		←	LOCATION UPDATING ACCEPT	
8		SS		
9			Void	
10		SS		Set the cell type of Cell A to the "non-suitable cell". (see note)
11		SS		The SS shall wait for 7 minutes during which no messages should be received.
NOTE: The definitions for "Suitable neighbour cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

## Specific message contents

None.

## 9.4.9.5 Test requirements

At step 11 the UE shall not perform a normal location updating in Cell B.

## 9.5 MM connection

### 9.5.1 Introduction

[tbd]

### 9.5.2 MM connection / establishment in security mode

#### 9.5.2.1 Definition

#### 9.5.2.2 Conformance requirement

- 1) The UE shall be able to correctly set up an MM connection in a Mobile Originating CM connection attempt and send a CM SERVICE REQUEST message with CKSN information element as stored in the USIM and Mobile Identity information element set to the TMSI.
- 2) The UE shall be able to interpret security mode setting as acceptance of its CM service request i.e. send a CM message.

## References

TS 24.008 clause 4.5.1.1.

### 9.5.2.3 Test purpose

To verify that the UE can correctly set up an MM connection in an origination and interpret security mode setting as acceptance of its CM service request.

### 9.5.2.4 Method of test

#### Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE has a valid TMSI. It is "idle updated".

#### Related ICS/IXIT statements

None.

#### Test Procedure

A mobile originating CM connection is initiated. After the UE has sent the CM SERVICE REQUEST message to the SS, an authentication procedure and a security mode setting procedure are performed. Then, the UE sends a CM message and the SS clears the call and releases the RRC CONNECTION.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE		Void Void Void CM SERVICE REQUEST AUTHENTICATION REQUEST AUTHENTICATION RESPONSE	A MO CM connection is attempted.
2				
3				
4				
5	→			
6	←			
7	→			
8	SS			
9				
A10	→		SETUP	"Cause" IE: "unassigned number".
A11	←		RELEASE COMPLETE	
B10	→		REGISTER	
B11	←		RELEASE COMPLETE	
C10	→		CP-DATA	
C11	←		CP-ACK	
C12	←		CP-DATA	
C13	→		CP-ACK	
14	SS			The SS releases the RRC connection.
15			Void	

#### Specific message contents

None.

### 9.5.2.5 Test requirement

At step 5 the UE shall send the CM SERVICE REQUEST message to the SS.

At step A10 or B10 or C10 the UE shall send a CM message and the SS shall release the RRC connection (step 14).

## 9.5.3 Void

## 9.5.4 MM connection / establishment rejected

### 9.5.4.1 Definition

### 9.5.4.2 Conformance requirement

Upon reception of a CM SERVICE REJECT message, the UE shall not send any layer 3 message, start timer T3240 and enter the "wait for network command" state.

### References

TS 24.008 clause 4.5.1.1.

### 9.5.4.3 Test purpose

To verify that the UE does not send a layer 3 message when the service request is rejected by the SS.

### 9.5.4.4 Method of test

#### Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE has a valid TMSI. It is "idle updated".

#### Related ICS/IXIT statements

None.

#### Test Procedure

A mobile originating CM connection is attempted. After the UE has sent the CM SERVICE REQUEST message to the SS, the SS responds with a CM SERVICE REJECT message with reject cause "requested service option not subscribed". It is checked that the UE does not send a layer 3 message.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		UE		A MO CM connection is attempted  "Reject cause" IE: "requested service option not subscribed". The UE shall not send a layer 3 message. This is checked during 5 s. After the sending of this message, the SS waits for the disconnection of the main signalling link.
2	→		RRC CONNECTION REQUEST	
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		CM SERVICE REQUEST	
6	←		CM SERVICE REJECT	
7		SS		
8	←		RRC CONNECTION RELEASE	
9	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

#### 9.5.4.5 Test requirement

The UE shall attempt MO CM connection (step 1).

At step 7 the UE shall not send a layer 3 message and at step 9 the UE shall send an RRC CONNECTION RELEASE COMPLETE message.

### 9.5.5 MM connection / establishment rejected cause 4

#### 9.5.5.1 Definition

#### 9.5.5.2 Conformance requirement

- 1) The UE shall be able to correctly set up an MM connection in a Mobile Originating CM connection attempt and send a CM SERVICE REQUEST message with CKSN information element as stored in the USIM and Mobile Identity information element set to the TMSI.
- 2) The UE, when receiving a CM SERVICE REJECT message with reject cause "IMSI unknown in VLR" shall wait for the network to release the RRC connection.
- 3) The UE shall then be able to perform a location updating procedure.

#### References

TS 24.008 clause 4.5.1.1.

#### 9.5.5.3 Test purpose

To verify that the UE can correctly accept a CM SERVICE REJECT message with reject cause "IMSI unknown in VLR".

#### 9.5.5.4 Method of test

##### Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE has a valid TMSI. It is "idle updated".

##### Related ICS/IXIT statements

None.

##### Test Procedure

A mobile originating CM connection is attempted. After the UE has sent the CM SERVICE REQUEST message to the SS, the SS responds with a CM SERVICE REJECT message with reject cause "IMSI unknown in VLR". On receipt of this message, the UE shall delete any TMSI, LAI, cipher key and cipher key sequence number. The RRC CONNECTION is released. It is checked that the UE performs a normal location updating procedure.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		UE		A MO CM connection is attempted.
2		→	RRC CONNECTION REQUEST	
3		←	RRC CONNECTION SETUP	
4		→	RRC CONNECTION SETUP COMPLETE	
5		→	CM SERVICE REQUEST	CKSN = initial value, Mobile identity = TMSI.
6		←	CM SERVICE REJECT	"Reject cause" = "IMSI unknown in VLR".
7		←	RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
8		→	RRC CONNECTION RELEASE COMPLETE	
9		→	RRC CONNECTION REQUEST	"Establishment cause": Registration.
10		←	RRC CONNECTION SETUP	
11		→	RRC CONNECTION SETUP COMPLETE	
12		→	LOCATION UPDATING REQUEST	"Ciphering key sequence number" = "No key is available". "Mobile identity" = IMSI. "Location area identification" = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE).
13		←	AUTHENTICATION REQUEST	
14		→	AUTHENTICATION RESPONSE	
14a		←	SECURITY MODE COMMAND	
14b		→	SECURITY MODE COMPLETE	
15		←	LOCATION UPDATING ACCEPT	"Mobile identity" = new TMSI.
16		→	TMSI REALLOCATION COMPLETE	
17		←	RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
18		→	RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

#### 9.5.5.5 Test requirement

- 1) The UE shall attempt MO CM connection (at step 1) and at step 5 the UE shall send a CM SERVICE REQUEST message with CKSN information element as stored in the USIM and Mobile Identity information element set to the TMSI.
- 2) At step 6 the SS should send a CM SERVICE REJECT message with reject cause "IMSI unknown in VLR", and at step 8 the UE shall send an RRC CONNECTION RELEASE message.
- 3) At step 12 the UE send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type set to "deleted LAI".

## 9.5.6 MM connection / expiry T3230

### 9.5.6.1 Definition

### 9.5.6.2 Conformance requirement

At T3230 expiry (i.e. no response is given but an RRC connection is available) the MM connection establishment shall be aborted.

References

TS 24.008 clauses 4.5.1.2 and 11.2.

9.5.6.3 Test purpose

To verify that at T3230 expiry, the UE aborts the MM-connection establishment.

9.5.6.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE has a valid TMSI. It is "idle updated".

Related ICS/IXIT statements

None.

Test Procedure

A mobile originating CM connection is attempted. After the UE has sent the CM SERVICE REQUEST message to the SS, the SS waits for expiry of timer T3230. It is checked that the UE send a MM STATUS message and waits for the release of the RRC-connection.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			A MO CM connection is attempted.
2	→		RRC CONNECTION REQUEST	
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		CM SERVICE REQUEST	The SS waits for expiry of timer T3230.
6	SS			
7	←		CM SERVICE ACCEPT	"Reject cause" IE is "message type not compatible with protocol state". After the sending of this message, the SS waits for the disconnection of the main signalling link.
8	→		MM STATUS	
9	←		RRC CONNECTION RELEASE	
10	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

9.5.6.5 Test requirement

The UE shall attempt MO CM connection (step 1).

At step 8 the UE shall send a MM STATUS message.

## 9.5.7 MM connection / abortion by the network

### 9.5.7.1 MM connection / abortion by the network / cause #6

#### 9.5.7.1.1 Definition

#### 9.5.7.1.2 Conformance requirement

- 1) Upon reception of an ABORT message, the UE shall release any ongoing MM connection and enter the "wait for network command" state.
- 2) If the cause in the ABORT message was cause #6, the UE shall:
  - 2.1 not perform normal location updating;
  - 2.2 not perform periodic location updating;
  - 2.3 not respond to paging with TMSI;
  - 2.4 reject any request for Mobile Originating call establishment except Emergency call;
  - 2.5 not perform IMSI detach if deactivated.
- 3) After reception of an ABORT message with cause #6, the UE, if it supports speech, shall accept a request for an emergency call by sending a RRC CONNECTION Request message with the establishment cause set to "emergency call".
- 4) After reception of an ABORT message with cause #6, the UE shall delete the stored LAI, CKSN and TMSI.

#### Reference(s)

TS 24.008 clause 4.3.5.

#### 9.5.7.1.3 Test purpose

To check that upon reception of an ABORT message with cause #6 during call establishment:

- the UE does not send any layer 3 message;
- after reception of an ABORT message and after having been deactivated and reactivated, the UE performs location updating using its IMSI as mobile identity and indicates deleted LAI and CKSN;
- the UE does not perform location updating, does not answer to paging with TMSI, rejects any request for mobile originating call except emergency call, does not perform IMSI detach;
- the UE accepts a request for emergency call.

#### 9.5.7.1.4 Method of test

##### Initial Conditions

- System Simulator:
  - 2 cells, default parameters.
- User Equipment:
  - the UE has a valid TMSI, CKSN and CK, IK. It is "idle updated" on cell B.

##### Related ICS/IXIT Statement(s)

USIM removal possible while UE is powered Yes/No.

Switch off on button Yes/No.

Support of speech Yes/No.

### Test procedure

A mobile originating CM connection is attempted. Upon reception of the AUTHENTICATION RESPONSE message, the SS sends an ABORT message with cause #6. The SS waits for 5 s. The UE shall not send any layer 3 message. The SS releases the RRC connection.

The SS checks that the UE has entered the state MM IDLE substate NO IMSI, i.e. does not perform normal location updating, does not perform periodic updating, does not respond to paging, rejects any requests from CM entities except emergency calls and does not perform IMSI detach if deactivated.

### Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
The following messages are sent and shall be received on cell B				
1	UE			A mobile originating CM connection is attempted.
2	→		RRC CONNECTION REQUEST	
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		CM SERVICE REQUEST	
6	←		AUTHENTICATION REQUEST	
7	→		AUTHENTICATION RESPONSE	
8	←		ABORT	"reject cause" = #6.
9	SS			The SS waits for 5 s.
10	UE			The UE shall not send any layer 3 message during that time.
11	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
12	→		RRC CONNECTION RELEASE COMPLETE	
The following messages are sent and shall be received on cell A.				
13	SS			Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "non-suitable cell". (see note)
14	UE			The UE performs cell reselection according to procedure as specified in (this however is not checked until step 27). The UE shall not initiate an RRC connection establishment on cell A or on cell B.
15	SS			The SS waits at least 7 minutes for a possible periodic updating.
16	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B.
17	←		PAGING TYPE 1	"UE identity" IE contains TMSI. Paging Cause: Terminating Conversational Call.
18	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is verified during 3 s.
19	UE			A MO CM connection is attempted.
20	UE			The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is checked during 3 s.
21	UE			If the UE supports speech (see ICS), an emergency call is attempted.
22	→		RRC CONNECTION REQUEST	"Establishment cause": Emergency call.
23	←		RRC CONNECTION SETUP	
24	→		RRC CONNECTION SETUP COMPLETE	
25	→		CM SERVICE REQUEST	"CM service type": Emergency call establishment.

Step	Direction		Message	Comments
	UE	SS		
26	←		CM SERVICE ACCEPT	
27	→		EMERGENCY SETUP	"Cause" = unassigned number. After the sending of this message, the SS waits for the disconnection of the main signalling link.
28	←		RELEASE COMPLETE	
29	←		RRC CONNECTION RELEASE	
30	→		RRC CONNECTION RELEASE COMPLETE	
31	UE			If possible (see ICS) USIM detachment is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed. The UE shall not initiate an RRC connection establishment on cell A or on cell B. This is checked during 3 s.
32	UE			
33	UE			Depending on what has been performed in step 31 the UE is brought back to operation. "Establishment cause": Registration.  "location updating type" = normal, "CKSN" = no key available, "Mobile Identity" = IMSI, "LAI" = deleted LAI (the MCC and MNC hold the previous values, the LAC is coded FFFE). "CKSN" = CKSN1.  "Mobile Identity" = TMSI.  After the sending of this message, the SS waits for the disconnection of the main signalling link.
34	→		RRC CONNECTION REQUEST	
35	←		RRC CONNECTION SETUP	
36	→		RRC CONNECTION SETUP COMPLETE	
37	→		LOCATION UPDATING REQUEST	
38	←		AUTHENTICATION REQUEST	
39	→		AUTHENTICATION RESPONSE	
40	←		LOCATION UPDATING ACCEPT	
41	→		TMSI REALLOCATION COMPLETE	
42	←		RRC CONNECTION RELEASE	
43	→		RRC CONNECTION RELEASE COMPLETE	
NOTE: The definitions for "Serving cell" and "non-suitable cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

### Specific message contents

None.

#### 9.5.7.1.5 Test requirement

- 1) At step 10 the UE shall not send any layer 3 message and at step 12 the UE shall send an RRC CONNECTION RELEASE COMPLETE message.
- 2)
  - 2.1 At step 14 the UE shall not initiate an RRC connection establishment (not perform normal location updating).
  - 2.2 At step 16 the UE shall not initiate an RRC connection establishment.(not perform periodic location updating).
  - 2.3 At step 18 the UE shall not initiate an RRC connection establishment (not respond to paging with TMSI).
  - 2.4 At step 20 the UE shall not initiate an RRC connection establishment (reject any request for Mobile Originating call establishment).
  - 2.5 At step 32 the UE shall not initiate an RRC connection establishment.(not perform IMSI detach).
- 3) At step 22 the UE shall send an RRC CONNECTION REQUEST message with the establishment cause set to "emergency call".
- 4) At step 37 the UE send a LOCATION UPDATING REQUEST message with the Mobile Identity IE set to its IMSI, CKSN IE set to "no key is available" and the Location Updating type set to "deleted LAI".

## 9.5.7.2 MM connection / abortion by the network / cause not equal to #6

### 9.5.7.2.1 Definition

### 9.5.7.2.2 Conformance requirement

Upon reception of an ABORT message, the UE shall release any ongoing MM connection and enter the "wait for network command" state.

### Reference(s)

TS 24.008 clause 4.3.5.

### 9.5.7.2.3 Test purpose

To check that when multiple MM connections are established, the UE releases all MM connections upon reception of an ABORT message, in the case when the two MM connections are established for a mobile terminating call and a non call related supplementary service operation.

### 9.5.7.2.4 Method of test

#### Initial Conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE is in state U10 of a mobile terminating call.

#### Related ICS/IXIT Statement(s)

The UE supports a non call related supplementary service operation during an active call Yes/No.

#### Test procedure

A non call related supplementary service operation is attempted at the UE. Upon reception of the REGISTER message, the SS sends an ABORT message with cause # 17. The SS sends a DISCONNECT using the TI of the mobile terminating call. Upon reception of the RELEASE message, the SS send a RELEASE COMPLETE message with the PD and TI of the DISCONNECT message and with cause #81. The SS releases the RRC connection.

## Expected Sequence

This procedure is performed if the UE supports non call related supplementary service operation.

Step	Direction		Message	Comments
	UE	SS		
1	UE			A non call related supplementary service operation is attempted at the UE.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Originating Background Call.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		CM SERVICE REQUEST	
6	←		CM SERVICE ACCEPT	
7	→		REGISTER	
8	←		ABORT	"reject cause" = #17.
9	←		DISCONNECT	with the TI of the mobile terminating call.
9a	→		RELEASE	
10	←		RELEASE COMPLETE	"cause" = #81. Same PD and TI as the DISCONNECT message.
11	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
12	→		RRC CONNECTION RELEASE COMPLETE	

## Specific message contents

None.

## 9.5.7.2.5 Test requirement

At step 10 the SS shall send a RELEASE COMPLETE message and at step 12 the UE shall send an RRC CONNECTION RELEASE COMPLETE message.

## 9.5.8 MM connection / follow-on request pending

## 9.5.8.1 MM connection / follow-on request pending / test 1

## 9.5.8.1.1 Definition

## 9.5.8.1.2 Conformance requirement

The UE shall not attempt to establish a new MM connection after location updating on the same RRC connection if not allowed by the network.

## Reference(s)

TS 24.008 clause 4.4.4.6.

## 9.5.8.1.3 Test purpose

To check that when the network does not include the follow on proceed IE in a LOCATION UPDATING ACCEPT message, a UE that has a CM application request pending does not attempt to establish a new MM connection on that RRC connection.

## 9.5.8.1.4 Method of test

## Initial Conditions

- System Simulator:
  - 1 cell, ATT flag is set to "MSs in the cell shall apply IMSI attach and detach procedure".
- User Equipment:
  - the UE has a valid TMSI and is deactivated.

## Related ICS/IXIT Statement(s)

None.

## Test procedure

The UE is activated and a CM connection is attempted during the location updating procedure. The SS does not include the follow on proceed information element in the LOCATION UPDATING ACCEPT message. The SS waits for at least 8 s. The UE shall not send any layer 3 message for 8 s.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is activated.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	location updating type = IMSI attach. Then the SS waits for 15 s. During this delay a CM connection is attempted.
6	←		LOCATION UPDATING ACCEPT	follow on proceed IE not included.
7	SS			The SS wait for at least 8 s.
8	UE			The UE shall not send any layer 3 message for 8 s after reception of the LOCATION UPDATING ACCEPT message.
9	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
10	→		RRC CONNECTION RELEASE COMPLETE	

## Specific message contents

None.

## 9.5.8.1.5 Test requirement

After step 8 the UE shall not send any layer 3 messages.

## 9.5.8.2 MM connection / follow-on request pending / test 2

## 9.5.8.2.1 Definition

## 9.5.8.2.2 Conformance requirement

A UE supporting the follow-on request procedure and having a CM connection request pending shall correctly establish an MM connection following a location update when allowed by the network.

## Reference(s)

TS 24.008 clause 4.4.4.6.

## 9.5.8.2.3 Test purpose

To check that when the network includes the follow on proceed IE in a LOCATION UPDATING ACCEPT message, a UE that supports the follow on request procedure and that has a CM application request pending establishes successfully a new MM connection on that RRC connection.

## 9.5.8.2.4 Method of test

## Initial Conditions

- System Simulator:
  - 1 cell, ATT flag is set to "MSs in the cell shall apply IMSI attach and detach procedure".
- User Equipment:
  - the UE has a valid TMSI and is deactivated.

## Related ICS/IXIT Statement(s)

UE supports the follow on request procedure Yes/No.

## Test procedure

The UE is activated and a CM connection is attempted during the location updating procedure. The SS includes the follow on proceed information element in the LOCATION UPDATING ACCEPT message. The SS waits for at least 8 s.

If the UE supports the follow on request procedure:

- the UE shall send a CM SERVICE REQUEST. Upon reception of that message, the SS sends a CM SERVICE ACCEPT message. The UE shall send an initial CM message. Upon reception of that message, the SS releases the RRC connection.

If the UE does not support the follow on request procedure:

- the UE shall not send any layer 3 message for 8 s.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		UE		The UE is activated.
2		→	RRC CONNECTION REQUEST	"Establishment cause": Registration.
3		←	RRC CONNECTION SETUP	
4		→	RRC CONNECTION SETUP COMPLETE	
5		→	LOCATION UPDATING REQUEST	
6		←	LOCATION UPDATING ACCEPT	Location updating type = IMSI attach. Then the SS waits for 15 s. During this delay a CM connection is attempted. follow on proceed IE included.
				If the UE supports the follow on request procedure (see ICS) steps A7 to A9 are performed, otherwise steps B7 to B8 are performed.
A7		→	CM SERVICE REQUEST	
A8		←	CM SERVICE ACCEPT	
A9		→	An initial CM message	
B7		SS		The SS wait for at least 8 s. The UE shall not send any layer 3 message for 8 s after reception of the LOCATION UPDATING ACCEPT message.
B8		UE		
10		←	RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
11		→	RRC CONNECTION RELEASE COMPLETE	

## Specific message contents

None.

## 9.5.8.2.5 Test requirement

After step 6:

The UE shall send a CM SERVICE REQUEST if the UE supports the follow on request procedure.

The UE shall not send any layer 3 message if the UE does not support the follow on request procedure.

## 9.5.8.3 MM connection / follow-on request pending / test 3

## 9.5.8.3.1 Definition

## 9.5.8.3.2 Conformance requirement

- 1) The UE shall not set the follow on proceed IE in a LOCATION UPDATING REQUEST message if no MM connection request is pending.
- 2) When the network includes the follow on proceed IE in a LOCATION UPDATING ACCEPT message, a UE that has no CM application request pending shall not attempt to establish a new MM connection on that RRC connection.
- 3) The UE shall correctly handle a CM connection established by the network on the RRC connection that was used for the location updating procedure.

## Reference(s)

TS 24.008 clause 4.4.4.6.

## 9.5.8.3.3 Test purpose

- 1) To check that a UE that has no CM application request pending sets the follow on proceed IE to No follow-on request pending in a LOCATION UPDATING REQUEST message.
- 2) To check that when the network includes the follow on proceed IE in a LOCATION UPDATING ACCEPT message, a UE that has no CM application request pending does not attempt to establish a new MM connection on that RRC connection.
- 3) To check that the UE accepts establishment by the network of a new MM connection on the existing RRC connection.

## 9.5.8.3.4 Method of test

## Initial Conditions

- System Simulator:
  - 1 cell, ATT flag is set to "MSs in the cell shall apply IMSI attach and detach procedure".
- User Equipment:
  - the UE has a valid TMSI and is deactivated.

## Related ICS/IXIT Statement(s)

Supported services on TCH.

## Test procedure

The UE is activated. The UE performs location updating. The UE shall set the follow on proceed IE to No follow-on request pending in the LOCATION UPDATING REQUEST message. The SS includes the follow on proceed IE in the LOCATION UPDATING ACCEPT message. The SS waits for 5 s. The UE shall not send any layer 3 message for 5 s. The SS sends a SETUP message to the UE requesting a basic service supported by the UE. The UE shall send either a CALL CONFIRMED message if it supports a service on TCH or a RELEASE COMPLETE with cause #88.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is activated.
2	→		RRC CONNECTION REQUEST	"Establishment cause": Registration.
3	←		RRC CONNECTION SETUP	
4	→		RRC CONNECTION SETUP COMPLETE	
5	→		LOCATION UPDATING REQUEST	
6	←		LOCATION UPDATING ACCEPT	"Location updating type" = IMSI attach. The FOR bit is set to No follow-on request pending. follow on proceed IE is included.
7	SS			The SS wait for 5 s.
8	UE			The UE shall not send any layer 3 message for 5 s after reception of the LOCATION UPDATING ACCEPT message.
9	←		SETUP	
A10	→		CALL CONFIRMED	If the UE supports a basic service on TCH.
B10	→		RELEASE COMPLETE	If the UE does not support any basic service on TCH. cause #88.
11	←		RRC CONNECTION RELEASE	After the sending of this message, the SS waits for the disconnection of the main signalling link.
12	→		RRC CONNECTION RELEASE COMPLETE	

Specific message contents

None.

#### 9.5.8.3.5 Test requirement

At step 8 the UE shall not send any layer 3 message.

After step 9:

The UE shall send CALL CONFIRMED message if the UE supports a basic service on TCH.

The UE shall send RELEASE COMPLETE message if the UE does not support a basic service on TCH.

## 10 Circuit Switched Call Control (CC)

### 10.1 Circuit switched Call Control (CC) state machine verification

#### 10.1.1 General on CC state machine verification

The principle of checking the call control functions consists in the validation of each call control identified state.

State U0 as an initial state is not verified in the tests of 10.1.2 (establishment of an outgoing call).

State U0.1 is never verified.

The steps to be followed within each performed test are:

- bring the UE into the required state;
- trigger the tested event;
- check the UE response and new state.

In clauses 10.1.2 and 10.1.3 different tables are defined to bring the UE into the required initial state. The exact table to be chosen is specified individually in clause "Initial conditions" of "Method of test" for each test case.

For each test, unless otherwise specified, a circuit switched basic service among those supported by the UE but excluding the emergency call teleservice shall be chosen arbitrarily, and the test shall be performed according to that basic service. If the only circuit switched basic service supported by the mobile is emergency call, then the incoming call tests shall not be performed and the other call control tests shall be performed with the EMERGENCY SETUP message replacing the SETUP message.

The initial states are to be checked through STATUS ENQUIRY messages sent by the SS, when feasible. This is not explicitly stated in the tables of expected sequences of signalling messages. The checking of final states are explicitly included into the expected sequences of signalling messages.

The following postamble may be used by the SS to bring UE back to idle mode in those test cases, in which it is not already included into expected sequence of signalling messages:

**Table 10.1.1/1: A postamble to bring the UE back to idle mode.**

Step	Direction		Message	Comments
	UE	SS		
N	<--		RRC CONNECTION RELEASE	the UE shall release the main signalling link
n+1	-->		RRC CONNECTION RELEASE COMPLETE	
n+2		UE		

The postamble has not been included into the all of the tests in order to leave an option to concatenate the procedures in the future by using a final state of a test case as an initial state to another one.

For the special case of U0, the state is checked by sending STATUS ENQUIRY message with all possible values of transaction identifier (seven values) as U0 is the only state in which for every TI the UE will answer with release complete with cause #81. If U0 is to be verified when no RRC connection exists, first a mobile terminating radio connection must be established.

The UE responses are either call management messages received by the SS or lower layers functions activated within the UE or MMI actions (e.g. the buzzing of an alerting tone).

A time-out within the UE is triggered by the SS when it does not answer back an UE expected response.

The test sequences may be split in 3 main groups:

- establishment and release of an outgoing call;
- establishment and release of an incoming call;
- in-call functions.

Some test cases use Basic Generic Procedures, "Mobile terminated establishment of Radio Resource Connection" and "Radio Bearer Setup Procedure" defined in TS34.108 clause 7.

General tolerance value on protocol timers defined in TS34.108 is used in some test cases if no specific tolerance on timer is defined in a test case.

#### Remark on verification of transient states

Some call control states of the user equipment may be transient, depending on implementation, configuration of the UE and previous messages.

If a test starts in a transient state, then the test is executed without verification of the starting state.

## 10.1.2 Establishment of an outgoing call

### Initial conditions

As a minimum requirement the UE is updated and has been given a TMSI, a ciphering key and cipher key sequence number, and the layer 2, RRC and MM functionalities have been verified.

There are as many CM initial conditions as states to be checked.

The tables below describe message exchanges which bring the UE in the requested initial states.

A state may be taken as initial only when all the states which lead to this initial states have been validated. The order followed in the test procedure will be U0, U0.1, U1, U3, U4, U10, U12, U19, U11 as seen in the table underneath.

The UE is brought again in the initial state starting with U0 at each new test performed.

**Table 10.1.2/1: Establishment of an outgoing call, procedure 1 (late assignment)**

Step	Direction		Message	Comments
	UE	SS		
1	->		RRC CONNECTION REQUEST	Initiate outgoing call  U0.1  U1 U3 U4 DTCH, See TS 34.108 U10
2	<-		RRC CONNECTION SETUP	
3	->		RRC CONNECTION SETUP COMPLETE	
4	->		CM SERVICE REQUEST	
5	<-		AUTHENTICATION REQUEST	
6	->		AUTHENTICATION RESPONSE	
7	<-		SECURITY MODE COMMAND	
8	->		SECURITY MODE COMPLETE	
9	->		SETUP	
10	<-		CALL PROCEEDING	
11	<-		ALERTING	
12			Radio Bearer Setup Procedure	
13	<-		CONNECT	
14	->		CONNECT ACKNOWLEDGE	
A15	<-		DISCONNECT	U12 (note 1)
B15	<-		DISCONNECT	U12 (note 2)
B16	->		RELEASE	U19
C15				MMI action, terminate call
C16	->		DISCONNECT	U11
NOTE 1: The Progress Indicator IE with progress description #8 "in band information or appropriate pattern now available" is included.				
NOTE 2: The Progress Indicator IE is not included.				

Table 10.1.2/2: Void

Table 10.1.2/3: Establishment of an outgoing call, procedure 3

Step	Direction		Message	Comments
	UE	SS		
1	->		RRC CONNECTION REQUEST	Initiate outgoing call  U0.1  U1  U3 DTCH, See TS 34.108 U4  U10
2	<-		RRC CONNECTION SETUP	
3	->		RRC CONNECTION SETUP COMPLETE	
4	->		CM SERVICE REQUEST	
5	<-		SECURITY MODE COMMAND	
6	->		SECURITY MODE COMPLETE	
7	->		SETUP	
8	<-		AUTHENTICATION REQUEST	
9	->		AUTHENTICATION RESPONSE	
10	<-		CALL PROCEEDING	
11			Radio Bearer Setup Procedure	
12	<-		ALERTING	
13	<-		CONNECT	
14	->		CONNECT ACKNOWLEDGE	
A15	<-		DISCONNECT	U12 (note 1)
B15	<-		DISCONNECT	U12 (note 2)
B16	->		RELEASE	U19
C15				MMI action, terminate call
C16	->		DISCONNECT	
NOTE 1: The Progress Indicator IE with progress description #8 "in band information or appropriate pattern now available" is included.				
NOTE 2: The Progress indicator IE is not included.				

Table 10.1.2/4: Establishment of an outgoing call, procedure 4

Step	Direction		Message	Comments
	UE	SS		
1	->		RRC CONNECTION REQUEST	Initiate outgoing call  U0.1  U1 DTCH (note 1), See TS34.108 U3 U4  U10
2	<-		RRC CONNECTION SETUP	
3	->		RRC CONNECTION SETUP COMPLETE	
4	->		CM SERVICE REQUEST	
5	<-		IDENTITY REQUEST	
6	->		IDENTITY RESPONSE	
7	<-		SECURITY MODE COMMAND	
8	->		SECURITY MODE COMPLETE	
9	->		SETUP	
10	<-		Radio Bearer Setup Procedure	
11	<-		CALL PROCEEDING	
12	<-		ALERTING	
13	<-		CONNECT	
14	->		CONNECT ACKNOWLEDGE	
A15	<-		DISCONNECT	U12 (note 2)
B15	<-		DISCONNECT	U12 (note 3)
B16	->		RELEASE	U19
C15				MMI action, terminate call
C16	->		DISCONNECT	
NOTE 1: Assigned channel is appropriate for the chosen bearer capability (see 10.1).				
NOTE 2: The Progress Indicator IE with progress description #8 "in band information or appropriate pattern now available" is included.				
NOTE 3: The Progress Indicator IE is not included.				

### 10.1.2.1 Outgoing call / U0 null state

#### 10.1.2.1.1 Outgoing call / U0 null state / MM connection requested

##### 10.1.2.1.1.1 Definition

The call control entity of the User Equipment requests the MM-sublayer to establish a mobile originating MM-connection.

##### 10.1.2.1.1.2 Conformance requirement

- 1) Upon initiation of an outgoing basic call by user the UE shall initiate establishment of an MM connection, using as first MM message a CM SERVICE REQUEST message with CM service type "Mobile originating call establishment or packet mode connection establishment".

#### References

TS 24.008 clause 5.2.1.1 and clause 4.5.1.1, TS 25.331 clause 8.1.3.

##### 10.1.2.1.1.3 Test purpose

To verify that upon initiation of an outgoing basic call by user the UE initiates establishment of an MM connection, using as first MM message a CM SERVICE REQUEST message with CM service type "Mobile originating call establishment or packet mode connection establishment".

##### 10.1.2.1.1.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

#### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. When the SS receives CM SERVICE REQUEST, the contents of it shall be checked.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	->		RRC CONNECTION REQUEST	initiate outgoing call
2	<-		RRC CONNECTION SETUP	
3	->		RRC CONNECTION SETUP COMPLETE	
4	->		CM SERVICE REQUEST	
5	<-		RRC CONNECTION RELEASE	verify the type of call which is asked for "basic" or "emergency" by the UE
6	->		RRC CONNECTION RELEASE COMPLETE	
7	UE			
				the UE shall release the main signalling link

Specific message contents:

None.

#### 10.1.2.1.1.5 Test requirements

After step 3 the UE shall initiate establishment of an MM connection, using as first MM message a CM SERVICE REQUEST message with CM service type "Mobile originating call establishment or packet mode connection establishment".

### 10.1.2.2 Outgoing call / U0.1 MM connection pending

#### 10.1.2.2.1 Outgoing call / U0.1 MM connection pending / CM service rejected

##### 10.1.2.2.1.1 Definition

A request for MM connection is rejected by the SS.

##### 10.1.2.2.1.2 Conformance requirement

Upon receiving indication of an MM-connection establishment being rejected, CC entity should inform upper layer of this rejection.

#### References

TS 24.008, clause 4.5.1.1, TS 24.007, clause 6.2.2.

##### 10.1.2.2.1.3 Test purpose

To verify that a CC entity of the UE in CC-state U0.1, "MM-connection pending", upon the UE receiving a CM SERVICE REJECT message, returns to CC state U0, "Null".

##### 10.1.2.2.1.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U0.1 by using table 10.1.2/1.

#### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. When the SS receives CM SERVICE REQUEST, the contents of it shall be checked. The SS rejects it by CM SERVICE REJECT. Then the SS will check the state of the UE by using STATUS ENQUIRY with all the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		CM SERVICE REJECT	cause shall be #81 (invalid TI value) repeat steps 2-3 to cover all the transaction identifiers from 000 ...110
2	<-		STATUS ENQUIRY	
3	->		RELEASE COMPLETE	
4		SS		
5	<-		RRC CONNECTION RELEASE	the UE shall release the main signalling link
6	->		RRC CONNECTION RELEASE COMPLETE	
7		UE		

Specific message contents:

None.

#### 10.1.2.2.1.5 Test requirements

After step 2 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

#### 10.1.2.2.2 Outgoing call / U0.1 MM connection pending / CM service accepted

##### 10.1.2.2.2.1 Definition

A CM request is accepted for the MM-connection by the SS.

##### 10.1.2.2.2.2 Conformance requirement

A CC entity of the UE in CC-state U0.1, "MM-connection pending", upon the UE receiving a CM SERVICE ACCEPT message, shall send a SETUP message specifying the Called party BCD number that was entered into the UE and then enter CC state U1, "Call initiated".

#### References

TS 24.008, clause 4.5.1.1 and clause 5.2.1.1.

##### 10.1.2.2.2.3 Test purpose

To verify that a CC entity of the UE in CC-state U0.1, "MM-connection pending", upon the UE receiving a CM SERVICE ACCEPT message, sends a SETUP message specifying the Called party BCD number that was entered into the UE and then enters CC state U1, "Call initiated".

##### 10.1.2.2.2.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U0.1 by using table 10.1.2/1.

### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. When the UE is requesting a MM-connection, the SS will indicate acceptance by sending a CM SERVICE ACCEPT message. The UE shall respond with SETUP. Then the SS will check the state of the call control entity by STATUS ENQUIRY with the relevant transaction identifiers.

### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		CM SERVICE ACCEPT	
2	->		SETUP	with called party BCD number.
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause shall be #30 (response to enq.) and state U1 call initiated.

### Specific message contents:

None.

#### 10.1.2.2.2.5 Test requirements

After step 1 a CC entity of the UE in CC-state U0.1, "MM-connection pending", shall send a SETUP message specifying the Called party BCD number that was entered into the UE and then enter CC state U1, "Call initiated".

#### 10.1.2.2.3 Outgoing call / U0.1 MM connection pending / lower layer failure

##### 10.1.2.2.3.1 Definition

The call control entity of the UE being in the state, U0.1, a lower layer failure is accomplished at the UE and consequently, communication at layer 3 level with the peer entity is terminated.

##### 10.1.2.2.3.2 Conformance requirement

- 1) Upon a lower layer failure the UE releases the MM connection in progress and returns to idle mode. In that state no call exists, and the CC entity is in state U0, "Null".

### References

TS 24.008, clause 4.5.1.2, clause 5.2.1.1, clause 5.5.3.2 and clause 8.3, TS 25.331 clause 8.3.1 and clause 8.5.6.

##### 10.1.2.2.3.3 Test purpose

To verify that after the UE with a CC entity in state U0.1, "MM-connection pending", has detected a lower layer failure and has returned to idle mode, the CC entity is in state U0, "Null".

##### 10.1.2.2.3.4 Method of test

### Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

### System Simulator:

1 cell, default parameters.

### User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U0.1 by using table 10.1.2/1.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. When the UE has sent a CM SERVICE REQUEST message, the SS modifies the scrambling code of downlink transmission (DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to enable the UE to perform cell update procedure. The SS sends RRC CONNECTION RELEASE message as a response to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission(DL DPCH) to the original one and waits 60 s. The SS will check that the UE will not send any message during 60 s.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS modifies the scrambling code of DPCH for generating lower layer failure
2	->		CELL UPDATE	CCCH
3	<-		RRC CONNECTION RELEASE	CCCH
4		SS		SS re-modifies the scrambling code of DPCH to the original one.
5		SS		SS waits 60 s. UE shall send no message on DCCH

## Specific message contents:

None.

### 10.1.2.2.3.5 Test requirements

After step 4 the UE shall not send any message to the SS during 60 s.

## 10.1.2.3 Outgoing call / U1 call initiated

### 10.1.2.3.1 Outgoing call / U1 call initiated / receiving CALL PROCEEDING

#### 10.1.2.3.1.1 Definition

The call control entity of the UE being in the state, U1, a CALL PROCEEDING message is sent by the SS.

#### 10.1.2.3.1.2 Conformance requirement

- 1) A CC entity of the UE in CC-state U1, "Call initiated", upon receipt of a CALL PROCEEDING message, shall enter CC state U3, "Mobile originating call proceeding".

## References

TS 24.008, clauses 5.2.1.1, 5.2.1.2 and 5.2.1.3.

### 10.1.2.3.1.3 Test purpose

To verify that a CC entity of the UE in CC-state U1, "Call initiated", upon receipt of a CALL PROCEEDING message, enters CC state U3, "Mobile originating call proceeding".

### 10.1.2.3.1.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

##### System Simulator:

1 cell, default parameters.

##### User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U1 by using table 10.1.2/1.

#### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U1. The SS sends a CALL PROCEEDING message to the UE. The SS checks by using the status enquiry procedure that the CC entity has entered the state U3.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		CALL PROCEEDING	tone generation not mandatory
2	<-		STATUS ENQUIRY	
3	->		STATUS	cause #30, state U3

#### Specific message contents:

None.

### 10.1.2.3.1.5 Test requirements

After step 1 a CC entity of the UE in CC-state U1, "Call initiated", shall enter CC state U3, "Mobile originating call proceeding".

### 10.1.2.3.2 Outgoing call / U1 call initiated / rejecting with RELEASE COMPLETE

#### 10.1.2.3.2.1 Definition

The call control entity of the UE being in the state, U1, the call is rejected by a RELEASE COMPLETE message sent by the SS.

#### 10.1.2.3.2.2 Conformance requirement

- 1) A CC entity of the UE in CC-state U1, "Call initiated", upon receipt of a RELEASE COMPLETE message with valid cause value, shall enter CC state U0, "Null".

- 2) On returning to idle mode, the CC entities relating to the seven mobile originating transaction identifiers shall be in state U0, "Null".
- 3) On releasing the MM-connection, the UE shall wait for MM layer release initiated by the network.

## References

- Conformance requirement 1: TS 24.008, clause 5.4.2 and clause 5.4.4.
- Conformance requirement 2: TS 24.008, clause 5.5.3.2 and 8.3.1.
- Conformance requirement 3: TS 24.008, clause 5.4.4.1.3 and clause 4.5.3.

### 10.1.2.3.2.3 Test purpose

- 1) To verify that a CC entity of the UE in CC-state U1, "Call initiated", upon receipt of a RELEASE COMPLETE message with valid cause value, enters CC state U0, "Null".
- 2) To verify that in returning to idle mode, the CC entities relating to the seven mobile originating transaction identifiers are in state U0, "Null".
- 3) To verify that in releasing the MM-connection, the UE shall wait for MM layer release initiated by SS.

### 10.1.2.3.2.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U1 by using table 10.1.2/1.

#### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U1. The SS sends a RELEASE COMPLETE message to the UE. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		RELEASE COMPLETE	See specific message content below.  cause #81 (invalid TI value) repeat steps 2-3 to cover all the transaction identifiers from 000...110 the main signalling link shall be released.
2	<-		STATUS ENQUIRY	
3	>-		RELEASE COMPLETE	
4		SS		
5	<-		RRC CONNECTION RELEASE	
6	>-		RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

RELEASE COMPLETE

1) With a valid cause value among:

related to numbering,

#1 unallocated number

#3 no route to destination

#22 number changed

#28 invalid number format

related to bearer capabilities,

#8 operator determined barring

#57 bearer capability not authorized

#58 bearer capability not presently available

#63 service or option not available

#65 bearer service not implemented

#34 no circuit/channel available (call queuing).

#### 10.1.2.3.2.5 Test requirements

After step 2 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

#### 10.1.2.3.3 Outgoing call / U1 call initiated / T303 expiry

##### 10.1.2.3.3.1 Definition

The call control entity of the UE being in the state, U1, if no response is then received from the SS, timer T303 expires at the UE side.

##### 10.1.2.3.3.2 Conformance requirement

- 1) A CC entity of the UE in CC-state U1, "Call initiated", upon expiry of T303 shall send a DISCONNECT message to its peer entity and enter state U11, "Disconnect request".

#### References

TS 24.008, clause 5.2.1.1 and clause 5.4.

##### 10.1.2.3.3.3 Test purpose

- 1) To verify that a CC entity of the UE in CC-state U1, "Call initiated", upon expiry of T303 sends a DISCONNECT message to its peer entity and enters state U11, "Disconnect request".

##### 10.1.2.3.3.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

### System Simulator:

1 cell, default parameters.

### User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U1 by using table 10.1.2/1.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U1. When T303 expires at the UE, the UE shall send DISCONNECT. The SS checks by using the status enquiry procedure that the CC entity has entered the state U11, disconnect request.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS waits for T303 expiry. Shall be transmitted between 27 s and 33 s after the CM SERVICE REQUEST. cause #30, status U11
2	->		DISCONNECT	
3	<-		STATUS ENQUIRY	
4	->		STATUS	

## Specific message contents:

None.

### 10.1.2.3.3.5 Test requirements

Upon expiry of timer T303, a CC entity of the UE in CC-state U1, "Call initiated", shall send a DISCONNECT message and enter state U11, "Disconnect request".

### 10.1.2.3.4 Outgoing call / U1 call initiated / lower layer failure

#### 10.1.2.3.4.1 Definition

The call control entity of the UE being in the state, U1, a lower layer failure is accomplished at the UE and consequently, communication at layer 3 level with the peer entity is terminated.

#### 10.1.2.3.4.2 Conformance requirement

Upon a lower layer failure MM informs the relevant CM entities that the MM connection has been interrupted. As call re-establishment is not allowed, the CC entity must perform a local release. The UE returns to idle mode. In that state no call exists, and the CC entity is in state U0, "Null".

## References

TS 24.008, clause 4.5.2.3, clause 5.2.1.1 and clause 5.5.3.2, TS 25.331 clause 8.3.1 and clause 8.5.6.

### 10.1.2.3.4.3 Test purpose

To verify that after the UE with a CC entity in state U1 "Call initiated", has detected a lower layer failure and has returned to idle mode, the CC entity is in state U0, "Null".

## 10.1.2.3.4.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

## System Simulator:

1 cell, default parameters.

## User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U1 by using table 10.1.2/4.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The UE is brought to the state U1. The SS modifies the scrambling code of downlink transmission (DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to enable the UE to perform cell update procedure. The SS sends RRC CONNECTION RELEASE message as a response to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission (DL DPCH) to the original one and waits 60 s. The SS will check that the UE will not send any message during 60 s.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS modifies the scrambling code of DPCH for generating lower layer failure CCCH CCCH SS re-modifies the scrambling code of DPCH to the original one. SS waits 60 s. UE shall send no message on DCCH
2	->		CELL UPDATE	
3	<-		RRC CONNECTION RELEASE	
4		SS		
5		SS		

## Specific message contents:

None.

## 10.1.2.3.4.5 Test requirements

After step 4 the UE shall not send any message to the SS during 60 s.

## 10.1.2.3.5 Outgoing call / U1 call initiated / receiving ALERTING

## 10.1.2.3.5.1 Definition

The call control entity of the UE being in the state, U1, an ALERTING message is sent to the UE as an indication that a call is being alerted at a called end.

## 10.1.2.3.5.2 Conformance requirement

- 1) A CC entity of the UE in CC-state U1, "Call initiated", upon receipt of an ALERTING message, shall enter CC state U4, "Call delivered".

## References

TS 24.008, clause 5.2.1.1.

## 10.1.2.3.5.3 Test purpose

To verify that a CC entity of the UE in CC-state U1, "Call initiated", upon receipt of an ALERTING message, enters CC state U4, "Call delivered".

## 10.1.2.3.5.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U1 by using table 10.1.2/4.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U1. The SS sends an ALERTING message to the UE. The SS checks by using the status enquiry procedure that the CC entity has entered the state U4, call delivered.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		ALERTING	
2	<-		STATUS ENQUIRY	
3	->		STATUS	cause #30, state U4

## Specific message contents:

None.

## 10.1.2.3.5.5 Test requirements

After step 1 a CC entity of the UE in CC-state U1, "Call initiated", shall enter CC state U4, "Call delivered".

## 10.1.2.3.6 Outgoing call / U1 call initiated / entering state U10

## 10.1.2.3.6.1 Definition

The call control entity of the UE being in the state, U1, a CONNECT message is received by the UE.

## 10.1.2.3.6.2 Conformance requirement

- 1) A CC entity of the UE in CC-state U1, "Call initiated", upon receipt of a CONNECT message, shall send a CONNECT ACKNOWLEDGE message to its peer entity and enter CC state U10, "Active".

## References

TS 24.008, clause 5.2.1.1 and clause 5.2.1.6.

## 10.1.2.3.6.3 Test purpose

To verify that a CC entity of the UE in CC-state U1, "Call initiated", upon receipt of a CONNECT message, sends a CONNECT ACKNOWLEDGE message to its peer entity and enters CC state U10, "Active".

## 10.1.2.3.6.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U1 by using table 10.1.2/4.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U1. The SS sends a CONNECT message to the UE. The UE shall respond by sending a CONNECT ACKNOWLEDGE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U10, active.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<		CONNECT	
2		>	CONNECT ACKNOWLEDGE	
3	<		STATUS ENQUIRY	
4		>	STATUS	cause #30, state U10

Specific message contents:

None.

## 10.1.2.3.6.5 Test requirements

After step 1 a CC entity of the UE in CC-state U1, "Call initiated", shall send a CONNECT ACKNOWLEDGE message and shall enter CC state U10, "Active".

## 10.1.2.3.7 Outgoing call / U1 call initiated / unknown message received

## 10.1.2.3.7.1 Definition

The call control entity of the UE being in the state, U1, an unknown message is received by the UE.

## 10.1.2.3.7.2 Conformance requirement

- 1) A CC entity of the UE in CC-state U1, "Call initiated", upon receipt of a message with message type not defined for the protocol discriminator from its peer entity shall return a STATUS message.

## References

TS 24.008 clause 8.4.

## 10.1.2.3.7.3 Test purpose

To verify that a CC entity of the UE in CC-state U1, "Call initiated", upon receipt of a message with message type not defined for the protocol discriminator from its peer entity returns a STATUS message.

## 10.1.2.3.7.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U1 by using table 10.1.2/1.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U1. The SS sends a message with message type not defined for the protocol discriminator to the UE. The UE shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		unknown message	message type not defined for PD
2	->		STATUS	cause #97, state U1
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause #30, state U1

## Specific message contents:

None.

## 10.1.2.3.7.5 Test requirements

After step 1 and step 3 a CC entity of the UE in CC-state U1, "Call initiated", shall return a STATUS message.

## 10.1.2.4 Outgoing call / U3 UE originating call proceeding

### 10.1.2.4.1 Outgoing call / U3 UE originating call proceeding / ALERTING received

#### 10.1.2.4.1.1 Definition

The call control entity of the UE being in the state, U3, an ALERTING message is sent to the UE as an indication that a call is being alerted at a called end.

#### 10.1.2.4.1.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of an ALERTING message shall enter CC-state U4, "Call Delivered".

#### References

TS 24.008 clause 5.2.1.5.

#### 10.1.2.4.1.3 Test purpose

To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a ALERTING message enters CC-state U4, "Call Delivered".

#### 10.1.2.4.1.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/3.

#### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The SS sends an ALERTING message to the UE. The SS checks by using the status enquiry procedure that the CC entity has entered the state U4, call delivered.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		ALERTING	
2	<-		STATUS ENQUIRY	
3	->		STATUS	cause #30, state U4

#### Specific message contents:

None.

#### 10.1.2.4.1.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", shall enter CC-state U4, "Call Delivered".

#### 10.1.2.4.2 Outgoing call / U3 UE originating call proceeding / CONNECT received

##### 10.1.2.4.2.1 Definition

The call control entity of the UE being in the state, U3, a CONNECT message is received by the UE.

##### 10.1.2.4.2.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a CONNECT message shall return a "CONNECT ACKNOWLEDGE" message to its peer entity and enter the CC state U10, "Active".
- 2) The UE shall then stop any locally generated indication.

#### References

Conformance requirement 1: TS 24.008 clause 5.2.1.6.

Conformance requirement 2: TS 24.008 clause 5.2.1.6.

##### 10.1.2.4.2.3 Test purpose

- 1) To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a CONNECT message returns a "CONNECT ACKNOWLEDGE" message to its peer entity and enters the CC state U10, "Active".
- 2) To verify that the UE stops locally generated indication, if any.

##### 10.1.2.4.2.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/3.

#### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The SS sends a RADIO BEARER SETUP for traffic channel to the UE. The UE shall respond with a RADIO BEARER SETUP COMPLETE message. The SS sends a CONNECT message to the UE. The UE shall respond by sending a CONNECT ACKNOWLEDGE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U10, active.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Radio Bearer Setup Procedure	(DTCH), See TS34.108 the UE shall stop tone generation, if any cause #30, state U10
2		<-	CONNECT	
3		->	CONNECT ACKNOWLEDGE	
4		<-	STATUS ENQUIRY	
5		->	STATUS	

Specific message contents:

None.

#### 10.1.2.4.2.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", shall return a "CONNECT ACKNOWLEDGE" message and enter the CC state U10, "Active".

The UE shall stop locally generated indication.

#### 10.1.2.4.3 Outgoing call / U3 UE originating call proceeding / PROGRESS received without in band information

##### 10.1.2.4.3.1 Definition

The call control entity of the UE being in the state, U3, a PROGRESS message is received by the UE. The PROGRESS message does not contain indication of in-band information availability.

##### 10.1.2.4.3.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a PROGRESS message with valid cause values shall stay in CC-state U3.
- 2) After receipt of the PROGRESS message timer T310 shall be stopped.

#### References

Conformance requirement 1: TS 24.008 clause 5.2.1.4.

Conformance requirement 2: TS 24.008 clause 11.3.

##### 10.1.2.4.3.3 Test purpose

- 1) To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a PROGRESS message with valid cause values stays in CC-state U3.
- 2) To verify that after receipt of the PROGRESS message timer T310 is stopped.

##### 10.1.2.4.3.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/3.

### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The SS sends a PROGRESS message not containing indication of in-band information availability to the UE. The SS checks that the UE has stopped T310, i.e. at T310 time-out no DISCONNECT message is sent by the UE. Then the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		PROGRESS	(note)
2	<-		STATUS ENQUIRY	
3	->		STATUS	cause #30, state U3
4		SS		SS waits at least 45 s and checks no DISCONNECT is sent by the UE
5	<-		STATUS ENQUIRY	
6	->		STATUS	cause #30, state U3

NOTE: Tested with a valid Progress Indicator, Progress description value among:

- #4 call has returned to PLMN/ISDN;
- #32 call is end-to-end PLMN/ISDN.

Specific message contents:

None.

#### 10.1.2.4.3.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", shall stay in CC-state U3.

After step 3 SS waits at least 45 s and checks no DISCONNECT is sent by the UE.

#### 10.1.2.4.4 Outgoing call / U3 UE originating call proceeding / PROGRESS with in band information

##### 10.1.2.4.4.1 Definition

The call control entity of the UE being in the state, U3, a PROGRESS message indicating availability of in band information is received by the UE.

##### 10.1.2.4.4.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a PROGRESS message indicating in-band announcement shall through-connect the traffic channel for speech, if DTCH is in a speech mode. If DTCH is not in speech mode, the UE shall not through-connect the DTCH.
- 2) After receipt of the PROGRESS message, T310 shall be stopped.

## References

TS 25.331 clause 8.2.1, TS 24.008 clause 5.2.1.4, clause 5.2.1.9, clause 5.5.1 and clause 11.3.

## 10.1.2.4.4.3 Test purpose

- 1) To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a PROGRESS message indicating in-band announcement through-connects the traffic channel for speech, if DTCH is in speech mode. If DTCH is not in a speech mode, the UE does not through-connect the DTCH.
- 2) To verify that after receipt of the PROGRESS message, T310 is stopped.

## 10.1.2.4.4.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/3.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The SS sends a RADIO BEARER SETUP for traffic channel to the UE. The UE shall respond with a RADIO BEARER SETUP COMPLETE message. The SS sends a PROGRESS message containing indication of in-band information availability to the UE. The SS checks that if channel mode is speech, the DTCH shall be through connected. If channel mode is not speech, the DTCH shall not be through connected. Also the SS checks that the UE has stopped T310, i.e. at T310 time-out no DISCONNECT message is sent by the UE. Then the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Radio Bearer Setup Procedure	(DTCH), See TS34.108 (note) the UE shall stop all the CC timers , if channel mode is speech, the DTCH shall be through connected. If channel mode is not speech, the DTCH shall not be through connected.
2		<-	PROGRESS	
3		<-	STATUS ENQUIRY	cause #30, state U3 SS waits at least 45 s and checks no DISCONNECT is sent by the UE.
4		->	STATUS	
5		SS		
6		<-	STATUS ENQUIRY	cause #30, state U3 If the channel mode is speech the SS will check that the user connection for speech is attached (both downlink and uplink).
7		->	STATUS	
8		SS		

Specific message contents:

NOTE: Tested with a valid Progress Indicator, Progress description value among:

- #1 call is not end to end PLMN/ISDN;
- #2 destination address is non PLMN/ISDN;
- #3 originating address is non PLMN/ISDN;
- #8 in band information or appropriate pattern now available.

#### 10.1.2.4.4.5 Test requirements

After step 2 a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", shall through-connect the traffic channel for speech, if DTCH is in a speech mode. If DTCH is not in speech mode, the UE shall not through-connect the DTCH.

After step 4 the SS waits at least 45 s and checks no DISCONNECT is sent by the UE.

After step 7 the SS checks that the user connection for speech is attached (both downlink and uplink), if the channel mode is speech.

#### 10.1.2.4.5 Outgoing call / U3 UE originating call proceeding / DISCONNECT with in band tones

##### 10.1.2.4.5.1 Definition

The call control entity of the UE being in the state, U3, a DISCONNECT message indicating availability of in band information is received by the UE.

##### 10.1.2.4.5.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a DISCONNECT with progress indicator #8, shall through-connect the speech channel to make in-band announcements available, if traffic channel is in speech mode. If DTCH is not in speech mode, the UE shall send a RELEASE message.

#### References

TS 24.008 clause 5.2.1.4 and clause 5.4.4.

##### 10.1.2.4.5.3 Test purpose

To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a DISCONNECT with progress indicator #8 through-connects the speech channel to make in-band announcements available, if traffic channel is in speech mode. If DTCH is not in speech mode, the UE sends a RELEASE message.

##### 10.1.2.4.5.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/3.

### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The SS sends a RADIO BEARER SETUP for traffic channel to the UE. The UE shall respond with a RADIO BEARER SETUP COMPLETE message. The SS sends a DISCONNECT message containing indication of in-band information availability to the UE. The SS checks that if channel mode is speech, the DTCH shall be through connected and the UE enters state U12, disconnect indication. If channel mode is not speech, the DTCH shall not be through connected and the UE shall enter state U19, release request.

### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1 2		<-	Radio Bearer Setup Procedure DISCONNECT	(DTCH), See TS34.108 (note)
A3 A4 A5		SS <- ->	STATUS ENQUIRY STATUS	DTCH in speech mode: the SS will check that the audio path for in band tones is attached.  cause #30, state U12
B3 B4 B5		-> <- ->	RELEASE STATUS ENQUIRY STATUS	DTCH is not in speech mode:  cause #30, state U19

### Specific message contents:

NOTE: the Progress Indicator, Progress description value:

- #8 in band information or appropriate pattern now available.

#### 10.1.2.4.5.5 Test requirements

After step 2 a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", shall through-connect the speech channel to make in-band announcements available, if traffic channel is in speech mode. If DTCH is not in speech mode, the UE shall send a RELEASE message.

#### 10.1.2.4.6 Outgoing call / U3 UE originating call proceeding / DISCONNECT without in band tones

##### 10.1.2.4.6.1 Definition

The call control entity of the UE being in the state, U3, a DISCONNECT message is received by the UE. The DISCONNECT message does not contain indication of in-band information availability.

##### 10.1.2.4.6.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a DISCONNECT without progress indicator shall return a RELEASE message and enter the CC-state U19, "Release Request"

### References

TS 24.008 clause 5.4.4.

## 10.1.2.4.6.3 Test purpose

To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a DISCONNECT without progress indicator returns a RELEASE message and enters the CC-state U19, "Release Request".

## 10.1.2.4.6.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

## System Simulator:

1 cell, default parameters.

## User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/3.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The SS sends a DISCONNECT message not containing indication of in-band information availability to the UE. The UE shall respond with a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity of the UE has entered the state U19, release request.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		DISCONNECT	
2	->		RELEASE	
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause #30, state U19

## Specific message contents:

None.

## 10.1.2.4.6.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", shall send a RELEASE message and enter the CC-state U19, "Release Request".

## 10.1.2.4.7 Outgoing call / U3 UE originating call proceeding / RELEASE received

## 10.1.2.4.7.1 Definition

The call control entity of the UE being in the state, U3, a RELEASE message is received by the UE.

#### 10.1.2.4.7.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a RELEASE will return a RELEASE COMPLETE and enter the CC-state U0, "Null".
- 2) The UE on returning to the idle mode shall release the MM-connection and the CC-entities relating to the seven mobile originating transaction identifiers shall be in CC-state U0, "Null".
- 3) On releasing the MM-connection, the UE shall wait for MM layer release initiated by the network.

#### References

Conformance requirement 1: TS 24.008 clause 5.4.2 and clause 5.4.4.

Conformance requirement 2: TS 24.008 clause 4.5.3, clause 5.5.3.2 and 8.3.1.

Conformance requirement 3: TS 24.008 clause 5.4.4.1.3 and clause 4.5.3, TS 25.331 clause 8.1.4.

#### 10.1.2.4.7.3 Test purpose

- 1) To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon receipt of a RELEASE will return a RELEASE COMPLETE and enter the CC-state U0, "Null".
- 2) To verify that the UE on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile originating transaction identifiers are in CC-state U0, "Null".
- 3) To verify that in releasing the MM-connection, the UE shall wait for MM layer release initiated by SS.

#### 10.1.2.4.7.4 Method of test

##### Related ICS/IXIT statements

- supported MO circuit switched basic services.

##### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/3.

##### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The SS sends a RELEASE message to the UE. The UE shall respond with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		RELEASE	with cause "Normal, unspecified"  cause #81 (invalid TI value) repeat steps 3-4 to cover all the transaction identifiers from 000...110 the main signalling link shall be released.
2	->		RELEASE COMPLETE	
3	<-		STATUS ENQUIRY	
4	->		RELEASE COMPLETE	
5		SS		
6	<-		RRC CONNECTION RELEASE	
7	->		RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

None.

#### 10.1.2.4.7.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", shall send a RELEASE COMPLETE message.

After step 3 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

#### 10.1.2.4.8 Outgoing call / U3 UE originating call proceeding / termination requested by the user

##### 10.1.2.4.8.1 Definition

The call control entity of the UE being in the state, U3, the user requests to terminate the call.

##### 10.1.2.4.8.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon request by the user to terminate will send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

#### References

TS 24.007 clause 6.2.2., TS 24.008 clause 5.4.3.

##### 10.1.2.4.8.3 Test purpose

To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", upon request by the user to terminate will send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

##### 10.1.2.4.8.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator: 1 cell, default parameters.

User Equipment: The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/3.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The user requests termination of the call. The UE shall send a DISCONNECT message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U11, disconnect request.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				MMI action, terminate call  cause #30, state U11
2		->	DISCONNECT	
3		<-	STATUS ENQUIRY	
4		->	STATUS	

## Specific message contents:

None.

### 10.1.2.4.8.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

### 10.1.2.4.9 Outgoing call / U3 UE originating call proceeding / traffic channel allocation

#### 10.1.2.4.9.1 Definition

The call control entity of the UE being in the state, U3, a radio bearer establishment procedure is performed.

#### 10.1.2.4.9.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", when a traffic channel is allocated by the network performing the radio bearer establishment procedure, shall stay in CC-state U3.

## References

TS 25.331 clause 8.2.1, TS 24.008 clause 5.2.1.9.

#### 10.1.2.4.9.3 Test purpose

To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", when a traffic channel is allocated by the network performing the radio bearer establishment procedure, stays in CC-state U3.

#### 10.1.2.4.9.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/3.

#### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The SS sends a RADIO BEARER SETUP for traffic channel to the UE. The UE shall respond with a RADIO BEARER SETUP COMPLETE message. The SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Radio Bearer Setup Procedure	(DTCH), See TS34.108 cause #30, state U3
2		<-	STATUS ENQUIRY	
3		->	STATUS	

#### Specific message contents:

None.

#### 10.1.2.4.9.5 Test requirements

After step 1 the CC state U3, "Mobile Originating Call Proceeding", shall remain unchanged.

#### 10.1.2.4.10 Outgoing call / U3 UE originating call proceeding / timer T310 time-out

##### 10.1.2.4.10.1 Definition

The call control entity of the UE being in the state, U3, if no response is then received from the SS, timer T310 expires at the UE side.

##### 10.1.2.4.10.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding" shall, upon expiry of timer T310, and not before, initiate call release by sending DISCONNECT and enter the CC-state U11, "Disconnect Request".

#### References

TS 24.008 clause 5.2.1.3./Abnormal case, clause 5.4.3 and clause 11.3.

##### 10.1.2.4.10.3 Test purpose

To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding" will, upon expiry of timer T310, initiate call release by sending DISCONNECT and enter the CC-state U11, "Disconnect Request".

##### 10.1.2.4.10.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/3.

#### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The T310 expires at the UE and the UE shall send DISCONNECT. The SS checks timer T310 accuracy and that the CC entity has entered the state U11, disconnect request.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		
2		->	DISCONNECT	the SS waits for T310 time-out check the timer T310 accuracy, see TS34.108 clause 4.2.3
3		<-	STATUS ENQUIRY	
4		->	STATUS	cause #30, state U11

Specific message contents:

None.

#### 10.1.2.4.10.5 Test requirements

Upon expiry of timer T310, a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding" shall initiate call release by sending a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

#### 10.1.2.4.11 Outgoing call / U3 UE originating call proceeding / lower layer failure

##### 10.1.2.4.11.1 Definition

The call control entity of the UE being in the state, U3, a lower layer failure is accomplished at the UE and consequently, communication at layer 3 level with the peer entity is terminated.

##### 10.1.2.4.11.2 Conformance requirement

- 1) If a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding" has detected a lower layer failure and has returned to idle mode, the CC entity is in state U0, "Null".

#### References

TS 24.008 clause 4.5.2.3, clause 4.5.3 and clause 5.5.3.2, TS 25.331 clause 8.3.1 and clause 8.5.6.

##### 10.1.2.4.11.3 Test purpose

To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding" having detected a lower layer failure and having returned to idle mode, the CC entity is in state U0, "Null".

## 10.1.2.4.11.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

## System Simulator:

1 cell, default parameters.

## User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/4.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The UE is brought to the state U3. The SS modifies the scrambling code of downlink transmission (DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to perform cell update procedure. The SS sends RRC CONNECTION RELEASE message as a response to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission (DL DPCH) to the original one and waits 60 s. The SS will check that the UE will not send any message during 60 s.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS modifies the scrambling code of DPCH for generating lower layer failure
2	->		CELL UPDATE	CCCH
3	<-		RRC CONNECTION RELEASE	CCCH
4		SS		SS re-modifies the scrambling code of DPCH to the original one.
5		SS		SS waits 60 s. UE shall send no message on DCCH

## Specific message contents:

None.

## 10.1.2.4.11.5 Test requirements

After step 4 the UE shall not send any message to the SS during 60 s.

## 10.1.2.4.12 Outgoing call / U3 UE originating call proceeding / unknown message received

## 10.1.2.4.12.1 Definition

The call control entity of the UE being in the state, U3, an unknown message is received by the UE.

## 10.1.2.4.12.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding" having received an unknown message from its peer entity shall return a STATUS message.

## References

TS 24.008 clause 8.5.

## 10.1.2.4.12.3 Test purpose

To verify that a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding" having received an unknown message from its peer entity returns a STATUS message.

## 10.1.2.4.12.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/1.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U3. The SS sends a message with message type not defined for the protocol discriminator to the UE. The UE shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<		unknown message	message type not defined for PD
2		>	STATUS	cause #97, state U3
3	<		STATUS ENQUIRY	
4		>	STATUS	cause #30, state U3

Specific message contents:

None.

## 10.1.2.4.12.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U3, "Mobile Originating Call Proceeding", shall return a STATUS message.

## 10.1.2.4.13 Outgoing call / U3 UE originating call proceeding / Internal alerting indication

## 10.1.2.4.13.1 Definition

The call control entity of the UE being in the state, U3, an ALERTING message is sent to the UE when the user connection is not attached to the radio path.

## 10.1.2.4.13.2 Conformance requirement

- 1) When the call control entity of the UE in the "mobile originating call proceeding" state receives an ALERTING message then it shall enter "call delivered" state and, for speech calls, if the user connection is not attached to the radio path, the UE shall internally generate an alerting indication.

## References

TS 24.008 clause 5.2.1.5.

## 10.1.2.4.13.3 Test purpose

When the call control entity of the UE in the "mobile originating call proceeding" state receives an ALERTING message then it enters "call delivered" state and, for speech calls, if the user connection is not attached to the radio path, the UE generates internally an alerting indication.

## 10.1.2.4.13.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.
- way to give internally generated alerting indication for outgoing calls.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U3 by using table 10.1.2/1.

## Test procedure

The SS sends an ALERTING message to the UE. The SS checks by using the status enquiry procedure that the CC entity has entered the state U4, call delivered. Also it is checked that the UE generates internally alerting indication to the user in the way described in the ICS/IXIT statements.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	ALERTING	the UE shall generate an alerting indication to the user in the way described in the ICS/IXIT statements cause #30, state U4
2		<-	STATUS ENQUIRY	
3		->	STATUS	

Specific message contents:

None.

## 10.1.2.4.13.5 Test requirements

After step 1 CC entity of the UE in CC state U3, the "Mobile Originating Call Proceeding" shall enter "Call Delivered" state and, for speech calls, if the user connection is not attached to the radio path, the UE shall internally generate an alerting indication.

## 10.1.2.5 Outgoing call / U4 call delivered

### 10.1.2.5.1 Outgoing call / U4 call delivered / CONNECT received

#### 10.1.2.5.1.1 Definition

The call control entity of the UE being in the state, U4, a CONNECT message is received by the UE.

#### 10.1.2.5.1.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U4, "Call Delivered", upon receipt of the CONNECT message shall return a CONNECT ACKNOWLEDGE to its peer entity and enter the CC-state U10, "Active".

#### References

TS 24.008 clause 5.2.1.6.

#### 10.1.2.5.1.3 Test purpose

To verify that a CC-entity of the UE in CC-state U4, "Call Delivered", upon receipt of the CONNECT message returns a CONNECT ACKNOWLEDGE to its peer entity and enters the CC-state U10, "Active".

#### 10.1.2.5.1.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U4 by using table 10.1.2/3.

#### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U4. The SS sends a CONNECT message to the UE. The UE shall respond by sending a CONNECT ACKNOWLEDGE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U10, active.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		CONNECT	
2		->	CONNECT ACKNOWLEDGE	UE stops alerting, if applicable
3	<-		STATUS ENQUIRY	
4		->	STATUS	cause #30, state U10

#### Specific message contents:

None.

## 10.1.2.5.1.5 Test requirements

After step 1 a CC entity of the UE in CC state U4, "Call Delivered", shall return a CONNECT ACKNOWLEDGE message and enter the CC state U10, "Active".

## 10.1.2.5.2 Outgoing call / U4 call delivered / termination requested by the user

## 10.1.2.5.2.1 Definition

The call control entity of the UE being in the state, U4, the user requests to terminate the call.

## 10.1.2.5.2.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U4, "Call Delivered", upon request by the user to terminate shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

## References

TS 24.007 clause 6.2.2, TS 24.008 clause 5.4.3.

## 10.1.2.5.2.3 Test purpose

To verify that a CC-entity of the UE in CC-state U4, "Call Delivered", upon request by the user to terminate will send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

## 10.1.2.5.2.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U4 by using table 10.1.2/3.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U4. The user requests termination of the call. The UE shall send a DISCONNECT message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U11, disconnect request.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				MMI action, terminate call  cause #30, state U11
2		->	DISCONNECT	
3		<-	STATUS ENQUIRY	
4		->	STATUS	

Specific message contents:

None.

#### 10.1.2.5.2.5 Test requirements

After step 1 a CC entity of the UE in CC state U4, "Call Delivered", shall send a DISCONNECT message and enter the CC state U11, "Disconnect Request".

#### 10.1.2.5.3 Outgoing call / U4 call delivered / DISCONNECT with in band tones

##### 10.1.2.5.3.1 Definition

The call control entity of the UE being in the state, U4, a DISCONNECT message indicating availability of in band information is received by the UE.

##### 10.1.2.5.3.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U4, "Call Delivered" shall, upon receipt of a DISCONNECT with a progress indicator indicating in-band information, shall through-connect the speech channel to make in-band announcements available, if traffic channel is in speech mode. If DTCH is not in speech mode, the UE shall send a RELEASE message.

#### References

TS 25.331 clause 8.2.1., TS 24.008 clause 5.4.4.1.1, clause 5.5.1 and clause 5.2.1.9.

##### 10.1.2.5.3.3 Test purpose

To verify that a CC-entity of the UE in CC-state U4, "Call Delivered", upon receipt of a DISCONNECT with a progress indicator indicating in-band information, through-connects the speech channel to make in-band announcements available, if traffic channel is in speech mode. If DTCH is not in speech mode, the UE shall send a RELEASE message.

##### 10.1.2.5.3.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U4 by using table 10.1.2/3.

#### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U4. The SS sends a DISCONNECT message containing indication of in-band information availability to the UE. The SS checks that if channel mode is MO telephony, the DTCH shall be through connected and the UE enters state U12, disconnect indication. If channel mode is not speech, the DTCH shall not be through connected and the UE shall enter state U19, release request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		DISCONNECT	(note)
A2	SS			DTCH in speech mode: the SS will check that the audio path for in band tones is attached.
A3	<-		STATUS ENQUIRY	cause #30, state U12
A4	->		STATUS	
B2	->		RELEASE	DTCH is not in speech mode:  cause #30, state U19
B3	<-		STATUS ENQUIRY	
B4	->		STATUS	

Specific message contents:

NOTE: the Progress Indicator, Progress Description:

- #8 in band information or appropriate pattern now available.

#### 10.1.2.5.3.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U4, "Call Delivered", shall through-connect the speech channel to make in-band announcements available, if traffic channel is in speech mode. If DTCH is not in speech mode, the UE shall send a RELEASE message.

#### 10.1.2.5.4 Outgoing call / U4 call delivered / DISCONNECT without in band tones

##### 10.1.2.5.4.1 Definition

The call control entity of the UE being in the state, U4, a DISCONNECT message is received by the UE. The DISCONNECT message does not contain indication of in-band information availability.

##### 10.1.2.5.4.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U4, "Call Delivered", upon receipt of a DISCONNECT without progress indicator, shall return a RELEASE message and enter the CC-state U19, "Release Request".

#### References

TS 24.008 clause 5.4.4.

##### 10.1.2.5.4.3 Test purpose

To verify that a CC-entity of the UE in CC-state U4, "Call Delivered", upon receipt of a DISCONNECT without progress indicator, returns a RELEASE message and enters the CC-state U19, "Release Request".

##### 10.1.2.5.4.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U4 by using table 10.1.2/3.

### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U4. The SS sends a DISCONNECT message not containing indication of in-band information availability to the UE. The UE shall respond with a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity of the UE has entered the state U19, release request.

### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		DISCONNECT	without progress indicator
2	->		RELEASE	
3	<-		STATUS ENQUIRY	cause #30, state U19
4	->		STATUS	

### Specific message contents:

None.

#### 10.1.2.5.4.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U4, "Call Delivered", shall return a RELEASE message and enter the CC-state U19, "Release Request".

#### 10.1.2.5.5 Outgoing call / U4 call delivered / RELEASE received

##### 10.1.2.5.5.1 Definition

The call control entity of the UE being in the state, U4, a RELEASE message is received by the UE.

##### 10.1.2.5.5.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U4, "Call Delivered", upon receipt of the RELEASE message shall respond with the RELEASE COMPLETE message and enter the CC-state U0, "Null".
- 2) The UE on returning to idle mode shall release the MM-connection and the CC-entities relating to the seven mobile originating transaction identifiers shall be in CC-state U0, "Null".

### References

Conformance requirement 1: TS 24.008 clause 5.4.2 and clause 5.4.4.

Conformance requirement 2: TS 24.008 clause 4.5.3, clause 5.5.3.2 and 8.3.1.

#### 10.1.2.5.5.3 Test purpose

- 1) To verify that a CC-entity of the UE in CC-state U4, "Call Delivered", upon receipt of the RELEASE message will respond with the RELEASE COMPLETE message and enter the CC-state U0, "Null".
- 2) To verify that the UE on returning the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile originating transaction identifiers are in CC-state U0, "Null".

## 10.1.2.5.5.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

## System Simulator:

1 cell, default parameters.

## User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U4 by using table10.1.2/3.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U4. The SS sends a RELEASE message to the UE. The UE shall respond with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		RELEASE	with cause "Normal, unspecified"
2	->		RELEASE COMPLETE	
3	<-		STATUS ENQUIRY	
4	->		RELEASE COMPLETE	
5		SS		
6	<-		RRC CONNECTION RELEASE	cause #81 (invalid TI value) repeat steps 3-4 to cover all the transaction identifiers from 000...110 the main signalling link shall be released.
7	->		RRC CONNECTION RELEASE COMPLETE	

## Specific message contents:

None.

## 10.1.2.5.5.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U4, "Call Delivered", shall respond with the RELEASE COMPLETE message.

After step 3 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

## 10.1.2.5.6 Outgoing call / U4 call delivered / lower layer failure

## 10.1.2.5.6.1 Definition

The call control entity of the UE being in the state, U4, a lower layer failure is accomplished at the UE and consequently, communication at layer 3 level with the peer entity is terminated.

## 10.1.2.5.6.2 Conformance requirement

- 1) When CC-entity of the UE in CC-state U4, "Call Delivered" has detected a lower layer failure and has returned to idle mode, the CC-entity is in CC-state U0, "Null".

## References

TS 24.008 clause 4.5.2.3, clause 4.5.3 and clause 5.5.3.2., TS 25.331 clause 8.3.1 and clause 8.5.6.

## 10.1.2.5.6.3 Test purpose

To verify that a CC-entity of the UE in CC-state U4, "Call Delivered" having detected a lower layer failure and has returned to idle mode, the CC-entity is in CC-state U0, "Null".

## 10.1.2.5.6.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U4 by using table 10.1.2/3.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The UE is brought to the state U4. The SS modifies the scrambling code of downlink transmission (DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to perform cell update procedure. The SS sends RRC CONNECTION RELEASE message as a response to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission (DL DPCH) to the original one and waits 60 s. The SS will check that the UE will not send any message during 60 s.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS modifies the scrambling code of DPCH for generating lower layer failure
2	->		CELL UPDATE	CCCH
3	<-		RRC CONNECTION RELEASE	CCCH
4		SS		SS re-modifies the scrambling code of DPCH to the original one.
5		SS		SS waits 60 s. UE shall send no message on the DCCH

## Specific message contents:

None.

## 10.1.2.5.6.5 Test requirements

After step 4 the UE shall not send any message to the SS during 60 s.

## 10.1.2.5.7 Outgoing call / U4 call delivered / traffic channel allocation

## 10.1.2.5.7.1 Definition

The call control entity of the UE being in the state, U4, a radio bearer establishment procedure is performed.

## 10.1.2.5.7.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U4, "Call Delivered", when a traffic channel is allocated by the network performing the radio bearer establishment procedure, shall stay in CC-state U4.

## References

TS 25.331 clause 8.2.1., TS 24.008 clause 5.2.1.9.

## 10.1.2.5.7.3 Test purpose

To verify that a CC-entity of the UE in CC-state U4, "Call Delivered", when a traffic channel is allocated by the network performing the radio bearer establishment procedure, stays in CC-state U4.

## 10.1.2.5.7.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U4 by using table 10.1.2/1.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U4. The SS sends a RADIO BEARER SETUP for traffic channel to the UE. The UE shall respond with a RADIO BEARER SETUP COMPLETE message. The SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Radio Bearer Setup Procedure	DTCH, See TS34.108 cause #30, state U4
2	<-		STATUS ENQUIRY	
3		->	STATUS	

Specific message contents:

None.

#### 10.1.2.5.7.5 Test requirements

After step 1 the CC state U4, "Call delivered", shall remain unchanged.

#### 10.1.2.5.8 Outgoing call / U4 call delivered / unknown message received

##### 10.1.2.5.8.1 Definition

The call control entity of the UE being in the state, U4, an unknown message is received by the UE.

##### 10.1.2.5.8.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U4, "Call Delivered", having received an unknown message from its peer entity shall return a STATUS message.

#### References

TS 24.008 clause 8.4.

##### 10.1.2.5.8.3 Test purpose

To verify that a CC-entity of the UE in CC-state U4, "Call Delivered", having received an unknown message from its peer entity returns a STATUS message.

##### 10.1.2.5.8.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U4 by using table 10.1.2/4.

#### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U4. The SS sends a message with message type not defined for the protocol discriminator to the UE. The UE shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		unknown message	message type not defined for PD cause #97, state U4
2	->		STATUS	
3	<-		STATUS ENQUIRY	cause #30, state U4
4	->		STATUS	

Specific message contents:

None.

#### 10.1.2.5.8.5 Test requirements

After step 1 a CC entity of the UE in CC state U4, "Call Delivered", shall return a STATUS message.

#### 10.1.2.6 U10 call active

##### 10.1.2.6.1 U10 call active / termination requested by the user

###### 10.1.2.6.1.1 Definition

The call control entity of the UE being in the state, U10, the user requests to terminate the call.

###### 10.1.2.6.1.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U10, "Call Active", upon request by the user to terminate shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

#### References

TS 24.007 clause 6.2.2, TS 24.008 clause 5.4.3.

##### 10.1.2.6.1.3 Test purpose

To verify that the a CC-entity of the UE in CC-state U10, "Call Active", upon request by the user to terminate will send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

##### 10.1.2.6.1.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U10 by using table 10.1.2/1.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U10. The user requests termination of the call. The UE shall send a DISCONNECT message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U11, disconnect request.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				
2		->	DISCONNECT	MMI action, terminate call U11 cause #30, state U11
3		<-	STATUS ENQUIRY	
4		->	STATUS	

## Specific message contents:

None.

### 10.1.2.6.1.5 Test requirements

After step 1 a CC entity of the UE in CC state U10, "Call Active", shall send a DISCONNECT message and enter the CC state U11, "Disconnect Request".

### 10.1.2.6.2 U10 call active / RELEASE received

#### 10.1.2.6.2.1 Definition

The call control entity of the UE being in the state, U10, a RELEASE message is received by the UE.

#### 10.1.2.6.2.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U10, "Call Active", upon receipt of the RELEASE shall respond with the RELEASE COMPLETE message and enter the CC-state U0, "Null"
- 2) When the UE returns to the idle mode it shall release the MM-connection and the CC-entities relating to the seven mobile originating transaction identifiers shall be in CC-state U0, "Null"

## References

Conformance requirement 1: TS 24.008 clause 5.4.2 and clause 5.4.4.

Conformance requirement 2: TS 24.008 clauses 4.5.3, 5.5.3.2 and 8.3.1.

#### 10.1.2.6.2.3 Test purpose

- 1) To verify that the a CC-entity of the UE in CC-state U10, "Call Active", upon receive of the RELEASE will respond with the RELEASE COMPLETE message and enter the CC-state U0, "Null"
- 2) To verify that the UE on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile originating transaction identifiers are in CC-state U0, "Null"

#### 10.1.2.6.2.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U10 by using table 10.1.2/1.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U10. The SS sends a RELEASE message to the UE. The UE shall respond with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		RELEASE	with cause "Normal, unspecified" the UE starts T3240
2	->		RELEASE COMPLETE	
3	<-		STATUS ENQUIRY	cause #81 (invalid TI value) repeat steps 3-4 to cover all the transaction identifiers from 000...110 the main signalling link shall be released.
4	->		RELEASE COMPLETE	
5		SS		
6	<-		RRC CONNECTION RELEASE	
7	->		RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

None.

## 10.1.2.6.2.5 Test requirements

After step 1 a CC entity of the UE in CC state U10, "Call Active", shall return a RELEASE COMPLETE message.

After step 3 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

## 10.1.2.6.3 U10 call active / DISCONNECT with in band tones

## 10.1.2.6.3.1 Definition

The call control entity of the UE being in the state, U10, a DISCONNECT message indicating availability of in band information is received by the UE.

## 10.1.2.6.3.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U10, "Call Active", upon receipt of a DISCONNECT message with a Progress Indicator indicating in-band information, shall through-connect the speech channel to make in-band announcements available, if traffic channel is in speech mode. If DTCH is not in speech mode, the UE shall send a RELEASE message.

## References

TS 24.008 clause 5.4.4.1.1 and clause 5.5.1.

## 10.1.2.6.3.3 Test purpose

To verify that a CC-entity of the UE in CC-state U10, "Call Active", upon receipt of a DISCONNECT message with a Progress Indicator indicating in-band information, through-connects the speech channel to make in-band announcements available, if traffic channel is in speech mode. If DTCH is not in speech mode, the UE sends a RELEASE message.

## 10.1.2.6.3.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U10 by using table 10.1.2/1.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U10. The SS sends a DISCONNECT message containing indication of in-band information availability to the UE. The SS checks that if channel mode is speech, the DTCH shall be through connected and the UE enters state U12, disconnect indication. If channel mode is not speech, the DTCH shall not be through connected and the UE enters state U19, release request.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		DISCONNECT	(note)
A2		SS		DTCH in speech mode: the SS will check that the audio path for in band tones is attached.
A3	<-		STATUS ENQUIRY	
A4	->		STATUS	cause #30, state U12
B2	->		RELEASE	DTCH is not in speech mode:
B3	<-		STATUS ENQUIRY	
B4	->		STATUS	cause #30, state U19

Specific message contents:

NOTE: the Progress Indicator, Progress Description:

#8 in band information or appropriate pattern now available.

#### 10.1.2.6.3.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U10, "Call Active", shall through-connect the speech channel to make in-band announcements available, if traffic channel is in speech mode. If DTCH is not in speech mode, the UE shall send a RELEASE message.

#### 10.1.2.6.4 U10 call active / DISCONNECT without in band tones

##### 10.1.2.6.4.1 Definition

The call control entity of the UE being in the state, U10, a DISCONNECT message is received by the UE. The DISCONNECT message does not contain indication of in-band information availability.

##### 10.1.2.6.4.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U10, "Call Active", upon receipt of a DISCONNECT message without progress indicator, shall return a RELEASE message and enter the CC-state U19, "Release Request".

#### References

TS 24.008 clause 5.4.4.

##### 10.1.2.6.4.3 Test purpose

To verify that the a CC-entity of the UE in CC-state U10, "Call Active", upon receipt of a DISCONNECT message without progress indicator, returns a RELEASE message and enters the CC-state U19, "Release Request".

##### 10.1.2.6.4.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U10 by using table 10.1.2/1.

#### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U10. The SS sends a DISCONNECT message not containing indication of in-band information availability to the UE. The UE shall respond with a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity of the UE has entered the state U19, release request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		DISCONNECT	without progress indicator  cause #30, state U19
2	->		RELEASE	
3	<-		STATUS ENQUIRY	
4	->		STATUS	

Specific message contents:

None.

#### 10.1.2.6.4.5 Test requirements

A CC-entity of the UE in CC-state U10, "Call Active", shall return a RELEASE message and enter the CC-state U19, "Release Request".

#### 10.1.2.6.5 U10 call active / RELEASE COMPLETE received

##### 10.1.2.6.5.1 Definition

The call control entity of the UE being in the state, U10, the call is cleared by a RELEASE COMPLETE message sent by the SS.

##### 10.1.2.6.5.2 Conformance requirement

- 1) A CC entity of the UE in CC-state U10, "active", upon receipt of a RELEASE COMPLETE message with valid cause value, shall enter CC state U0, "Null".
- 2) On returning to idle mode, the CC entities relating to the seven mobile originating transaction identifiers shall be in state U0, "Null".

#### References

Conformance requirement 1: TS 24.008 clause 5.4.2 and clause 5.4.4.

Conformance requirement 2: TS 24.008 clause 5.4.4.1.3 and clause 8.3.1.

##### 10.1.2.6.5.3 Test purpose

- 1) To verify that a CC entity of the UE in CC-state U10, "Call active" upon receipt of a RELEASE COMPLETE message with valid cause value, enters CC state U0, "Null".
- 2) To verify that in returning to idle mode, the CC entities relating to the seven mobile originating transaction identifiers are in state U0, "Null".

##### 10.1.2.6.5.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U10 by using table 10.1.2/1.

#### Test procedure

The SS sends a RELEASE COMPLETE message to the UE. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		RELEASE COMPLETE	note 1 note 2 cause #81 (invalid TI value), repeat steps 2-3 to cover all the transaction identifiers from 000...110 the main signalling link shall be released.
2	<-		STATUS ENQUIRY	
3	->		RELEASE COMPLETE	
4		SS		
5	<-		RRC CONNECTION RELEASE	
6	->		RRC CONNECTION RELEASE COMPLETE	

#### Specific message contents:

NOTE 1: With the cause value chosen arbitrarily.

NOTE 2: TI flag has the value indicating the UE as an originator of the call.

#### 10.1.2.6.5.5 Test requirements

After step 2 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

#### 10.1.2.6.6 U10 call active / SETUP received

##### 10.1.2.6.6.1 Definition

If the UE does not react correctly when receiving a SETUP message on a new Transaction Identifier during an active call, the active call may be lost.

##### 10.1.2.6.6.2 Conformance requirement

- 1) A UE that has a call established when receiving a SETUP message shall respond either with a CALL CONFIRMED message or a RELEASE COMPLETE message, both with cause #17 "user busy".
- 2) The call control state of the existing transaction shall not be affected by the incoming SETUP message.

#### Reference(s):

Conformance requirement 1: TS 24.008 clause 5.2.2.3.1.

Conformance requirement 2: TS 24.008 clause 5.1.1.

##### 10.1.2.6.6.3 Test purpose

- 1) To verify that a User Equipment that has a call established and receives a SETUP message answers either with a CALL CONFIRMED message with cause "user busy" if it supports call waiting, or with a RELEASE COMPLETE message with cause "user busy" otherwise.
- 2) To verify that after having sent this message, the UE is still in state U10 for the established call.

## 10.1.2.6.6.4 Method of test

## Related ICS/IXIT statement(s)

- supported MO circuit switched basic services.
- support of call waiting Y/N.

## Initial conditions

## System Simulator:

1 cell, default parameters.

## User Equipment:

The UE is idle updated with valid TMSI and CKSN.

The UE is brought into the state U10 by using table 10.1.2/1.

## Test Procedure

The UE has a mobile originated call in the U10 state. When UE sends a SETUP message and SS receives it in the first call establishment, SS sends a CALL PROCEEDING message without Network Call Control Capabilities IE.

The SS sends a SETUP message to the UE (with signal IE indicating "call waiting tone on" and without Network Call Control Capabilities IE).

If the UE does not support call waiting it shall answer by a RELEASE COMPLETE message.

If the UE supports call waiting it shall answer by a CALL CONFIRMED message followed by an ALERTING. The second transaction is then released by the SS with a RELEASE COMPLETE message.

In both cases the SS checks by using the status enquiry procedure that the CC entity of the UE is still in state U10, active call for the original call.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	SETUP	this message establishes a second transaction The TI value shall be the same as the one that is in use for the MO call. The TI flag shall have the value specified for an MT call.
A2		->	RELEASE COMPLETE	if the UE does not support call waiting with cause "user busy" with the TI of the second transaction
B2		->	CALL CONFIRMED	if the UE supports call waiting with cause "user busy" with the TI of the second transaction
B3		->	ALERTING	with the TI of the second transaction
B4		<-	RELEASE COMPLETE	with the TI of the second transaction
5		<-	STATUS ENQUIRY	with the TI of the original transaction
6		->	STATUS	cause #30, state U10 with the TI of the original transaction

NOTE: The Transaction Identifier of the second transaction shall be different from the one of the already established transaction.

## Specific message contents

SETUP message contains a Signal IE with value "call waiting tone on" (H'07).

#### 10.1.2.6.6.5 Test requirements

After step 1 a UE that has a call established shall answer either with a CALL CONFIRMED message with cause "user busy" if it supports call waiting, or with a RELEASE COMPLETE message with cause "user busy" otherwise.

After step A2 or B2 the UE is still in state U10 for the established call.

### 10.1.2.7 U11 disconnect request

#### 10.1.2.7.1 U11 disconnect request / clear collision

##### 10.1.2.7.1.1 Definition

The call control entity of the UE being in the state, U11, a DISCONNECT message is received by the UE.

##### 10.1.2.7.1.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U11, "Disconnect Request", upon receipt of a DISCONNECT message, shall return to its peer entity the RELEASE message and enter the CC-state U19, "Release Request".

#### References

TS 24.008 clause 5.4.4.2.5.1.

##### 10.1.2.7.1.3 Test purpose

To verify that the a CC-entity of the UE in CC-state U11, "Disconnect Request", upon receipt of a DISCONNECT message, returns to its peer entity the RELEASE message and enters the CC-state U19, "Release Request".

##### 10.1.2.7.1.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U11 by using table 10.1.2/3.

#### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U11. The SS sends a DISCONNECT message to the UE. The UE shall respond with a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity of the UE has entered the state U19, release request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		DISCONNECT	
2	->		RELEASE	
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause #30, state U19

Specific message contents:

None.

#### 10.1.2.7.1.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U11, "Disconnect Request", shall return the RELEASE message and enter the CC-state U19, "Release Request".

#### 10.1.2.7.2 U11 disconnect request / RELEASE received

##### 10.1.2.7.2.1 Definition

The call control entity of the UE being in the state, U11, a RELEASE message is received by the UE.

##### 10.1.2.7.2.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U11, "Disconnect Request", upon receipt of the RELEASE message shall return RELEASE COMPLETE and enter the CC-state U0, "Null".
- 2) On returning to the idle mode the UE shall release the MM-connection and the CC-entities relating to the seven mobile originating transaction identifiers shall be in CC-state U0, "Null".

#### References

Conformance requirement 1: TS 24.008 clause 5.4.3.

Conformance requirement 2: TS 24.008 clause 4.5.3, clause 5.5.3.2 and clause 8.3.1.

##### 10.1.2.7.2.3 Test purpose

- 1) To verify that the a CC-entity of the UE in CC-state U11, "Disconnect Request", upon receipt of the RELEASE message shall return RELEASE COMPLETE and enter the CC-state U0, "Null".
- 2) To verify that the UE on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile originating transaction identifiers are in CC-state U0, "Null".

##### 10.1.2.7.2.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U11 by using table 10.1.2/3.

### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U11. The SS sends a RELEASE message to the UE. The UE shall respond with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		RELEASE	cause #81 (invalid TI value) repeat steps 3-4 to cover all the transaction identifiers from 000...110 the main signalling link shall be released.
2	->		RELEASE COMPLETE	
3	<-		STATUS ENQUIRY	
4	->		RELEASE COMPLETE	
5		SS		
6	<-		RRC CONNECTION RELEASE	
7	->		RRC CONNECTION RELEASE COMPLETE	

### Specific message contents:

None.

#### 10.1.2.7.2.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U11, "Disconnect Request", shall return the RELEASE COMPLETE.

After step 3 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

#### 10.1.2.7.3 U11 disconnect request / timer T305 time-out

##### 10.1.2.7.3.1 Definition

The call control entity of the UE being in the state, U11, if no response is then received from the SS, timer T305 expires at the UE side.

##### 10.1.2.7.3.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U11, "Disconnect Request" shall on expiry of T305, proceed with the connection release procedure by sending the RELEASE message to its peer entity and shall enter the CC-state U19, "Release Request".

### References

TS 24.008 clause 5.4.3 and clause 11.3.

##### 10.1.2.7.3.3 Test purpose

To verify that the CC-entity of the UE in CC-state U11, "Disconnect Request" shall on expiry of T305, proceed with the connection release procedure by sending the RELEASE message to its peer entity and enters the CC-state U19, "Release Request".

## 10.1.2.7.3.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

## System Simulator:

1 cell, default parameters.

## User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U11 by using table 10.1.2/3.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U11. Then T305 expires at the UE and the UE shall send a RELEASE message. The SS checks timer T305 accuracy and that the CC entity has entered the state U19, release request.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		
2	->		RELEASE	SS waits until T305 expires at the UE SS checks the time between DISCONNECT and RELEASE (note), check the timer T305 accuracy, see TS34.108 clause 4.2.3
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause #30, state U19

## Specific message contents:

NOTE: With the same cause value as originally contained in the DISCONNECT message. An additional cause information element (#102 recovery on timer expiry) may be included.

## 10.1.2.7.3.5 Test requirements

Upon expiry of timer T305 a CC-entity of the UE in CC-state U11, "Disconnect Request", shall proceed with the connection release procedure by sending the RELEASE message and enter the CC-state U19, "Release Request".

## 10.1.2.7.4 U11 disconnect request / lower layer failure

## 10.1.2.7.4.1 Definition

The call control entity of the UE being in the state, U11, a lower layer failure is accomplished at the UE and consequently, communication at layer 3 level with the peer entity is terminated.

## 10.1.2.7.4.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U11, "Disconnect Request" having detected a lower layer failure shall return to the idle mode. The CC entity is in state U0, "Null".

## References

TS 24.008 clause 4.5.2.3, clause 4.5.3, clause 5.5.3.2 and clause 8.3, TS 25.331 clause 8.3.1 and clause 8.5.6.

## 10.1.2.7.4.3 Test purpose

To verify that the a CC-entity of the UE in CC-state U11, "Disconnect Request" having detected a lower layer failure returns to the idle mode. The CC entity is thus in state U0, "Null".

## 10.1.2.7.4.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U11 by using table 10.1.2/4.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The UE is brought to the state U11. The SS modifies the scrambling code of downlink transmission (DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to enable the UE to perform cell update procedure. The SS sends RRC CONNECTION RELEASE message as a response to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission (DL DPCH) to the original one and waits 60 s. The SS will check that the UE will not send any message during 60 s.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS modifies the scrambling code of DPCH for generating lower layer failure
2	->		CELL UPDATE	CCCH
3	<-		RRC CONNECTION RELEASE	CCCH
4		SS		SS re-modifies the scrambling code of DPCH to the original one.
5		SS		SS waits 60 s.

## Specific message contents:

None.

## 10.1.2.7.4.5 Test requirements

After step 4 the UE shall not send any message to the SS during 60 s.

## 10.1.2.7.5 U11 disconnect request / unknown message received

## 10.1.2.7.5.1 Definition

The call control entity of the UE being in the state, U11, an unknown message is received by the UE.

## 10.1.2.7.5.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U11, "Disconnect Request", having received an unknown message from its peer entity shall return a STATUS message.

## References

TS 24.008 clause 8.4.

## 10.1.2.7.5.3 Test purpose

To verify that a CC-entity of the UE in CC-state U11, "Disconnect Request", having received an unknown message from its peer entity returns a STATUS message.

## 10.1.2.7.5.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U11 by using table 10.1.2/4.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U11. The SS sends a message with message type not defined for the protocol discriminator to the UE. The UE shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	unknown message	message type not defined for PD cause #97, state U11
2		->	STATUS	
3		<-	STATUS ENQUIRY	cause #30, state U11
4		->	STATUS	

## Specific message contents:

None.

#### 10.1.2.7.5.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U11, "Disconnect Request", shall return a STATUS message.

### 10.1.2.8 U12 disconnect indication

#### 10.1.2.8.1 U12 disconnect indication / call releasing requested by the user

##### 10.1.2.8.1.1 Definition

The call control entity of the UE being in the state, U12, the user requests to terminate the call.

##### 10.1.2.8.1.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U12, "Disconnect Indication" being in network initiated call release phase, shall, upon receiving a call release request from the user send a RELEASE to its peer entity and enter CC-state U19, "Release Request".

#### References

TS 24.007 clause 6.2.2, TS 24.008 clause 5.4.4.

##### 10.1.2.8.1.3 Test purpose

To verify that a CC-entity of the UE in CC-state U12, "Disconnect Indication" being in network initiated call release phase, shall, upon receiving a call release request from the user sends a RELEASE to its peer entity and enters CC-state U19, "Release Request"

##### 10.1.2.8.1.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U12 by using Option A of table 10.1.2/1.

#### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U12. The user requests termination of the call. The UE shall send a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U19, release request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				MMI action, "on hook"  cause #30, state U19
2	->		RELEASE	
3	<-		STATUS ENQUIRY	
4	->		STATUS	

Specific message contents:

None.

#### 10.1.2.8.1.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U12, "Disconnect Indication" being in network initiated call release phase, shall send a RELEASE message and enter CC-state U19, "Release Request".

#### 10.1.2.8.2 U12 disconnect indication / RELEASE received

##### 10.1.2.8.2.1 Definition

The call control entity of the UE being in the state, U12, a RELEASE message is received by the UE.

##### 10.1.2.8.2.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U12, "Disconnect Indication", upon receipt of a RELEASE message shall return to its peer entity the RELEASE COMPLETE message and enter the CC-state U0, "Null".
- 2) On returning to the idle mode the UE shall release the MM-connection and the CC-entities relating to the seven mobile originating transaction identifiers shall be in CC-state U0, "Null".

#### References

Conformance requirement 1: TS 24.008 clause 5.4.2

Conformance requirement 2: TS 24.008 clause 4.5.3, clause 5.5.3.2 and clause 8.3.1.

##### 10.1.2.8.2.3 Test purpose

- 1) To verify that a CC-entity of the UE in CC-state U12, "Disconnect Indication", upon receipt of a RELEASE message returns to its peer entity the RELEASE COMPLETE message and enters the CC-state U0, "Null".
- 2) To verify that the UE on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile originating transaction identifiers are in CC-state U0, "Null".

##### 10.1.2.8.2.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U12 by using Option A of table 10.1.2/1.

### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U12. The SS sends a RELEASE message to the UE. The UE shall respond with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		RELEASE	cause #81 (invalid TI value) repeat steps 3-4 to cover all the transaction identifiers from 000...110 the main signalling link shall be released.
2	->		RELEASE COMPLETE	
3	<-		STATUS ENQUIRY	
4	->		RELEASE COMPLETE	
5		SS		
6	<-		RRC CONNECTION RELEASE	
7	->		RRC CONNECTION RELEASE COMPLETE	

### Specific message contents:

None.

#### 10.1.2.8.2.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U12, "Disconnect Indication", shall return the RELEASE COMPLETE message.

After step 3 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

#### 10.1.2.8.3 U12 disconnect indication / lower layer failure

##### 10.1.2.8.3.1 Definition

The call control entity of the UE being in the state, U12, a lower layer failure is accomplished at the UE and consequently, communication at layer 3 level with the peer entity is terminated.

##### 10.1.2.8.3.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U12, "Disconnect Indication" having detected a lower layer failure shall return to idle mode. The CC-entity is in state U0, "Null".

### References

TS 24.008 clause 5.4.4.2.5.1, clause 4.5.3, clause 5.5.3.2 and clause 8.3, TS 25.331 clause 8.3.1 and clause 8.5.6.

##### 10.1.2.8.3.3 Test purpose

To verify that a CC-entity of the UE in CC-state U12, "Disconnect Indication" having detected a lower layer failure returns to idle mode. The CC-entity is thus in state U0, "Null".

## 10.1.2.8.3.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

## System Simulator:

1 cell, default parameters.

## User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U12 by using Option A of table 10.1.2/3.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The UE is brought to the state U12. The SS modifies the scrambling code of downlink transmission (DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to enable the UE to perform cell update procedure. The SS sends RRC CONNECTION RELEASE message as a response to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission (DL DPCH) to the original one and waits 60 s. The SS will check that the UE will not send any message during 60 s.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS modifies the scrambling code of DPCH for generating lower layer failure CCCH CCCH SS re-modifies the scrambling code of DPCH to the original one. SS waits 60 s. UE shall send no message on the DCCH
2	->		CELL UPDATE	
3	<-		RRC CONNECTION RELEASE	
4		SS		
5		SS		

## Specific message contents:

None.

## 10.1.2.8.3.5 Test requirements

After step 4 the UE shall not send any message to the SS during 60 s.

## 10.1.2.8.4 U12 disconnect indication / unknown message received

## 10.1.2.8.4.1 Definition

The call control entity of the UE being in the state, U12, an unknown message is received by the UE.

## 10.1.2.8.4.2 Conformance requirement

A CC-entity of the UE in CC-state U12, "Disconnect Indication" having received an unknown message from its peer entity shall return a STATUS message.

## References

TS 24.008 clause 8.4.

## 10.1.2.8.4.3 Test purpose

To verify that a CC-entity of the UE in CC-state U12, "Disconnect Indication" having received an unknown message from its peer entity returns a STATUS message.

## 10.1.2.8.4.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U12 by using Option A of table 10.1.2/3.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U12. The SS sends a message with message type not defined for the protocol discriminator to the UE. The UE shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		unknown message	message type not defined for PD
2	->		STATUS	cause #97, state U12
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause #30, state U12

Specific message contents:

None.

## 10.1.2.8.4.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U12, "Disconnect Indication", shall return a STATUS message.

## 10.1.2.9 Outgoing call / U19 release request

## 10.1.2.9.1 Outgoing call / U19 release request / timer T308 time-out

## 10.1.2.9.1.1 Definition

The call control entity of the UE being in the state, U19, if no response is then received from the SS, timer T308 expires at the UE side.

## 10.1.2.9.1.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U19, "Release Request" will, upon the first expiry of timer T308 send the RELEASE message to its peer entity and remain in the CC-state U19.

## References

TS 24.008 clause 5.4.4.1.3.1 and clause 11.3.

## 10.1.2.9.1.3 Test purpose

To verify that a CC-entity of the UE in CC-state U19, "Release Request" will, upon the first expiry of timer T308 send the RELEASE message to its peer entity and remain in the CC-state U19.

## 10.1.2.9.1.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U19 by using table 10.1.2/4.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U19. When T308 expires at the UE, the UE shall send a RELEASE message. The SS checks timer T308 accuracy and that the state of the CC entity has remained unchanged.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS waits until T308 at the UE SS checks the time between the two RELEASE messages check the timer T308 accuracy, see TS34.108 clause 4.2.3 cause #30, state U19
2		->	RELEASE	
3		<-	STATUS ENQUIRY	
4		->	STATUS	

## Specific message contents:

None.

## 10.1.2.9.1.5 Test requirements

Upon the first expiry of timer T308 (after step 1) a CC-entity of the UE in CC-state U19, "Release Request", shall send the RELEASE message and remain in the CC-state U19.

## 10.1.2.9.2 Outgoing call / U19 release request / 2nd timer T308 time-out

### 10.1.2.9.2.1 Definition

The call control entity of the UE being in the state, U19, if no response is then received after timer T308 has expired two times in success at the UE.

### 10.1.2.9.2.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U19, "Release Request", upon the 2nd expiry of the timer T308, shall enter the CC-state U0, "Null".
- 2) Subsequently the UE shall proceed with releasing the MM-connection and enter the idle mode with the CC entities relating to the seven mobile originating transaction identifiers in state U0, "Null".

### References

Conformance requirement 1: TS 24.008 clause 5.4.4.1.3.1 and clause 11.3.

Conformance requirement 2: TS 24.008 clause 4.5.3, clause 5.5.3.2 and 8.3.1.

### 10.1.2.9.2.3 Test purpose

- 1) To verify that a CC-entity of the UE in CC-state U19, "Release Request", upon the 2nd expiry of the timer T308, enters the CC-state U0, "Null".
- 2) To verify that subsequently the UE proceeds with releasing the MM-connection and enters the idle mode with the CC entities relating to the seven mobile originating transaction identifiers in state U0, "Null".

### 10.1.2.9.2.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U19 by using table 10.1.2/4.

#### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U19. The SS allows T308 expiry at the UE, and the UE shall repeat sending the RELEASE message and start timer T308 again. The SS allows again T308 expiry at the UE. The UE shall abort the RRC connection. The SS waits long enough to enable the UE to return to idle state listening to paging, and then pages UE to create RRC connection. Finally, the SS will check the state of the UE by using STATUS ENQUIRY with the relevant transaction identifiers.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS waits until T308 expiry at the UE
2	->		RELEASE	
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause #30, state U19
5		SS		SS waits until the second T308 expiry at the UE
6		SS		SS waits T3240 expiry at the UE
7		UE		the main signalling link shall be released.
8		SS		SS waits 10 s for the UE to return to listening to paging
9			Mobile terminated establishment of Radio Resource Connection	See TS34.108
9a	->		PAGING RESPONSE	
10	<-		STATUS ENQUIRY	
11	->		RELEASE COMPLETE	cause #81 (invalid TI value)
12		SS		repeat steps 10-11 to cover all the transaction identifiers from 000...110
13	<-		RRC CONNECTION RELEASE	the main signalling link shall be released.
14	->		RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

None.

#### 10.1.2.9.2.5 Test requirements

Upon the 2nd expiry of the timer T308 (after step 5) a CC-entity of the UE in CC-state U19, "Release Request", shall enter the CC-state U0, "Null".

After step 10 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

#### 10.1.2.9.3 Outgoing call / U19 release request / RELEASE received

##### 10.1.2.9.3.1 Definition

The call control entity of the UE being in the state, U19, a RELEASE message is received by the UE.

##### 10.1.2.9.3.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U19, "Release Request", upon receipt of a RELEASE, shall release the MM-connection and enter the CC-state U0, "Null" with the CC entities relating to the seven mobile originating transaction identifiers in state U0, "Null".

#### References

TS 24.008 clause 5.4.4.2.5.1, clause 11.3, clause 5.5.3.2 and 8.3.1.

##### 10.1.2.9.3.3 Test purpose

To verify that a CC-entity of the UE in CC-state U19, "Release Request", upon receipt of a RELEASE, shall release the MM-connection and enters the CC-state U0, "Null" with the CC entities relating to the seven mobile originating transaction identifiers in state U0, "Null".

## 10.1.2.9.3.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

## System Simulator:

1 cell, default parameters.

## User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U19 by using table 10.1.2/4.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U19. The SS sends a RELEASE message to the UE. The UE shall release the MM-connection. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		RELEASE	(note)
2	<-		STATUS ENQUIRY	
3	->		RELEASE COMPLETE	cause #81 (invalid TI value)
4		SS		repeat steps 2-3 to cover all the transaction identifiers from 000...110
5	<-		RRC CONNECTION RELEASE	the main signalling link shall be released.
6	->		RRC CONNECTION RELEASE COMPLETE	

## Specific message contents:

NOTE: With the same cause number as originally contained in DISC and optional cause #102 recovery on timer expiry.

## 10.1.2.9.3.5 Test requirements

After step 2 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

## 10.1.2.9.4 Outgoing call / U19 release request / RELEASE COMPLETE received

## 10.1.2.9.4.1 Definition

The call control entity of the UE being in the state, U19, a RELEASE COMPLETE message is received by the UE.

## 10.1.2.9.4.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U19, "Release Request", upon receipt of a RELEASE COMPLETE, shall release the MM-connection and enter the CC-state U0, "Null" with the CC entities relating to the seven mobile originating transaction identifiers in state U0, "Null".

## References

TS 24.008 clause 5.4.4.1.3, clause 4.5.3 and clause 8.3.1.

## 10.1.2.9.4.3 Test purpose

To verify that a CC-entity of the UE in CC-state U19, "Release Request", upon receipt of a RELEASE COMPLETE, shall release the MM-connection and enters the CC-state U0, "Null" with the CC entities relating to the seven mobile originating transaction identifiers in state U0, "Null".

## 10.1.2.9.4.4 Method of test

## Related ICS/IXIT statements

- supported MO circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U19 by using table 10.1.2/1.

## Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The CC entity of the UE is brought to the state U19. The SS sends a RELEASE COMPLETE message to the UE. The UE shall release the MM-connection. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		RELEASE COMPLETE	
2	<-		STATUS ENQUIRY	
3	->		RELEASE COMPLETE	
4		SS		cause #81 (invalid TI value) repeat steps 2-3 to cover all the transaction identifiers from 000...110 the main signalling link shall be released.
5	<-		RRC CONNECTION RELEASE	
6	->		RRC CONNECTION RELEASE COMPLETE	

## Specific message contents:

None.

## 10.1.2.9.4.5 Test requirements

After step 2 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

### 10.1.2.9.5 Outgoing call / U19 release request / lower layer failure

#### 10.1.2.9.5.1 Definition

The call control entity of the UE being in the state, U19, a lower layer failure is accomplished at the UE and consequently, communication at layer 3 level with the peer entity is terminated.

#### 10.1.2.9.5.2 Conformance requirement

A CC-entity of the UE in CC-state U19, "Release Request", having detected a lower layer failure, shall return to the idle mode, the CC entity is in state U0, "Null".

#### References

TS 24.008 clause 4.5.2.3, clause 4.5.3, clause 5.5.3.2 and clause 8.3, TS 25.331 clause 8.3.1 and clause 8.5.6.

#### 10.1.2.9.5.3 Test purpose

To verify that a CC-entity of the UE in CC-state U19, "Release Request", having detected a lower layer failure, returns to the idle mode, the CC entity is in state U0, "Null".

#### 10.1.2.9.5.4 Method of test

#### Related ICS/IXIT statements

- supported MO circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U19 by using table 10.1.2/1.

#### Test procedure

An MO circuit switched basic service is selected that is supported by the UE; if the UE supports MO telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then, the UE is made to initiate a call. The UE is brought to the state U19. The SS modifies the scrambling code of downlink transmission (DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to enable the UE to perform cell update procedure. The SS sends RRC CONNECTION RELEASE message as a response to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission (DL DPCH) to the original one and waits 60 s. The SS will check that the UE will not send any message during 60 s.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS modifies the scrambling code of DPCH for generating lower layer failure
2	->		CELL UPDATE	CCCH
3	<-		RRC CONNECTION RELEASE	CCCH
4		SS		SS re-modifies the scrambling code of DPCH to the original one.
5		SS		SS waits 60 s. UE shall send no message on the DCCH

Specific message contents:

None.

#### 10.1.2.9.5.5 Test requirements

After step 4 CC the UE shall not send any message to the SS during 60 s.

### 10.1.3 Establishment of an incoming call / Initial conditions

The tables below describe message exchanges which bring the UE in the requested initial states in case of an incoming call.

A state may be taken as initial only when all the states which lead to this initial states have been validated. The order will be U0, U6, U9, U7, U8, U10, U26 etc. as in the following tables.

**Table 10.1.3/1: Establishment of an incoming call, procedure 1**

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See TS 34.108
2	->		PAGING RESPONSE	
3	<-		AUTHENTICATION REQUEST	
4	->		AUTHENTICATION RESPONSE	
5	<-		SECURITY MODE COMMAND	
6	->		SECURITY MODE COMPLETE	
7	<-		SETUP	U6, (note 1)
8	->		CALL CONFIRMED	U9
A9	->		CONNECT	U8, p = Y, (note 2)
B9	->		ALERTING	U7, p = N, (note 2)
B10	UE			(note 3)
B11	->		CONNECT	U8
12			Radio Bearer Setup Procedure	DTCH, See TS 34.108
13	<-		CONNECT ACKNOWLEDGE	U10

NOTE 1: With signal information included in the SETUP message.

NOTE 2: The UE is supporting immediate connect (p = Y/N). See ICS/IXIT statement.

NOTE 3: If necessary (see ICS/IXIT statement), the UE is made to accept the call in the way described in a ICS/IXIT statement.

**Table 10.1.3/2: Establishment of an incoming call, procedure 2**

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See TS34.108
2		->	PAGING RESPONSE	
3		<-	SECURITY MODE COMMAND	
4		->	SECURITY MODE COMPLETE	
5		<-	SETUP	U6, (note 1)
6		->	CALL CONFIRMED	U9
A7		->	CONNECT	U8, p = Y, (note 2)
A8			Radio Bearer Setup Procedure	DTCH, See TS34.108
B7		->	ALERTING	U7, p = N, (note 2)
B8			Radio Bearer Setup Procedure	DTCH, See TS34.108
B9	UE			(note 3)
B10		->	CONNECT	U8
11		<-	AUTHENTICATION REQUEST	
12		->	AUTHENTICATION RESPONSE	
13		<-	CONNECT ACKNOWLEDGE	U10
NOTE 1: With signal information included in the SETUP message.				
NOTE 2: The UE is supporting immediate connect (p = Y/N). See ICS/IXIT statement.				
NOTE 3: If necessary (see ICS/IXIT statement), the UE is made to accept the call in the way described in a ICS/IXIT statement.				

**Table 10.1.3/3: Void****Table 10.1.3/4: Establishment of an incoming call, procedure 4**

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See TS 34.108
2		->	PAGING RESPONSE	
3		<-	SECURITY MODE COMMAND	
4		->	SECURITY MODE COMPLETE	
5		<-	SETUP	U6, (note 1)
6		->	CALL CONFIRMED	U9
7			Radio Bearer Setup Procedure	DTCH, See TS 34.108
A8		->	CONNECT	U8, p = Y, (note 2)
B8		->	ALERTING	U7, p = N, (note 2)
B9	UE			(note 3)
B10		->	CONNECT	U8
11		<-	AUTHENTICATION REQUEST	
12		->	AUTHENTICATION RESPONSE	
13		<-	CONNECT ACKNOWLEDGE	U10
NOTE 1: The signal information element is not included in the SETUP message.				
NOTE 2: The UE is supporting immediate connect (p = Y/N). See ICS/IXIT statement.				
NOTE 3: If necessary (see ICS/IXIT statement), the UE is made to accept the call in the way described in a ICS/IXIT statement.				

### 10.1.3.1 Incoming call / U0 null state

#### 10.1.3.1.1 Incoming call / U0 null state / SETUP received with a non supported bearer capability

##### 10.1.3.1.1.1 Definition

The call control entity of the UE being in the state, U0, a SETUP message is received with only one bearer capability and this bearer capability is not supported by the UE.

## 10.1.3.1.1.2 Conformance requirement

- 1) A CC entity of the UE, upon receipt of SETUP containing one bearer capability and this bearer capability is not supported, shall return a RELEASE COMPLETE with correct cause value to its peer entity and return to the idle mode. The CC-entities relating to the seven mobile terminating transaction identifiers shall be in the state U0, "Null".

## References

TS 24.008 clause 5.2.2.2, clause 8.3.1 and annex B.

## 10.1.3.1.1.3 Test purpose

To verify that a CC entity of the UE, upon receipt of SETUP containing one bearer capability and this bearer capability is not supported, returns a RELEASE COMPLETE with correct cause value to its peer entity, and returns to the idle mode. To verify that the CC-entities relating to the seven mobile terminating transaction identifiers are then in the state U0, "Null".

## 10.1.3.1.1.4 Method of test

## Related ICS/IXIT statements

- supported MT circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

## Test procedure

A mobile terminated call is initiated. The UE receives a SETUP message that contains a bearer capability not supported by the UE. The UE returns a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity is still in the state U0 with all the relevant transaction identifiers.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	SS sends paging, See TS34.108  (note 1) (note 2)  Cause #81 (invalid TI value). Repeat steps 9-10 to cover all the transaction identifiers from 000... 110.
2	->		PAGING RESPONSE	
3	<-		AUTHENTICATION REQUEST	
4	->		AUTHENTICATION RESPONSE	
5	<-		SECURITY MODE COMMAND	
6	->		SECURITY MODE COMPLETE	
7	<-		SETUP	
8	->		RELEASE COMPLETE	
9	<-		STATUS ENQUIRY	
10	->		RELEASE COMPLETE	
11		SS		

## Specific message contents:

NOTE 1: With one bearer capability and that bearer capability is not supported by the UE.

NOTE 2: With cause #88 incompatible destination.

#### 10.1.3.1.1.5 Test requirements

After step 7 a CC entity of the UE shall return a RELEASE COMPLETE message with cause value #88 (incompatible destination) and return to the idle mode.

After step 9 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

### 10.1.3.2 Incoming call / U6 call present

#### 10.1.3.2.1 Incoming call / U6 call present / automatic call rejection

##### 10.1.3.2.1.1 Definition

Although the state U6 is transient, the ability to refuse a call (automatically) in this state is tested, if it is implemented at the UE.

##### 10.1.3.2.1.2 Conformance requirement

- 1) A CC entity of the UE in CC-state U6, "Call Present", upon receipt of a rejection indication of the incoming call from the user, send RELEASE COMPLETE with the appropriate cause value to its peer entity and enter the CC-state U0, "Null". The CC entities relating to the seven mobile terminating transaction identifiers shall be in state U0, "Null".

#### References

TS 24.007 clause 6.2.2, TS 24.008 clause 5.2.2.3.1, clause 5.5.3.2 and clause 8.3.1.

##### 10.1.3.2.1.3 Test purpose

To verify that a CC entity of the UE in CC-state U6, "Call Present", shall upon receipt of a rejection indication of the incoming call from the user, shall send RELEASE COMPLETE with the appropriate cause value to its peer entity and enter the CC-state U0, "Null". The CC entities relating to the seven mobile terminating transaction identifiers are then in state U0, "Null".

##### 10.1.3.2.1.4 Method of test

#### Related ICS/IXIT statements

- supported teleservices;
- the UE supports an ability to refuse a call after receipt of a SETUP message.

#### Initial conditions

##### System Simulator:

1 cell, default parameters.

##### User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U6 by using table 10.1.3/2.

#### Test procedure

A teleservice is selected that is supported by the UE; if the UE supports speech, the selected teleservice is speech. If necessary, the UE is configured for that teleservice. Then a mobile terminated call is initiated. The call control entire of

the UE is brought to the state U6 (Note: The state U6 is not checked, since it is not stable). The UE is made to refuse the call (the refusal may require some preliminary preparations in order to achieve refusal at this point). The UE shall send a RELEASE COMPLETE message and enter a call control state U0. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				
2		->	RELEASE COMPLETE	the UE is made to refuse the call (note)  cause #81 (invalid TI value) repeat steps 3-4 to cover all the transaction identifiers from 000...110 the main signalling link shall be released.
3		<-	STATUS ENQUIRY	
4		->	RELEASE COMPLETE	
5		SS		
6		<-	RRC CONNECTION RELEASE	
7		->	RRC CONNECTION RELEASE COMPLETE	

#### Specific message contents:

NOTE: With cause value #21 call rejected.

#### 10.1.3.2.1.5 Test requirements

After step 1 a CC entity of the UE shall return a RELEASE COMPLETE message with cause value #21 (call rejected) and return to the idle mode.

After step 3 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

#### 10.1.3.3 Incoming call / U9 mobile terminating call confirmed

##### 10.1.3.3.1 Incoming call / U9 mobile terminating call confirmed / alerting or immediate connecting

##### 10.1.3.3.1.1 Definition

The call control entity of the UE having entered the state, U9, with signal information received in the preceding SETUP message, the subsequent behaviour of the UE is tested.

##### 10.1.3.3.1.2 Conformance requirement

- 1) A CC entity in CC-state U9, "Mobile Terminating Call Confirmed", (if signalled by the network in previous SETUP message that it may alert) shall either send a ALERTING message to its peer entity and enter state U7, or send a CONNECT message to its peer entity and enter U8.

#### References

TS 24.008 clause 5.2.2.3.2 and clause 5.2.2.5.

##### 10.1.3.3.1.3 Test purpose

To verify that a CC entity in CC-state U9, "Mobile Terminating Call Confirmed", (if signalled by the network in previous SETUP message that it may alert) will either send a ALERTING message to its peer entity and enter state U7, or send a CONNECT message to its peer entity and enter U8.

## 10.1.3.3.1.4 Method of test

## Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

## Initial conditions

## System Simulator:

1 cell, default parameters.

## User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U9 by using table 10.1.3/2.

## Test procedure

An MT circuit switched basic service is selected that is supported by the UE; if the UE supports MT telephony, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U9 by using a SETUP message containing signalling information element. (The state U9 is not a stable state in this case, and consequently it is not checked as an initial state.) If the UE supports immediate connect for the selected basic service ( $p = Y$ ), it sends a CONNECT message and enters the state U8, connect request. Otherwise ( $p = N$ ) the UE sends an ALERTING message and enters the state U7, call receiving. The SS checks by using the status enquiry procedure that the CC entity has entered its state as described.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
A1	->		CONNECT	$p = Y$
A2	<-		STATUS ENQUIRY	
A3	->		STATUS	cause #30, state U8
B1	->		ALERTING	$p = N$
B2	<-		STATUS ENQUIRY	
B3	->		STATUS	cause #30, state U7

## Specific message contents:

None.

## 10.1.3.3.1.5 Test requirements

A CC entity in CC-state U9, "Mobile Terminating Call Confirmed", (if signalled by the network in previous SETUP message that it may alert) shall either send an ALERTING message and enter state U7, or send a CONNECT message and enter U8.

## 10.1.3.3.2 Incoming call / U9 mobile terminating call confirmed / DTCH assignment

## 10.1.3.3.2.1 Definition

The call control entity of the UE being in the state, U9, a radio bearer establishment procedure is performed for traffic channel.

## 10.1.3.3.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", when a traffic channel is allocated by the network performing the radio bearer establishment procedure, shall send an ALERTING message and enter state U7.

## References

TS 25.331 clause 8.2.1, TS 24.008 clause 5.2.2.7 and clause 5.2.2.3.2.

## 10.1.3.3.2.3 Test purpose

To verify that a CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", when a traffic channel is allocated by the network performing the radio bearer establishment procedure, shall send an ALERTING message and enters state U7.

## 10.1.3.3.2.4 Method of test

## Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U9 by using table 10.1.3/4.

## Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U9 (by using a SETUP message not containing the signal information element). The SS sends a RADIO BEARER SETUP for traffic channel to the UE. The UE shall respond with a RADIO BEARER SETUP COMPLETE message. The UE sends an ALERTING message and enters state U7, call received. The SS verifies by using the status enquiry procedure that the UE has entered the correct state.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Radio Bearer Setup Procedure	DTCH, See TS34.108  cause #30, state U7
2		->	ALERTING	
3		<-	STATUS ENQUIRY	
4		->	STATUS	

## Specific message contents:

None.

#### 10.1.3.3.2.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed" shall send an ALERTING message and enter state U7.

#### 10.1.3.3.3 Incoming call / U9 mobile terminating call confirmed / termination requested by the user

##### 10.1.3.3.3.1 Definition

The call control entity of the UE being in the state, U9, the user requests for releasing of the call.

##### 10.1.3.3.3.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", upon request by the user to terminate shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

#### References

TS 24.007 clause 6.2.2, TS 24.008 clause 5.4.3.

##### 10.1.3.3.3.3 Test purpose

To verify that a CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", upon request by the user to terminate will send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

##### 10.1.3.3.3.4 Method of test

#### Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used;
- the UE supports user requested call clearing in the state U9.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U9 by using table 10.1.3/4.

#### Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U9 (by using a SETUP message not containing the signal information element). Then the user requests termination of the call, if possible. The UE sends a DISCONNECT message and enters state U11, disconnect request. The SS verifies by using the status enquiry procedure that the UE has entered the correct state.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				the UE is made to clear the call  cause #30, state U11
2		->	DISCONNECT	
3		<-	STATUS ENQUIRY	
4		->	STATUS	

Specific message contents:

None.

#### 10.1.3.3.3.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

#### 10.1.3.3.4 Incoming call / U9 mobile terminating call confirmed / DISCONNECT received

##### 10.1.3.3.4.1 Definition

The call control entity of the UE being in the state, U9, a DISCONNECT message is received by the UE.

##### 10.1.3.3.4.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", upon receipt of a DISCONNECT shall return a RELEASE message and enter the CC-state U19, "Release Request".

#### References

TS 24.008 clause 5.4.4.

##### 10.1.3.3.4.3 Test purpose

To verify that a CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", upon receipt of a DISCONNECT returns a RELEASE message and enters the CC-state U19, "Release Request".

##### 10.1.3.3.4.4 Method of test

#### Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U9 by using table 10.1.3/4.

## Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U9. The SS sends a DISCONNECT message to the UE. The UE responds by sending a RELEASE message and enters state U19, release request. The SS verifies by using the status enquiry procedure that the UE has entered the correct state.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		DISCONNECT	
2	->		RELEASE	
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause #30, state U19

## Specific message contents:

None.

### 10.1.3.3.4.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U9, "UE Terminating Call Confirmed", shall return a RELEASE message and enter the CC-state U19, "Release Request".

### 10.1.3.3.5 Incoming call / U9 mobile terminating call confirmed / RELEASE received

#### 10.1.3.3.5.1 Definition

The call control entity of the UE being in the state, U9, a RELEASE message is received by the UE.

#### 10.1.3.3.5.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", upon receipt of a RELEASE shall return a RELEASE COMPLETE and enter the CC-state U0, "Null".
- 2) On returning to the idle mode the UE shall release the MM-connection and the CC-entities relating to the seven mobile terminating transaction identifiers shall be in CC-state U0, "Null".

## References

Conformance requirement 1: TS 24.008 clause 5.4.4.

Conformance requirement 2: TS 24.008 clause 4.5.3, clause 5.5.3.2 and clause 8.3.1.

#### 10.1.3.3.5.3 Test purpose

- 1) To verify that a CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", upon receipt of a RELEASE will return a RELEASE COMPLETE and enter the CC-state U0, "Null".
- 2) To verify that the UE on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile terminating transaction identifiers are in CC-state U0, "Null".

#### 10.1.3.3.5.4 Method of test

## Related ICS/IXIT statements

- supported MT circuit switched basic services;

- MT circuit switched basic services for which immediate connect is not used.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U9 by using table 10.1.3/4.

#### Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U9. The SS sends a RELEASE message to the UE. The UE responds by sending a RELEASE COMPLETE message and enters state U0, null. The SS verifies by using the status enquiry procedure that the UE has entered the correct state with the relevant transaction identifiers.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	RELEASE	with cause "Normal, unspecified"  cause #81 (invalid TI value) repeat steps 3-4 to cover all the transaction identifiers from 000...110 the main signalling link shall be released.
2		->	RELEASE COMPLETE	
3		<-	STATUS ENQUIRY	
4		->	RELEASE COMPLETE	
5		SS		
6		<-	RRC CONNECTION RELEASE	
7		->	RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

None.

#### 10.1.3.3.5.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U9, "UE Terminating Call Confirmed", shall return a RELEASE COMPLETE message.

After step 3 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

#### 10.1.3.3.6 Incoming call / U9 mobile terminating call confirmed / lower layer failure

##### 10.1.3.3.6.1 Definition

The call control entity of the UE being in the state, U9, a lower layer failure is accomplished at the UE and consequently, communication at layer 3 level with the peer entity is terminated.

##### 10.1.3.3.6.2 Conformance requirement

- 1) A CC entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", having detected a lower layer failure shall return to idle mode, the CC entity is in state U0, "Null".

## References

TS 24.008 clause 4.5.2.3, clause 4.5.3, clause 5.5.3.2 and clause 8.3, TS 25.331 clause 8.3.1 and clause 8.5.6.

## 10.1.3.3.6.3 Test purpose

To verify that a CC entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed", having detected a lower layer failure returns to idle mode, the CC entity is in state U0, "Null".

## 10.1.3.3.6.4 Method of test

## Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

## Initial conditions

## System Simulator:

1 cell, default parameters.

## User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U9 by using table 10.1.3/4.

## Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The UE is brought to the state U9. The SS modifies the scrambling code of downlink transmission (DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to enable the UE to perform cell update procedure. The SS sends RRC CONNECTION RELEASE message as a response to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission (DL DPCH) to the original one and waits 60 s. The SS will check that the UE will not send any message during 60 s.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS modifies the scrambling code of DPCH for generating lower layer failure
2	->		CELL UPDATE	CCCH
3	<-		RRC CONNECTION RELEASE	CCCH
4		SS		SS re-modifies the scrambling code of DPCH to the original one.
5		SS		SS waits 60 s. UE shall send no message on the DCCH

## Specific message contents:

None.

## 10.1.3.3.6.5 Test requirements

After step 4 the UE shall not send any message to the SS during 60 s.

### 10.1.3.3.7 Incoming call / U9 mobile terminating call confirmed / unknown message received

#### 10.1.3.3.7.1 Definition

The call control entity of the UE being in the state, U9, an unknown message is received by the UE.

#### 10.1.3.3.7.2 Conformance requirement

- 1) A CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed" having received an unknown message from its peer entity shall return a STATUS message.

#### References

TS 24.008 clause 8.4.

#### 10.1.3.3.7.3 Test purpose

To verify that a CC-entity of the UE in CC-state U9, "Mobile Terminating Call Confirmed" having received an unknown message from its peer entity returns a STATUS message.

#### 10.1.3.3.7.4 Method of test

#### Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U9 by using table 10.1.3/4.

#### Test procedure

A MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U9. The SS sends a message with message type not defined for the protocol discriminator to the UE. The UE shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		unknown message	message type not defined for PD cause #97, state U9
2	->		STATUS	
3	<-		STATUS ENQUIRY	cause #30, state U9
4	->		STATUS	

Specific message contents:

None.

#### 10.1.3.3.7.5 Test requirements

After step 1 a CC-entity of the UE in CC-state U9, "UE Terminating Call Confirmed", shall return a STATUS message.

### 10.1.3.4 Incoming call / U7 call received

#### 10.1.3.4.1 Incoming call / U7 call received / call accepted

##### 10.1.3.4.1.1 Definition

The call control entity of the UE being in the state, U7, a user accepts the incoming call.

##### 10.1.3.4.1.2 Conformance requirement

- 1) A CC entity of a UE in CC-state U7, "Call Received", upon a user accepting the incoming call, shall send a CONNECT message to its peer entity and enter the CC-state U8, "Connect Request".

#### References

TS 24.007 clause 6.2.2, TS 24.008 clause 5.2.2.5.

##### 10.1.3.4.1.3 Test purpose

To verify that a CC entity of a UE in CC-state U7, "Call Received", upon a user accepting the incoming call, shall send a CONNECT message to its peer entity and enter the CC-state U8, "Connect Request".

##### 10.1.3.4.1.4 Method of test

#### Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U7 by using table 10.1.3/1.

#### Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U7. The user accepts the incoming call. The UE sends a CONNECT message. The SS checks by using the status enquiry procedure that the CC entity has entered state U8, connect request.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				the UE is made to accept the call by the user
2		->	CONNECT	
3		<-	STATUS ENQUIRY	
4		->	STATUS	cause #30, state U8

Specific message contents:

None.

#### 10.1.3.4.1.5 Test requirements

After step 1 a CC entity of a UE in CC-state U7, "Call Received", shall send a CONNECT message and enter the CC-state U8, "Connect Request".

#### 10.1.3.4.2 Incoming call / U7 call received / termination requested by the user

##### 10.1.3.4.2.1 Definition

The call control entity of the UE being in the state, U7, a user requests to terminate incoming call.

##### 10.1.3.4.2.2 Conformance requirement

- 1) A CC entity of a UE in CC-state U7, "Call Received", upon request by the user to terminate shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

#### References

TS 24.007 clause 6.2.2, TS 24.008 clause 5.4.3.

##### 10.1.3.4.2.3 Test purpose

To verify that a CC entity of a UE in CC-state U7, "Call Received", upon request by the user to terminate will send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

##### 10.1.3.4.2.4 Method of test

#### Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U7 by using table10.1.3/1.

## Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U7. The user initiates clearing the incoming call. The UE sends a DISCONNECT message. The SS checks by using the status enquiry procedure that the CC entity has entered state U11, disconnect request.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				the UE is made to terminate/reject the call
2		->	DISCONNECT	
3		<-	STATUS ENQUIRY	
4		->	STATUS	cause #30, state U11

## Specific message contents:

None.

### 10.1.3.4.2.5 Test requirements

After step 1 a CC entity of a UE in CC-state U7, "Call Received", shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

### 10.1.3.4.3 Incoming call / U7 call received / DISCONNECT received

#### 10.1.3.4.3.1 Definition

The call control entity of the UE being in the state, U7, a DISCONNECT message is received by the UE.

#### 10.1.3.4.3.2 Conformance requirement

- 1) A CC entity of a UE in CC-state U7, "Call Received", upon receipt of a DISCONNECT with a progress indicator indicating in-band information from network, if a DTCH was not assigned, shall return a RELEASE message and enter the CC-state U19, "Release Request".

## References

TS 24.008 clause 5.4.4.

#### 10.1.3.4.3.3 Test purpose

To verify that a CC entity of a UE in CC-state U7, "Call Received", upon receipt of a DISCONNECT with a progress indicator indicating in-band information from network, if a DTCH was not assigned, returns a RELEASE message and enters the CC-state U19, "Release Request".

#### 10.1.3.4.3.4 Method of test

## Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U7 by using table 10.1.3/1.

## Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U7. The SS sends a DISCONNECT message. The UE responds with a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity has entered state U19, release request.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	DISCONNECT	(note) cause #30, state U19
2		->	RELEASE	
3		<-	STATUS ENQUIRY	
4		->	STATUS	

## Specific message contents:

NOTE: With a progress indicator indicating in-band information; Progress Indicator, Progress Description #8.

## 10.1.3.4.3.5 Test requirements

After step 1 a CC entity of a UE in CC-state U7, "Call Received", if a DTCH was not assigned, shall return a RELEASE message and enter the CC-state U19, "Release Request".

## 10.1.3.4.4 Incoming call / U7 call received / RELEASE received

## 10.1.3.4.4.1 Definition

The call control entity of the UE being in the state, U7, a RELEASE message is received by the UE.

## 10.1.3.4.4.2 Conformance requirement

- 1) A CC entity of a UE in CC-state U7, "Call Received", upon receipt of a RELEASE shall return a RELEASE COMPLETE and enter the CC-state U0, "Null".
- 2) On returning to the idle mode the UE shall release the MM-connection and the CC-entities relating to the seven mobile terminating transaction identifiers shall be in CC-state U0, "Null".

## References

Conformance requirement 1: TS 24.008 clause 5.4.4.

Conformance requirement 2: TS 24.008 clause 4.5.3, clause 5.5.3.2 and 8.3.1.

## 10.1.3.4.4.3 Test purpose

- 1) To verify that a CC entity of a UE in CC-state U7, "Call Received", upon receipt of a RELEASE will return a RELEASE COMPLETE and enter the CC-state U0, "Null".
- 2) To verify that the UE on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile terminating transaction identifiers are in CC-state U0, "Null".

## 10.1.3.4.4.4 Method of test

## Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

## Initial conditions

## System Simulator:

1 cell, default parameters.

## User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U7 by using table 10.1.3/1.

## Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U7. The SS sends a RELEASE message. The UE responds with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered state U0, null, with the relevant transaction identifiers.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		RELEASE	with cause "Normal, unspecified"  cause #81 (invalid TI value) repeat steps 3-4 to cover all the transaction identifiers from 000...110 the main signalling link shall be released.
2	->		RELEASE COMPLETE	
3	<-		STATUS ENQUIRY	
4	->		RELEASE COMPLETE	
5		SS		
6	<-		RRC CONNECTION RELEASE	
7	->		RRC CONNECTION RELEASE COMPLETE	

## Specific message contents:

None.

## 10.1.3.4.4.5 Test requirements

After step 1 a CC entity of a UE in CC-state U7, "Call Received", shall return a RELEASE COMPLETE message.

After step 3 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

#### 10.1.3.4.5 Incoming call / U7 call received / lower layer failure

##### 10.1.3.4.5.1 Definition

The call control entity of the UE being in the state, U7, a lower layer failure is accomplished at the UE and consequently, communication at layer 3 level with the peer entity is terminated.

##### 10.1.3.4.5.2 Conformance requirement

- 1) A CC entity of a UE in CC-state U7, "Call Received", having detected a lower layer failure shall return to idle mode, the CC entity is in state U0, "Null".

#### References

TS 24.008 clause 4.5.2.3, clause 4.5.3, clause 5.5.3.2 and clause 8.3, TS 25.331 clause 8.3.1, and clause 8.5.6.

##### 10.1.3.4.5.3 Test purpose

To verify that a CC entity of a UE in CC-state U7, "Call Received", having detected a lower layer failure returns to idle mode, the CC entity is in state U0, "Null".

##### 10.1.3.4.5.4 Method of test

#### Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

#### Initial conditions

##### System Simulator:

1 cell, default parameters.

##### User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U7 by using table 10.1.3/2.

#### Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The UE is brought to the state U7. The SS modifies the scrambling code of downlink transmission(DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to enable the UE to perform cell update procedure. The SS sends RRC CONNECTION RELEASE message as a response to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission(DL DPCH) to the original one and waits 60 s. The SS will check that the UE will not send any message during 60 s.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS modifies the scrambling code of DPCH for generating lower layer failure
2	->		CELL UPDATE	CCCH
3	<-		RRC CONNECTION RELEASE	CCCH
4		SS		SS re-modifies the scrambling code of DPCH to the original one.
5		SS		SS waits 60 s. UE shall send no message on the DCCH

Specific message contents:

None.

#### 10.1.3.4.5.5 Test requirements

After step 4 the UE shall not send any message to the SS during 60 s.

#### 10.1.3.4.6 Incoming call / U7 call received / unknown message received

##### 10.1.3.4.6.1 Definition

The call control entity of the UE being in the state, U7, an unknown message is received by the UE.

##### 10.1.3.4.6.2 Conformance requirement

- 1) A CC entity of a UE in CC-state U7, "Call Received", having received an unknown message from its peer entity shall return a STATUS message.

#### References

TS 24.008 clause 8.4.

##### 10.1.3.4.6.3 Test purpose

To verify that a CC entity of a UE in CC-state U7, "Call Received", having received an unknown message from its peer entity returns a STATUS message.

##### 10.1.3.4.6.4 Method of test

#### Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U7 by using table 10.1.3/1.

## Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U7. The SS sends a message with message type not defined for the protocol discriminator to the UE. The UE shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		unknown message	message type not defined for PD
2	->		STATUS	cause #97, state U7
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause #30, state U7

## Specific message contents:

None.

### 10.1.3.4.6.5 Test requirements

After step 1 a CC entity of a UE in CC-state U7, "Call Received", shall return a STATUS message.

### 10.1.3.4.7 Incoming call / U7 call received / DTCH assignment

#### 10.1.3.4.7.1 Definition

The call control entity of the UE being in the state, U7, a radio bearer establishment procedure is performed for traffic channel.

#### 10.1.3.4.7.2 Conformance requirement

- 1) A CC entity of a UE in CC-state U7, "Call Received", when a traffic channel is allocated by the network performing the radio bearer establishment procedure, shall stay in CC-state U7.

## References

TS 25.331 clause 8.2.1, TS 24.008 clause 5.2.2.7.

#### 10.1.3.4.7.3 Test purpose

To verify that a CC entity of a UE in CC-state U7, "Call Received", when a traffic channel is allocated by the network performing the radio bearer establishment procedure, stays in CC-state U7.

#### 10.1.3.4.7.4 Method of test

## Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U7 by using table 10.1.3/1.

#### Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected basic service is telephony. If necessary, the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U7. The SS sends a RADIO BEARER SETUP for traffic channel to the UE. The UE shall respond with a RADIO BEARER SETUP COMPLETE message. The SS verifies by using the status enquiry procedure that the state of the CC entity has remained unchanged.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Radio Bearer Setup Procedure	DTCH, See TS34.108 cause #30, state U7
2		<-	STATUS ENQUIRY	
3		->	STATUS	

Specific message contents:

None.

#### 10.1.3.4.7.5 Test requirements

After step 1 the CC state U7, "Call Received", shall remain unchanged.

#### 10.1.3.4.8 Incoming call / U7 call received / RELEASE COMPLETE received

##### 10.1.3.4.8.1 Definition

The call control entity of the UE being in the state, U7, the call is cleared by a RELEASE COMPLETE message sent by the SS.

##### 10.1.3.4.8.2 Conformance requirement

- 1) A CC entity of the UE in CC-state U7, "call received", upon receipt of a RELEASE COMPLETE message with valid cause value, shall enter CC state U0, "Null".
- 2) On returning to idle mode, the CC entities relating to the seven mobile terminating transaction identifiers shall be in state U0, "Null".

#### References

Conformance requirement 1: TS 24.008 clause 5.4.2 and clause 5.4.4.

Conformance requirement 2: TS 24.008 clause 5.4.4.1.3 and 8.3.1.

##### 10.1.3.4.8.3 Test purpose

- 1) To verify that a CC entity of the UE in CC-state U7, "Call received", upon receipt of a RELEASE COMPLETE message with valid cause value, enters CC state U0, "Null".

- 2) To verify that in returning to idle mode, the CC entities relating to the seven mobile terminating transaction identifiers are in state U0, "Null".

#### 10.1.3.4.8.4 Method of test

##### Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

##### Initial conditions

###### System Simulator:

1 cell, default parameters.

###### User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U7 by using table 10.1.3/1.

##### Test procedure

An MT circuit switched basic service is selected that is supported by the UE and for which the UE does not use immediate connection; if the UE supports MT telephony without immediate connection, the selected service is telephony. If necessary, the UE is configured for that basic service. The mobile terminated call is initiated. The CC entity of the UE is brought to U7. The SS sends a RELEASE COMPLETE message to the UE. The SS checks by using the status enquiry procedure that the CC entity has entered the state U0 with all the relevant transaction identifiers.

##### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		RELEASE COMPLETE	note 1  cause #81 (invalid TI value), note 2 repeat steps 2-3 to cover all the transaction identifiers from 000...110 the main signalling link shall be released.
2	<-		STATUS ENQUIRY	
3	->		RELEASE COMPLETE	
4		SS		
5	<-		RRC CONNECTION RELEASE	
6	->		RRC CONNECTION RELEASE COMPLETE	

##### Specific message contents:

NOTE 1: With the cause value chosen arbitrarily.

NOTE 2: TI flag has the value indicating the SS as an originator of the call.

#### 10.1.3.4.8.5 Test requirements

After step 2 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

### 10.1.3.5 Incoming call / U8 connect request

#### 10.1.3.5.1 Incoming call / U8 connect request / CONNECT acknowledged

##### 10.1.3.5.1.1 Definition

The call control entity of the UE being in the state, U8, a CONNECT ACKNOWLEDGE message is received by the UE.

##### 10.1.3.5.1.2 Conformance requirement

A CC entity of a UE in CC-state U8, "Connect Request", upon receipt of CONNECT ACKNOWLEDGE shall enter the CC-state U10, "Call Active".

#### References

TS 24.008 clause 5.2.2.6.

##### 10.1.3.5.1.3 Test purpose

To verify that a CC entity of a UE in CC-state U8, "Connect Request", upon receipt of CONNECT ACKNOWLEDGE shall enter the CC-state U10, "Call Active".

##### 10.1.3.5.1.4 Method of test

#### Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U8 by using table 10.1.3/2.

#### Test procedure

An MT circuit switched basic service is selected that is supported by the UE; if the UE supports MT telephony, the selected basic service is telephony. If necessary the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U8 (if the UE uses immediate connection for the selected basic service then p = Y, otherwise p = N). The SS sends a CONNECT ACKNOWLEDGE message. The SS checks by using the status enquiry procedure that the CC entity of the UE has entered state U10, active.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
A1			Radio Bearer Setup Procedure	p = Y, See TS34.108
2	<-		CONNECT ACKNOWLEDGE	
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause #30, state U10

Specific message contents:

None.

#### 10.1.3.5.1.5 Test requirements

After step 2 a CC entity of a UE in CC-state U8, "Connect Request", shall enter the CC-state U10, "Call Active".

#### 10.1.3.5.2 Incoming call / U8 connect request / timer T313 time-out

##### 10.1.3.5.2.1 Definition

The call control entity of the UE being in the state, U8, if no response is then received from the SS, timer T313 expires at the UE side.

##### 10.1.3.5.2.2 Conformance requirement

A CC entity of a UE in CC-state U8, "Connect Request", having waited for a reasonable length of time (e.g. expiry of timer T313) without receiving the appropriate protocol message to complete the incoming call, shall initiate the clearing of that incoming call by sending the CC message DISCONNECT and enter the CC-state U11, "Disconnect Request".

If an UE disconnects too early then, in the case of very late assignment of a traffic channel, systematic waste of radio resources may occur.

#### References

TS 24.008 clause 5.2.2.6 and clause 5.4.3.

##### 10.1.3.5.2.3 Test purpose

To verify that a CC entity of a UE in CC-state U8, "Connect Request", having waited for a reasonable length of time (e.g. expiry of timer T313) without receiving the appropriate protocol message to complete the incoming call, shall initiate the clearing of that incoming call by sending the CC message DISCONNECT and enter the CC-state U11, "Disconnect Request".

##### 10.1.3.5.2.4 Method of test

#### Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U8 by using table 10.1.3/2.

#### Test procedure

An MT circuit switched basic service is selected that is supported by the UE; if the UE supports MT telephony, the selected basic service is telephony. If necessary the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U8 (if the UE uses immediate connection for the selected basic service then p = Y, otherwise p = N). The T313 expires at the UE and the UE sends a DISCONNECT

message and enters state U11, disconnect request. The SS checks by using the status enquiry procedure that the UE has entered the correct state.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
A1			Radio Bearer Setup Procedure	p = Y, See TS34.108
2		->	DISCONNECT	Shall not be sent before 15 s after entry into state U8. But, shall be sent before 1,1 * T313 after entry into state U8.
3		<-	STATUS ENQUIRY	
4		->	STATUS	cause #30, state U11

Specific message contents:

None.

#### 10.1.3.5.2.5 Test requirements

Upon expiry of timer T313 without receiving the appropriate protocol message to complete the incoming call a CC entity of a UE in CC-state U8, "Connect Request", shall initiate the clearing of that incoming call by sending a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

#### 10.1.3.5.3 Incoming call / U8 connect request / termination requested by the user

##### 10.1.3.5.3.1 Definition

The call control entity of the UE being in the state, U8, the user requests for releasing of the call.

##### 10.1.3.5.3.2 Conformance requirement

- 1) A CC entity of a UE in CC-state U8, "Connect Request", upon request by the user to terminate shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

#### References

TS 24.007 clause 6.2.2, TS 24.008 clause 5.4.3.

##### 10.1.3.5.3.3 Test purpose

To verify that a CC entity of a UE in CC-state U8, "Connect Request", upon request by the user to terminate will send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

##### 10.1.3.5.3.4 Method of test

#### Related ICS/IXIT statements

- supported MT circuit switched basic services;
- MT circuit switched basic services for which immediate connect is not used.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U8 by using table 10.1.3/2.

### Test procedure

An MT circuit switched basic service is selected that is supported by the UE; if the UE supports MT telephony, the selected basic service is telephony. If necessary the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U8 (if the UE uses immediate connection for the selected basic service then p = Y, otherwise p = N). Then the user requests termination of the call. The UE sends a DISCONNECT message and enters state U11, disconnect request. The SS verifies by using the status enquiry procedure that the UE has entered the correct state.

### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
A1			Radio Bearer Setup Procedure	p = Y, See TS34.108
2				the user requests to clear the call
3		->	DISCONNECT	
4		<-	STATUS ENQUIRY	
5		->	STATUS	cause #30, state U11

Specific message contents:

None.

#### 10.1.3.5.3.5 Test requirements

After step 2 a CC entity of a UE in CC-state U8, "Connect Request", shall send a DISCONNECT message and enter the CC-state U11, "Disconnect Request".

#### 10.1.3.5.4 Incoming call / U8 connect request / DISCONNECT received with in-band information

##### 10.1.3.5.4.1 Definition

The call control entity of the UE being in the state, U8, a DISCONNECT message indicating availability of in band information is received by the UE.

##### 10.1.3.5.4.2 Conformance requirement

A CC entity of a UE in CC-state U8, "Connect Request", upon receipt of a DISCONNECT with progress indicator #8 shall enter CC-state U12, if the traffic channel is in speech mode. If the DTCH is not in speech mode, the UE shall send a RELEASE message and enter CC-state U19.

### References

TS 24.008 clause 5.4.4 and clause 5.5.1.

#### 10.1.3.5.4.3 Test purpose

To verify that a CC entity of a UE in CC-state U8, "Connect Request", upon receipt of a DISCONNECT with progress indicator #8 enters CC-state U12, if the traffic channel is in speech mode, and that the UE sends a RELEASE message and enters CC-state U19 if the DTCH is not in speech mode.

## 10.1.3.5.4.4 Method of test

## Related ICS/IXIT statements

- supported MT circuit switched basic services.

## Initial conditions

## System Simulator:

1 cell, default parameters.

## User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U8 by using table 10.1.3/4.

## Test procedure

An MT circuit switched basic service is selected that is supported by the UE; if the UE supports MT telephony, the selected basic service is telephony. If necessary the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U8. The SS sends a DISCONNECT message containing indication of in-band information availability to the UE. If channel mode is speech, the UE enters state U12, disconnect indication. If channel mode is not speech, the UE sends a RELEASE message and enters state U19, release request.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		DISCONNECT	(note)
A2 A3	<- ->		STATUS ENQUIRY STATUS	DTCH in speech mode: cause #30, state U12
B2 B3 B4	-> <- ->		RELEASE STATUS ENQUIRY STATUS	DTCH is not in speech mode: cause #30, state U19

## Specific message contents:

NOTE: With a progress indicator indicating in-band information; Progress Indicator, Progress description #8.

## 10.1.3.5.4.5 Test requirements

After step 1 a CC entity of a UE in CC-state U8, "Connect Request", shall enter CC-state U12, if the traffic channel is in speech mode. If the DTCH is not in speech mode, the UE shall send a RELEASE message and enter CC-state U19.

## 10.1.3.5.5 Incoming call / U8 connect request / DISCONNECT received without in-band information

## 10.1.3.5.5.1 Definition

The call control entity of the UE being in the state, U8, a DISCONNECT message is received by the UE. The DISCONNECT message does not contain indication of in-band information availability.

## 10.1.3.5.5.2 Conformance requirement

- 1) A CC entity of a UE in CC-state U8, "Connect Request", upon receipt of a DISCONNECT without progress indicator, shall return a RELEASE message and enter the CC-state U19, "Release Request".

## References

TS 24.008 clause 5.4.4 and clause 5.4.4.1.2.

## 10.1.3.5.5.3 Test purpose

To verify that a CC entity of a UE in CC-state U8, "Connect Request", upon receipt of a DISCONNECT without progress indicator, returns a RELEASE message and enters the CC-state U19, "Release Request".

## 10.1.3.5.5.4 Method of test

## Related ICS/IXIT statements

- supported MT circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U8 by using table 10.1.3/4.

## Test procedure

An MT circuit switched basic service is selected that is supported by the UE; if the UE supports MT telephony, the selected basic service is telephony. If necessary the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U8. The SS sends a DISCONNECT message not containing indication of in-band information availability to the UE. The UE shall respond with a RELEASE message. The SS checks by using the status enquiry procedure that the CC entity of the UE has entered the state U19, release request.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		DISCONNECT	(note)
2	->		RELEASE	
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause #30, state U19

## Specific message contents:

NOTE: Without a progress indicator indicating in-band information.

## 10.1.3.5.5.5 Test requirements

After step 1 a CC entity of a UE in CC-state U8, "Connect Request", shall return a RELEASE message and enter the CC-state U19, "Release Request".

## 10.1.3.5.6 Incoming call / U8 connect request / RELEASE received

## 10.1.3.5.6.1 Definition

The call control entity of the UE being in the state, U8, a RELEASE message is received by the UE.

## 10.1.3.5.6.2 Conformance requirement

- 1) A CC entity of a UE in CC-state U8, "Connect Request", upon receipt of a RELEASE shall return a RELEASE COMPLETE and enter the CC-state U0, "Null".
- 2) On returning to the idle mode the UE shall release the MM-connection and the CC-entities relating to the seven mobile terminating transaction identifiers shall be in CC-state U0, "Null".

## References

Conformance requirement 1: TS 24.008 clause 5.4.4.

Conformance requirement 2: TS 24.008 clause 4.5.3 and clause 5.5.3.2 and 8.3.1.

## 10.1.3.5.6.3 Test purpose

- 1) To verify that a CC entity of a UE in CC-state U8, "Connect Request", upon receipt of a RELEASE will return a RELEASE COMPLETE and enter the CC-state U0, "Null".
- 2) To verify that the UE on returning to the idle mode releases the MM-connection and that the CC-entities relating to the seven mobile terminating transaction identifiers are in CC-state U0, "Null".

## 10.1.3.5.6.4 Method of test

## Related ICS/IXIT statements

- supported MT circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U8 by using table 10.1.3/1.

## Test procedure

An MT circuit switched basic service is selected that is supported by the UE; if the UE supports MT telephony, the selected basic service is telephony. If necessary the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U8. The SS sends a RELEASE message. The UE responds with a RELEASE COMPLETE message. The SS checks by using the status enquiry procedure that the CC entity has entered state U0, null, with the relevant transaction identifiers.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		RELEASE	with cause "Normal, unspecified"
2	->		RELEASE COMPLETE	
3	<-		STATUS ENQUIRY	
4	->		RELEASE COMPLETE	
5		SS		
6	<-		RRC CONNECTION RELEASE	cause #81 (invalid TI value) repeat steps 3-4 to cover all the transaction identifiers from 000...110 the main signalling link shall be released.
7	->		RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

None.

#### 10.1.3.5.6.5 Test requirements

After step 1 a CC entity of a UE in CC-state U8, "Connect Request", shall return a RELEASE COMPLETE message.

After step 3 CC entities relating to all mobile originating transaction identifiers shall send RELEASE COMPLETE messages with cause value #81 (invalid TI value).

#### 10.1.3.5.7 Incoming call / U8 connect request / lower layer failure

##### 10.1.3.5.7.1 Definition

The call control entity of the UE being in the state, U8, a lower layer failure is accomplished at the UE and consequently, communication at layer 3 level with the peer entity is terminated.

##### 10.1.3.5.7.2 Conformance requirement

- 1) A CC entity of a UE in CC-state U8, "Connect Request", having detected a lower layer failure shall return to idle mode, the CC entity is in state U0, "Null".

#### References

TS 24.008 clause 4.5.2.3, clause 4.5.3 and clause 5.5.3.2, TS 25.331 clause 8.3.1 and clause 8.5.6.

##### 10.1.3.5.7.3 Test purpose

To verify that a CC entity of a UE in CC-state U8, "Connect Request", having detected a lower layer failure returns to idle mode, the CC entity is in state U0, "Null".

##### 10.1.3.5.7.4 Method of test

#### Related ICS/IXIT statements

- supported MT circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U8 by using table 10.1.3/1.

#### Test procedure

An MT circuit switched basic service is selected that is supported by the UE; if the UE supports MT telephony, the selected basic service is telephony. If necessary the UE is configured for that basic service. Then a mobile terminated call is initiated. The UE is brought to the state U8. The SS modifies the scrambling code of downlink transmission (DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to enable the UE to perform cell update procedure. The SS sends RRC CONNECTION RELEASE message as a response to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission (DL DPCH) to the original one and waits 60 s. The SS will check that the UE will not send any message during 60 s.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		SS modifies the scrambling code of DPCH for generating lower layer failure
2	->		CELL UPDATE	CCCH
3	<-		RRC CONNECTION RELEASE	CCCH
4		SS		SS re-modifies the scrambling code of DPCH to the original one.
5		SS		SS waits 60 s. UE shall send no message on the DCCH

Specific message contents:

None.

#### 10.1.3.5.7.5 Test requirements

After step 4 the UE shall not send any message to the SS during 60 s.

#### 10.1.3.5.8 Incoming call / U8 connect request / DTCH assignment

##### 10.1.3.5.8.1 Definition

The call control entity of the UE being in the state, U8, a radio bearer establishment procedure is performed for traffic channel.

##### 10.1.3.5.8.2 Conformance requirement

- 1) A CC entity of a UE in CC-state U8, "Connect Request", when a traffic channel is allocated by the network performing the radio bearer establishment procedure, shall stay in the CC-state U8.

#### References

TS 25.331 clause 8.2.1, TS 24.008 clause 5.2.2.7.

##### 10.1.3.5.8.3 Test purpose

To verify that a CC entity of a UE in CC-state U8, "Connect Request", when a traffic channel is allocated by the network performing the radio bearer establishment procedure, stays in the CC-state U8.

##### 10.1.3.5.8.4 Method of test

#### Related ICS/IXIT statements

- supported MT circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U8 by using table 10.1.3/1.

## Test procedure

An MT circuit switched basic service is selected that is supported by the UE; if the UE supports MT telephony, the selected basic service is telephony. If necessary the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U8. The SS sends a RADIO BEARER SETUP for traffic channel to the UE. The UE shall respond with a RADIO BEARER SETUP COMPLETE message. The SS verifies by using the status enquiry procedure that the state of the CC entity has remained unchanged.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Radio Bearer Setup Procedure	DTCH, See TS34.108
2		<-	STATUS ENQUIRY	
3		->	STATUS	cause #30, state U8

## Specific message contents:

None.

### 10.1.3.5.8.5 Test requirements

After step 1 the CC-state U8, "Connect Request", shall remain unchanged.

### 10.1.3.5.9 Incoming call / U8 connect request / unknown message received

#### 10.1.3.5.9.1 Definition

The call control entity of the UE being in the state, U8, an unknown message is received by the UE.

#### 10.1.3.5.9.2 Conformance requirement

- 1) A CC entity of a UE in CC-state U8, "Connect Request", having received an unknown message from its peer entity shall return a STATUS message.

## References

TS 24.008 clause 8.4.

#### 10.1.3.5.9.3 Test purpose

To verify that a CC entity of a UE in CC-state U8, "Connect Request", having received an unknown message from its peer entity returns a STATUS message.

#### 10.1.3.5.9.4 Method of test

## Related ICS/IXIT statements

- supported MT circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U8 by using table 10.1.3/1.

### Test procedure

An MT circuit switched basic service is selected that is supported by the UE; if the UE supports MT telephony, the selected basic service is telephony. If necessary the UE is configured for that basic service. Then a mobile terminated call is initiated. The CC entity of the UE is brought to the state U8. The SS sends a message with message type not defined for the protocol discriminator to the UE. The UE shall respond with a STATUS message, and finally the SS checks by using the status enquiry procedure that the state of the CC entity has remained unchanged.

### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		unknown message	message type not defined for PD
2	->		STATUS	cause #97, state U8
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause #30, state U8

Specific message contents:

None.

#### 10.1.3.5.9.5 Test requirements

After step 1 a CC entity of a UE in CC-state U8, "Connect Request", shall return a STATUS message.

## 10.1.4 In call functions

### 10.1.4.1 In-call functions / DTMF information transfer

#### 10.1.4.1.1 In-call functions / DTMF information transfer / basic procedures

##### 10.1.4.1.1.1 Definition

Dual Tone Multi Frequency (DTMF) is an inband one out of four plus one out of four signalling system primarily used from terminal instruments in telecommunication networks.

##### 10.1.4.1.1.2 Conformance requirement

- 1) An UE supporting the Mobile originating DTMF protocol control procedure, having a CC entity for speech in state U10, "Active": when made to send a DTMF tone, shall send a START DTMF message on the correct DCCH.
- 2) An UE supporting the Mobile originating DTMF protocol control procedure, having a CC entity for speech in state U10, "Active": when made to send a DTMF tone (the corresponding IA5 character being selected from among the ones supported), shall send a START DTMF message specifying the correct IA5 character in the "keypad information" field of the keypad facility information element.

### References

TS 24.008 clause 5.5.7.

##### 10.1.4.1.1.3 Test purpose

- 1) To verify that an UE supporting the Mobile originating DTMF protocol control procedure, having a CC entity for speech in state U10, "Active": when made to send a DTMF tone, sends a START DTMF message on the correct DCCH.

- 2) To verify that an UE supporting the Mobile originating DTMF protocol control procedure, having a CC entity for speech in state U10, "Active": when made to send a DTMF tone (the corresponding IA5 character being selected from among the ones supported), sends a START DTMF message specifying the correct IA5 character in the "keypad information" field of the keypad facility information element.

#### 10.1.4.1.1.4 Method of test

##### Related ICS/IXIT statements

- supported teleservices;
- supported character set (e.g. 0-9, #, \*, A, B, C, D);
- if and how DTMF tone is indicated to the user.

##### Initial conditions

###### System Simulator:

1 cell, default parameters.

###### User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U10 "Active" for speech by using Generic call setup procedure for mobile originating circuit switched call defined in TS 34.108.

##### Test procedure

The UE being in the call active state, a user causes a DTMF tone to be generated e.g. by depression of a key in the UE. A DTMF digit corresponding to the digit indicated by the user is sent in a START DTMF message by the UE. The SS will return a START DTMF ACKNOWLEDGE message to the UE. This acknowledgement may be used in the UE to generate an indication as a feedback for a successful transmission. Then the user indicates that the DTMF sending should cease e.g. by releasing the key. The UE will send a STOP DTMF message to the network which is acknowledged with STOP DTMF ACKNOWLEDGE by the SS.

The sequence described above is repeated for each of the applicable characters 0-9, #, \*, A, B, C, and D.

Then a case of rejecting a DTMF tone is tested and the state of the UE is verified.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		Request the user to cause a DTMF tone to be generated the SS will verify that the transmitted information corresponds to the digit pressed possible indication of a DTMF tone depending the ICS/IXIT statements  cause #30, state U10  the DTMF tone indication shall be stopped the steps 1-6 shall be repeated for each of the applicable characters 0-9, #, *, A, B, C, D.  cause #30, state U10 Request the user to cause a DTMF tone to be generated.  cause #30, state U10
	->		START DTMF	
2	<-		START DTMF ACKNOWLEDGE	
3	<-		STATUS ENQUIRY	
4	->		STATUS	
5	->		STOP DTMF	
6	<-		STOP DTMF ACKNOWLEDGE	
7				
8	<-		STATUS ENQUIRY	
9	->		STATUS	
10		SS		
11	->		START DTMF	
12	<-		START DTMF REJECT	
13	<-		STATUS ENQUIRY	
14	->		STATUS	

Specific message contents:

None.

#### 10.1.4.1.1.5 Test requirements

Upon a user making to send a DTMF tone a CC entity for speech in the CC state U10, "Active", shall send a START DTMF message on the DCCH to SS.

The SS will verify that the transmitted information corresponds to the digit pressed in the UE.

After step 7 (successful DTMF transmission) the CC-state U10, "Active", shall remain unchanged.

After step 11 (unsuccessful DTMF transmission) the CC-state U10, "Active", shall remain unchanged.

#### 10.1.4.2 In-call functions / user notification

User notification procedure allows the network to notify a UE of any call-related event during the "active" state of a call. It also may allow a UE to notify the remote user of any appropriate call-related event during the "active" state of a call by sending a NOTIFY message containing a notification indicator to the network. No state change occurs at any of the interface sides during this procedure.

##### 10.1.4.2.1 In-call functions / User notification / UE terminated

###### 10.1.4.2.1.1 Definition

This is a case for testing user notification procedure terminated by the user equipment.

###### 10.1.4.2.1.2 Conformance requirement

- 1) A CC entity of a UE in CC-state U10, "active", upon receiving of a NOTIFY message shall remain in the active state.

## References

TS 24.008 clause 5.3.1.

## 10.1.4.2.1.3 Test purpose

To verify that a CC entity of a UE in CC-state U10, "active", upon receiving of a NOTIFY message remains in the active state.

## 10.1.4.2.1.4 Method of test

## Related ICS/IXIT statements

- supported circuit switched basic services.

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U10 "Active" by using Generic call setup procedure for mobile originating circuit switched calls defined in TS 34.108.

## Test procedure

The UE being in the call active state, the SS will send a NOTIFY message to the UE. The state of the UE is checked after that.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		NOTIFY	
2	<-		STATUS ENQUIRY	
3	->		STATUS	cause #30, state U10

## Specific message contents:

None.

## 10.1.4.2.1.5 Test requirements

After step 1 a CC entity of the UE in the CC-state U10, "active", shall remain in the active state.

## 10.1.4.3 In-call functions / channel changes

The two following test cases are for testing some elementary radio resource level procedures during an active state of a call to ensure call maintenance also during Hard handover.

10.1.4.3.1 In-call functions / channel changes / a successful channel change in active state/  
Hard handover

## 10.1.4.3.1.1 Definition

This is a case to test a change of the frequency of a physical channel during active state of a call.

## 10.1.4.3.1.2 Conformance requirement

- 1) The UE being in the call active state after having successful completed a physical channel reconfiguration, shall remain in the call active state.

## References

TS 24.008 clause 5.3.4.3.2, TS 25.331 clause 8.3.5.

## 10.1.4.3.1.3 Test purpose

To verify that the UE being in the call active state after having successful completed a physical channel reconfiguration remains in the call active state.

## 10.1.4.3.1.4 Method of test

## Related ICS/IXIT statements

- supported circuit switched basic services;

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U10 "Active" by using Generic call setup procedure for mobile originating circuit switched calls defined in TS 34.108.

## Test procedure

The UE being in the call active state, the SS initiated physical channel reconfiguration procedure causing an intracell change of channel by sending a PHYSICAL CHANNEL RECONFIGURATION message to the UE. The UE performs physical channel reconfiguration procedure and after the main signalling link is successfully established, the UE returns a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on the uplink DCCH using AM RLC. The state of the UE is then checked.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<-		PHYSICAL CHANNEL RECONFIGURATION	
2	->		PHYSICAL CHANNEL RECONFIGURATION COMPLETE	
3	<-		STATUS ENQUIRY	
4	->		STATUS	cause #30, state U10

## Specific message contents:

None.

## 10.1.4.3.1.5 Test requirements

The UE being in the call active state after having successful completed a physical channel reconfiguration, shall remain in the call active state.

### 10.1.4.3.2 In-call functions / channel changes / an unsuccessful channel change in active mode/Hard handover

#### 10.1.4.3.2.1 Definition

This is a case to test an unsuccessful change of the frequency of a physical channel during active state of a call.

#### 10.1.4.3.2.2 Conformance requirement

- 1) The UE, when returning to the old channel after physical channel reconfiguration failure, shall remain in the call active state.

#### References

TS 24.008 clause 5.3.4.3.

#### 10.1.4.3.2.3 Test purpose

To verify that the UE, when returning to the old channel after physical channel reconfiguration failure, will remain in the call active state.

#### 10.1.4.3.2.4 Method of test

#### Related ICS/IXIT statements

- supported circuit switched basic services.

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

The UE is brought into the state U10 "Active" by using Generic call setup procedure for mobile originating circuit switched calls defined in TS 34.108.

#### Test procedure

The SS sends a PHYSICAL CHANNEL RECONFIGURATION message, but does not activate the assigned physical channel. The UE shall attempt try to activate the new channel (this is not verified) and shall then reactivate the "old" channel. The UE shall send a PHYSICAL CHANNEL RECONFIGURATION FAILURE message on the DCCH using AM RLC and shall set the cause value in IE "failure cause" to "physical channel failure". The state of the UE is then checked.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<-	PHYSICAL CHANNEL RECONFIGURATION	The UE attempts and fails to re-configure the physical channel.
2		->	PHYSICAL CHANNEL RECONFIGURATION FAILURE	NOTE
3		<-	STATUS ENQUIRY	
4		->	STATUS	cause #30, state U10

Specific message contents:

NOTE: With the cause value "physical channel failure".

#### 10.1.4.3.2.5 Test requirements

The UE being in the call active state after physical channel reconfiguration failure, shall remain in the call active state.

#### 10.1.4.4 In-call functions / UE terminated in-call modification

##### 10.1.4.4.1 In-call functions / UE terminated in-call modification / modify when new mode is not supported

This test is not applicable for R99.

#### 10.1.4.5 In-call functions / UE originated in-call modification

##### 10.1.4.5.1 In-call functions / UE originated in-call modification / a successful case of modifying

This test is not applicable for R99.

##### 10.1.4.5.2 In-call functions / UE originated in-call modification / modify rejected

This test is not applicable for R99.

##### 10.1.4.5.3 In-call functions / UE originated in-call modification / an abnormal case of acceptance

This test is not applicable for R99.

##### 10.1.4.5.4 In-call functions / UE originated in-call modification / an abnormal case of rejection

This test is not applicable for R99.

##### 10.1.4.5.5 In-call functions / UE originated in-call modification / time-out of timer T323

This test is not applicable for R99.

##### 10.1.4.5.6 In-call functions / UE originated in-call modification / a successful channel change in state mobile originating modify

This test is not applicable for R99.

##### 10.1.4.5.7 In-call functions / UE originated in-call modification / an unsuccessful channel change in state mobile originating modify

This test is not applicable for R99.

##### 10.1.4.5.8 In-call functions / UE originated in-call modification / unknown message received

This test is not applicable for R99.

##### 10.1.4.5.9 In-call functions / UE originated in-call modification / a release complete received

This test is not applicable for R99.

## 10.2 Call Re-establishment

### 10.2.1 Call Re-establishment/call present, re-establishment allowed

#### 10.2.1.1 Definition

This is to test a successful case of a call re-establishment procedure.

#### 10.2.1.2 Conformance requirement

- 1) If the call is in the "active" state or "mobile originating modify" state, the indication from MM that re-establishment is possible shall cause call control to request re-establishment from the MM-connection, suspend any further message to be sent and await the completion of the re-establishment procedure.
- 2) When the call control entity is notified that the MM-connection is re-established, it shall then resume the transmission of possibly suspended messages and resume user data exchange when an appropriate channel is available.

#### References

- 1) TS 24.008 clauses 4.5.1.6 and 5.5.4.2, TS 25.331 clause 8.3.1 and clause 8.5.6.
- 2) TS 24.008 clauses 4.5.1.6 and 5.5.4.3.

#### 10.2.1.3 Test purpose

The purpose of this test is to verify that the UE can correctly perform a call re-establishment procedure.

#### 10.2.1.4 Method of test

#### Related ICS/IXIT statements

- supported teleservices.

#### Initial conditions

System Simulator:

1 cell, default parameters

User Equipment:

The UE is in MM-state "idle, updated" with valid TMSI and CKSN.

#### Test procedure

The UE is brought into the state U10 "Active" by using Generic call setup procedure for mobile originating circuit switched calls defined in TS34.108. The SS modifies the scrambling code of downlink transmission (DL DPCH) to generate a lower layer failure at the UE. The SS waits long enough to enable the UE to perform cell update procedure. The SS sends RRC CONNECTION RELEASE as a response message to the CELL UPDATE message from the UE. The SS re-modifies the scrambling code of downlink transmission (DL DPCH) to the original one. The UE shall re-establish the call using CM RE-ESTABLISHMENT message. The SS performs security mode control and radio bearer establishment procedures. The UE shall through-connect the appropriate bearer channel. Then, the call is cleared by the SS.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				<p>The UE is brought into the state U10 "Active" by using Generic call setup procedure for mobile originating circuit switched calls defined in TS34.108 (the appropriate bearer channel is through connected in both directions in DTCH)</p> <p>SS modifies the scrambling code of DPCH for generating lower layer failure. CCCH</p> <p>SS re-modifies the scrambling code of DPCH to the original one.</p> <p>note specific message contents</p> <p>See TS34.108</p> <p>The appropriate bearer channel is through connected in both directions. with cause value "Normal"</p>
2		SS		
3		->	CELL UPDATE	
4		<-	RRC CONNECTION RELEASE	
5		SS		
6		->	RRC CONNECTION REQUEST	
7		<-	RRC CONNECTION SETUP	
8		->	RRC CONNECTION SETUP COMPLETE	
9		->	CM REESTABLISHMENT REQUEST	
10		<-	SECURITY MODE COMMAND	
11		->	SECURITY MODE COMPLETE	
12			Radio Bearer Setup Procedure	
13		UE		
14		<-	DISCONNECT	
15		->	RELEASE	
16		<-	RELEASE COMPLETE	
17		<-	RRC CONNECTION RELEASE	
18		->	RRC CONNECTION RELEASE COMPLETE	

Specific message contents:

CM RE-ESTABLISHMENT REQUEST message contains Ciphering key sequence number IE with the value which the UE was allocated in .

#### 10.2.1.5 Test requirements

After step 2 a CC entity of the UE in the "active" state, shall suspend any further message to be sent and await the completion of the re-establishment procedure.

After step 12 the UE resume user data exchange when an appropriate channel is available.

## 10.3 User to user signalling

### 10.3.1 Definition

The "user to user" information element is used to convey information between the mobile user and a remote ISDN user.

NOTE: There is no test for an UE originating call including a "user-user" information element since it is not a mandatory UE feature.

### 10.3.2 Conformance requirement

The inclusion of the "user-user" information element in downlink call control messages shall cause no adverse effects on the operation of the UE.

### References

TS 24.008 clauses 5.2.2, 9.3.7, 9.3.23.1 and 10.5.4.25.

### 10.3.3 Purpose of the test

The purpose of this test is to verify that inclusion of the "user-user" information element in either of the down link messages, SETUP or DISCONNECT causes no adverse effects on the operation of the UE.

### 10.3.4 Method of test

#### Related ICS/IXIT statement(s)

- Supported MT circuit switched basic services.
- Support of user-user information element, and details of suitable codings.

#### Initial conditions.

##### System Simulator:

The SS simulates 1 cell, with default parameters.

##### User Equipment:

The UE is in MM-state "idle updated", with a valid TMSI and CKSN.

#### Test procedure

The SS attempts to set up a mobile terminated call, with one of the supported circuit switched basic services which has been arbitrarily chosen, the generic call set up procedures for mobile terminating circuit switched calls,(either speech or data) as specified in TS 34.108 clause 7. The default SETUP message contents are modified to include the user-user Information Element. The UE shall not respond adversely to the inclusion of the user-user information element.

After 30 s the SS sends a DISCONNECT message, again the UE shall not respond adversely to the inclusion of the user-user information element, but shall continue to clear down the call normally.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1				Generic Call Setup procedure for mobile terminating circuit switched calls defined in TS 34.108, depending on choice of Bearer Capability. The SETUP message contains the user-user IE, see Specific message contents.
2				The SS waits 30 s.
3		<-	DISCONNECT	Message contains the user-user IE, see Specific message contents
4		->	RELEASE	
5		<-	RELEASE COMPLETE	
6		<-	RRC CONNECTION RELEASE	
7		->	RRC CONNECTION RELEASE COMPLETE	

#### Specific message contents:

SETUP message contains user-user IE with the string coded in IA5 characters: for example "Call Setup".

DISCONNECT message contains user-user IE with the string coded in IA5 characters: for example "Call Disconnect". (The codings above are for example only. For the case of an UE which supports "user-user" signalling it may be necessary to add meaning to the data fields, see ICS/IXIT statement(s).)

**NOTE:** The codings above are for example only. For the case of an UE which supports "user-user" signalling it may be necessary to add meaning to the data fields, see ICS/IXIT statement(s).

### 10.3.5 Test requirements

The inclusion of the "user-user" information element in downlink call control messages shall cause no adverse effects on the operation of the UE.

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# 11 Session Management Procedures

## 11.1 PDP context activation

### 11.1.1 Initiated by the UE

#### 11.1.1.1 Attach initiated by context activation/QoS Offered by Network is the QoS Requested

##### 11.1.1.1.1 Definition

##### 11.1.1.1.2 Conformance requirement

SM procedures for identified access can only be performed if a GMM context has been established between the MS and the network. If no GMM context has been established, the MM sublayer has to initiate the establishment of a GMM context by use of the GMM procedures as described in chapter 4, 3GPP TS 24.008. After GMM context establishment, SM uses services offered by GMM (see 3GPP TS 24.007). Ongoing SM procedures are suspended during GMM procedure execution.

In UMTS only, integrity protected signalling (see 3GPP TS 24.008 clause 4.1.1.1.1) and in general, see 3GPP TS 33.102) is mandatory. In UMTS only, all protocols shall use integrity protected signalling. Integrity protection of all SM signalling messages is the responsibility of lower layers. It is the network which activates integrity protection. This is done using the security mode control procedure (TS 25.331).

In order to request a PDP context activation, the UE sends an ACTIVATE PDP CONTEXT REQUEST message to the network, enters the state PDP-ACTIVE-PENDING and starts timer T3380. The message contains the selected NSAPI, PDP type, requested QoS and, if the UE requests a static address, the PDP address.

Upon receipt of an ACTIVATE PDP CONTEXT REQUEST message, the network selects a radio priority level based on the QoS negotiated and may reply with an ACTIVATE PDP CONTEXT ACCEPT message. Upon receipt of the message ACTIVATE PDP CONTEXT ACCEPT the UE shall stop timer T3380, shall enter the state PDP-ACTIVE.

If the QoS offered by the network is the same as the QoS requested by the UE, the UE shall accept the negotiated QoS.

In UMTS, both the network and the UE shall store the LLC SAPI and the radio priority in the PDP context. If a UMTS to GSM system change is performed, the new SGSN shall initiate establishment of the logical link using the negotiated QoS profile, the negotiated LLC SAPI, and selected radio priority level stored in the PDP context as in a GSM to GSM Routing Area Update.

A UE, which is capable of operating in both GSM and UMTS, shall use a valid LLC SAPI, while a UE which is capable of operating only in UMTS shall indicate the LLC SAPI value as "LLC SAPI not assigned" in order to avoid unnecessary value range checking and any other possible confusion in the network.

NOTE 1: The radio priority level and the LLC SAPI parameters, though not used in UMTS, shall be included in the messages, in order to support handover between UMTS and GSM networks.

#### Reference

3GPP TS 24.008 clauses 6.1.1 and 6.1.3.1.1.

##### 11.1.1.1.3 Test purpose

To check that the UE initiates a PS attach, if one is not already active, when PDP context activation is requested.

To test the behaviour of the UE when SS responds to the PDP context activation request with the requested QoS.



Expected sequence

Step	Direction		Message	Comments
	UE	SS		
0		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Detach".
1	→		DETACH REQUEST	Only sent if the UE attaches at power-up, if not go to step 3. Detach is performed by the UE using MMI or AT Commands
1a		SS		The SS starts integrity protection.
2	←		DETACH ACCEPT	SS sends Detach Accept message.
2a		SS		The SS releases the RRC connection.
3		UE		Initiate a context activation
3a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
4	→		ATTACH REQUEST	Request attach with Follow-on request pending
4a		SS		The SS starts ciphering and integrity protection.
5	←		ATTACH ACCEPT	Accept attach Negotiated Ready timer value IE should not be included
6	→		ACTIVATE PDP CONTEXT REQUEST	Force to standby indicator set Request a PDP context activation (with static PDP address)
6a		SS		The SS establishes the RAB.
7	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context activation
8		SS		Wait for T3380 seconds to ensure no further activate request messages come from the UE
9	←		MODIFY PDP CONTEXT REQUEST (NETWORK TO UE DIRECTION)	SS sends a modify request to UE for the activated context
10	→		MODIFY PDP CONTEXT ACCEPT (UE TO NETWORK DIRECTION)	UE accepts the modification request from the SS to show context is activated
11		SS		SS releases the RRC connection due to inactivity (no user data transferred)

Specific message contents

None.

#### 11.1.1.1.5 Test requirements

At step 0 the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step 3a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

When requesting a PDP context activation, the UE shall:

- initiate a PS ATTACH if one is not already active;
- when the SS responds to a PDP context activation request, initiated by the UE, with the requested QoS, the UE shall complete the PDP context activation procedure. To check if the PDP context activation was successful, SS shall request PDP context modification and UE shall accept it.

## 11.1.1.2 QoS offered by the network is a lower QoS

### 11.1.1.2.1 QoS accepted by UE

#### 11.1.1.2.1.1 Definition

#### 11.1.1.2.1.2 Conformance requirement

In order to request a PDP context activation, the UE sends an ACTIVATE PDP CONTEXT REQUEST message to the network, enters the state PDP-ACTIVE-PENDING and starts timer T3380. If the QoS offered by the network is acceptable to UE, then upon receipt of the message ACTIVATE PDP CONTEXT ACCEPT, the UE shall stop timer T3380.

In GSM, the MS shall initiate establishment of the logical link for the LLC SAPI indicated by the network with the offered QoS and selected radio priority level, if no logical link has been already established for that SAPI.

In UMTS, both the network and the MS shall store the LLC SAPI and the radio priority in the PDP context.

#### Reference

3GPP TS 24.008 clause 6.1.3.1.1.

#### 11.1.1.2.1.3 Test purpose

To test the behaviour of the UE when the SS responds to a PDP context activation request with a lower QoS than that requested.

#### 11.1.1.2.1.4 Method of test

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

#### Related ICS/IXIT statements

- PS Supported yes/no
- User setting of Minimum QoS supported yes/no
- Method of setting minimum QoS
- Method of context activation

## Test procedure

The requested QoS and Minimum QoS are set. A context activation is requested by the user. On receipt of the ACTIVATE PDP CONTEXT REQUEST message an ACTIVATE PDP CONTEXT ACCEPT is returned by the SS with QoS lower than the requested but higher than or equal to the minimum. The SS then sends a MODIFY PDP CONTEXT REQUEST message and the UE shall respond with a MODIFY PDP CONTEXT ACCEPT message to confirm the context is active.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		UE		Initiate a context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept a PDP context activation
4	←		MODIFY PDP CONTEXT REQUEST (NETWORK TO UE DIRECTION)	Send a modify request to UE for the activated context
5	→		MODIFY PDP CONTEXT ACCEPT (UE TO NETWORK DIRECTION)	Accept the modification request from network to show context is activated

## Specific message contents

None.

### 11.1.1.2.1.5 Test requirements

To pass the test UE shall:

- when the SS responds to a PDP context activation request, initiated by the UE, with the QoS lower than the requested but higher than or equal to the minimum, the UE shall complete the PDP context activation procedure.
- to see if the PDP context activation was successful, SS shall request PDP context modification and UE shall accept it.

### 11.1.1.2.2 QoS rejected by UE

#### 11.1.1.2.2.1 Definition

#### 11.1.1.2.2.2 Conformance requirement

In order to request a PDP context activation, the UE sends an ACTIVATE PDP CONTEXT REQUEST message to the network.

Upon receipt of the message ACTIVATE PDP CONTEXT ACCEPT offering a QoS which is not acceptable to the UE, the UE shall initiate the PDP context deactivation procedure.

## Reference

3GPP TS 24.008 clause 6.1.3.1.1.

### 11.1.1.2.2.3 Test purpose

To test the behaviour of the UE when the QoS offered by SS in response to a PDP context activation request is not acceptable to the UE.

## 11.1.1.2.2.4 Method of test

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

## Related ICS/IXIT statements

- PS Supported yes/no
- User setting of Minimum QoS supported yes/no
- Method of setting minimum QoS
- Method of context activation

## Test procedure

The requested QoS and Minimum QoS are set. A PDP context activation is requested by the user. On receipt of the ACTIVATE PDP CONTEXT REQUEST message an ACTIVATE PDP CONTEXT ACCEPT message is returned by the SS with a QoS lower than the minimum. The UE shall then send a DEACTIVATE PDP CONTEXT REQUEST message. A DEACTIVATE PDP CONTEXT ACCEPT message will be sent in return by the SS.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		UE		Initiate a context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context activation
4	→		DEACTIVATE PDP CONTEXT REQUEST	Deactivate the PDP context
5	←		DEACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context deactivation

## Specific message contents

None.

## 11.1.1.2.2.5 Test requirements

The UE shall reject the QoS offered by the SS in response to a PDP context activation request, if the QoS is not acceptable to the UE.

## 11.1.2 PDP context activation requested by the network, successful and unsuccessful

## 11.1.2.1 Definition

This test needs to take into account the number of active PDP contexts supported simultaneously by the UE, to be able to test the response when all contexts are activated and the network tries to initiate a new context.

### 11.1.2.2 Conformance requirement

1) Upon receipt of a REQUEST PDP CONTEXT ACTIVATION message:

- If the UE accepts the request the UE shall then initiate the PDP context activation procedure.
- If the UE rejects the request, the UE shall send a REQUEST PDP CONTEXT ACTIVATION REJECT message with one of the following causes:

#26: insufficient resources;

#31: activation rejected, unspecified;

#40: feature not supported; or

#95 – 111: protocol errors.

2) The UE shall not ignore the request.

3) If the UE accepts the request, the ACTIVATE PDP CONTEXT REQUEST message sent by the UE shall contain the parameters requested by the network in the REQUEST PDP CONTEXT ACTIVATION message, except for the offered QoS which may be changed by the UE.

4) Whenever a REQUEST PDP CONTEXT ACTIVATION message is received by the UE specifying a transaction identifier relating to a PDP context not in state PDP-INACTIVE, the UE shall locally deactivate the old PDP context relating to the received transaction identifier. Furthermore, the UE shall continue with the activation procedure of a new PDP context as indicated in the received message.

### Reference

3GPP TS 24.008 clauses 6.1.3.1.2, 6.1.3.1.4 and 8.3.2.f).

3GPP TS 27.060 clause 7.3.3.

### 11.1.2.3 Test purpose

To test the behaviour of the UE upon receipt of a context activation request from the SS.

### 11.1.2.4 Method of test

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

#### Related ICS/IXIT statements

- PS Supported yes/no
- Network requested PDP context activation supported yes/no
- Number of network initiated PDP contexts supported

### Case 1

For a UE that supports PDP context activation requested by the network.

### Test procedure

A REQUEST PDP CONTEXT ACTIVATION message is sent by the SS. On receipt of the ACTIVATE PDP CONTEXT REQUEST message an ACTIVATE PDP CONTEXT ACCEPT message is returned by the SS. This is repeated until the maximum number of contexts supported by the UE is activated.

If the UE cannot support seven PDP contexts then one greater than the maximum supported by the UE should be requested.

In response to this activation request the UE shall return a REQUEST PDP CONTEXT ACTIVATION REJECT message with cause set to 'insufficient resources', 'activation rejected, unspecified' or 'protocol errors' using cause values #26, #31, #40 or #95-111.

REQUEST PDP CONTEXT ACTIVATION message is then sent by the SS using currently activated context transaction identifier. The UE shall activate this context in place of the previous context.

### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	REQUEST PDP CONTEXT ACTIVATION	SS sends Request a PDP context activation to UE
2		→	ACTIVATE PDP CONTEXT REQUEST	UE replies with a Request PDP context activation
3		←	ACTIVATE PDP CONTEXT ACCEPT	SS accepts the PDP context activation
4		SS		Steps 1-3 are repeated for the number of Network Initiated contexts supported. NOTE: If all 7 contexts are supported steps 5 and 6 should not be performed.
5		←	REQUEST PDP CONTEXT ACTIVATION	SS requests a PDP context activation
6		→	REQUEST PDP CONTEXT ACTIVATION REJECT	The context activation request is rejected with cause 'insufficient resources', 'activation rejected, unspecified' or 'protocol errors' using cause values #26, #31, #40 or #95-111.
7		←	REQUEST PDP CONTEXT ACTIVATION	SS requests a PDP context activation for an existing context with TI the same as one of the active PDP contexts
8		UE		UE locally deactivates the old PDP context with the same TI value
9		→	ACTIVATE PDP CONTEXT REQUEST	UE continues with the activation of a new PDP context to replace deactivated context
10		←	ACTIVATE PDP CONTEXT ACCEPT	SS accepts the PDP context activation

### Case 2

For an UE that does not support PDP context activation requested by the network.

### Test procedure

A REQUEST PDP CONTEXT ACTIVATION message is sent by the SS. The UE shall then send a REQUEST PDP CONTEXT ACTIVATION REJECT message.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		REQUEST PDP CONTEXT ACTIVATION	Request a PDP context activation
2		→	REQUEST PDP CONTEXT ACTIVATION REJECT	Reject the PDP context activation request with cause 'insufficient resources' or 'feature not supported', 'activation rejected, unspecified' or 'protocol errors' using cause values #26, #31, #40 or #95-111.

Specific message contents

In Case 1 step 7, TI IE value is equal to the TI value of one of the active PDP contexts, Offered PDP address IE value and/or Access point name IE value are (is) different from the corresponding IE value(s) in the existing PDP context.

#### 11.1.2.5 Test requirements

The UE that is configured to support one or more PDP contexts simultaneously shall:

- accept PDP context activation initiated by the SS if number of active contexts is lower than the maximum.
- locally deactivate the old PDP context when a REQUEST PDP CONTEXT ACTIVATION message is received, specifying a transaction identifier relating to an active PDP context and continue with the activation procedure of a new PDP context as indicated in the received message.

The UE that does not support PDP Context Activation (a number of active contexts supported by the UE is equal to maximum or UE does not support PDP context) shall reject PDP context activation initiated by the SS.

### 11.1.3 Abnormal Cases

#### 11.1.3.1 T3380 Expiry

##### 11.1.3.1.1 Definition

##### 11.1.3.1.2 Conformance requirement

- 1) On the first expiry of the timer T3380, the UE shall re-send the PDP CONTEXT ACTIVATION REQUEST.
- 2) On the second expiry of the timer T3380, the UE shall re-send the PDP CONTEXT ACTIVATION REQUEST.
- 3) On the third expiry of the timer T3380, the UE shall re-send the PDP CONTEXT ACTIVATION REQUEST.
- 4) On the fourth expiry of the timer T3380, the UE shall re-send the PDP CONTEXT ACTIVATION REQUEST.
- 5) On the fifth expiry of the timer T3380, the UE shall release all resources possibly allocated for this invocation and shall abort the procedure; no automatic PDP context activation re-attempt shall be performed.

Reference

3GPP TS 24.008 clause 6.1.3.1.5 a).

##### 11.1.3.1.3 Test purpose

To test the behaviour of the UE when the SS does not reply to PDP CONTEXT ACTIVATION REQUEST.

## 11.1.3.1.4 Method of test

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

## Related ICS/IXIT statements

- PS Supported yes/no
- Method of activating a context

## Test procedure

A PDP context activation is requested by the user. The UE shall send the ACTIVATE PDP CONTEXT REQUEST message five times with T3380 seconds between each message. After this, no further ACTIVATE PDP CONTEXT REQUEST messages shall be sent by the UE.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
3		SS		T3380 seconds
4	→		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
5		SS		T3380 seconds
6	→		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
7		SS		T3380 seconds
8	→		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
9		SS		T3380 seconds
10	→		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
11		SS		Wait for T3380 seconds to ensure no further ACTIVATE PDP CONTEXT REQUEST messages are sent by the UE

## Specific message contents

None.

## 11.1.3.1.5 Test requirements

UE shall re-send the ACTIVATE PDP CONTEXT REQUEST to SS five times in order to initiate PDP context, with expiry of timer T3380 between messages. After fifth try, UE shall send no more ACTIVATE PDP CONTEXT REQUEST to SS.

### 11.1.3.2 Collision of UE initiated and network requested PDP context activation

#### 11.1.3.2.1 Definition

This test needs to take into account the number of PDP contexts supported by the UE, to be able to test the response when the network tries to initiate a new context.

#### 11.1.3.2.2 Conformance requirement

A collision of a UE initiated and a network requested PDP context activation procedure is identified by the UE if a REQUEST PDP CONTEXT ACTIVATION message is received from the network after the UE has sent an ACTIVATE PDP CONTEXT REQUEST message, and the UE has not yet received an ACTIVATE PDP CONTEXT ACCEPT or ACTIVATE PDP CONTEXT REJECT message.

NOTE: In general, the UE is unable to test if the PDP type, PDP address and APN in the REQUEST PDP CONTEXT ACTIVATION message are the same as those for the PDN to which it is attempting to activate a context. This is because the UE may have omitted one or more of the parameters in the ACTIVATE PDP CONTEXT REQUEST message, since it is relying on default values to be provided by the network.

In the case of such a collision, the UE initiated PDP context activation shall take precedence over the network requested PDP context activation. If the UE is able to compare the PDP type, PDP address and APN requested in the ACTIVATE PDP CONTEXT REQUEST message with those requested in the REQUEST PDP CONTEXT ACTIVATION message and these parameters are equal, then the UE shall discard the REQUEST PDP CONTEXT ACTIVATION message and shall wait for the network response to its ACTIVATE PDP CONTEXT REQUEST message. If the UE is not able to compare the PDP type, PDP address, and APN requested in the ACTIVATE PDP CONTEXT REQUEST message with those requested in the REQUEST PDP CONTEXT ACTIVATION message, then the UE shall send a REQUEST PDP CONTEXT ACTIVATION REJECT message with the cause 'insufficient resources' to the network, and wait for an ACTIVATE PDP CONTEXT ACCEPT message.

#### Reference

3GPP TS 24.008 clause 6.1.3.1.5 b), case: Static PDP address collision detected within the UE.

#### 11.1.3.2.3 Test purpose

To test the behaviour of the UE when there is a collision between an UE initiated and network requested PDP context activation detected by the UE.

#### 11.1.3.2.4 Method of test

##### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

##### Related ICS/IXIT statements

- PS Supported yes/no
- Network requested PDP context activation supported yes/no
- Method of PDP context activation

**Case 1**

For an UE that supports PDP context activation requested by the network.

**Test procedure**

A PDP context activation is requested by the user with a static PDP address. After receipt of the ACTIVATE PDP CONTEXT REQUEST message the SS sends a REQUEST PDP CONTEXT ACTIVATION message followed by an ACTIVATE PDP CONTEXT ACCEPT message in a time less than T3380 (Use T3380/2). The UE shall send no messages within this time.

**Expected sequence**

Step	Direction		Message	Comments
	UE	SS		
1		UE		Initiate a context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation (with static PDP address)
3	←		REQUEST PDP CONTEXT ACTIVATION	Request a PDP context activation request
4		SS		Wait for T3380/2 seconds to ensure UE does not re-send ACTIVATE PDP CONTEXT REQUEST
5	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context activation

**Case 2**

For a UE that does not support PDP context activation requested by the network.

**Test procedure**

A PDP context activation is requested by the user. After receipt of the ACTIVATE PDP CONTEXT REQUEST message the SS sends a REQUEST PDP CONTEXT ACTIVATION message. The UE shall send a REQUEST PDP CONTEXT ACTIVATION REJECT message with cause set to 'insufficient resources'. The SS then sends an ACTIVATE PDP CONTEXT ACCEPT.

**Expected sequence**

Step	Direction		Message	Comments
	UE	SS		
1		UE		Initiate a context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Request a PDP context activation
3	←		REQUEST PDP CONTEXT ACTIVATION	Request a PDP context activation
4	→		REQUEST PDP CONTEXT ACTIVATION REJECT	Cause set to 'insufficient resources'.
5	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context activation

**Specific message contents**

For Case 1 and Case 2:

Step 2: ACTIVATE PDP CONTEXT REQUEST message contains PDP address and APN IEs.

Step 3: REQUEST PDPD CONTEXT ACTIVATION message contains the same PDP address and APN values as in Step 2.



Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		UE		Initiate a context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	UE requests a PDP context activation
3	←		ACTIVATE PDP CONTEXT ACCEPT	SS accepts the PDP context activation
4	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	UE requests a secondary PDP context activation
5	←		ACTIVATE SECONDARY PDP CONTEXT ACCEPT	SS accepts the secondary PDP context activation
6	←		REQUEST PDP CONTEXT ACTIVATION	SS requests a PDP context activation with the same combination of APN, PDP type and PDP address as the activated PDP context
7		UE		UE locally deactivates the activated PDP context and the secondary PDP context
9	→		ACTIVATE PDP CONTEXT REQUEST	UE replies with a Request PDP context activation
10	←		ACTIVATE PDP CONTEXT ACCEPT	SS accepts the PDP context activation

Specific message contents

None.

#### 11.1.3.3.5 Test requirements

When inconsistency of PDP context between the UE and network is detected by the UE, then local synchronisation procedure shall be initiated in the UE. The PDP context and all (if any) linked contexts are implicitly deactivated and the new request shall be proceeded.

### 11.1.4 Secondary PDP context activation procedures

#### 11.1.4.1 Successful Secondary PDP Context Activation Procedure Initiated by the UE

##### 11.1.4.1.1 QoS Offered by Network is the QoS Requested

###### 11.1.4.1.1.1 Definition

###### 11.1.4.1.1.2 Conformance requirement

In order to request a secondary PDP context activation with the same PDP address and APN as an already active PDP context, the UE shall send an ACTIVATE SECONDARY PDP CONTEXT REQUEST message to the network, enter the state PDP-ACTIVE-PENDING and start timer T3380. The message contains the selected NSAPI, a QoS profile, a requested LLC SAPI and the linked TI.

If the QoS offered by the network is the same as the QoS requested by the UE, then upon receipt of the message ACTIVATE SECONDARY PDP CONTEXT ACCEPT, the UE shall stop timer T3380.

In GSM the UE shall initiate establishment of the logical link for the LLC SAPI indicated by the network, with the offered QoS and selected radio priority level, if no logical link has been already established for that SAPI.

Although not used in UMTS, LLC SAPI shall be included in the messages, in order to support handover between UMTS and GSM networks.

Reference

3GPP TS 24.008 clauses 6.1.3.2 and 6.1.3.2.1.

11.1.4.1.1.3 Test purpose

To test the behaviour of the UE when SS responds to a Secondary PDP context activation request with the requested QoS.

11.1.4.1.1.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE and is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- Method of context activation
- Secondary PDP context activation supported yes/no

Test procedure

A PDP context activation is requested by the user and accepted by the SS. Secondary PDP context activation is requested by the user. On receipt of the ACTIVATE SECONDARY PDP CONTEXT REQUEST message an ACTIVATE SECONDARY PDP CONTEXT ACCEPT is returned by the SS with the same requested QoS. The SS then waits for T3380 seconds to ensure T3380 has been stopped and no more ACTIVATE SECONDARY PDP CONREXT REQUEST messages are sent by the UE. The SS then sends a MODIFY PDP CONTEXT REQUEST message to which the UE shall reply with a MODIFY PDP CONTEXT ACCEPT message to ensure the context has been set up.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		UE		Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4		UE		Initiate a secondary PDP context activation
5	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	Request a Secondary PDP context activation
6	←		ACTIVATE SECONDARY PDP CONTEXT ACCEPT	Accept the Secondary PDP context activation
7		SS		Wait for T3380 seconds to ensure no further activate request messages come from the UE
8	←		MODIFY PDP CONTEXT REQUEST (NETWORK TO UE DIRECTION)	SS sends a modify request to UE for the activated context
9	→		MODIFY PDP CONTEXT ACCEPT (UE TO NETWORK DIRECTION)	UE accepts the modification request from the network to show context is activated

## Specific message contents

The Linked TI information element in ACTIVATE SECONDARY PDP CONTEXT REQUEST message specifies the TI for the PDP context already activated. The SS can derive PDP address for the secondary PDP context from Linked TI.

### 11.1.4.1.1.5 Test requirements

To pass the test the UE shall:

- when the SS responds to a Secondary PDP context activation request initiated by the UE, with the requested QoS, the UE shall complete the Secondary PDP context activation procedure. To check if the Secondary PDP context activation was successful, SS shall request PDP context modification and UE shall accept it.

### 11.1.4.1.2 QoS Offered by Network is a lower QoS

#### 11.1.4.1.2.1 QoS accepted by UE

##### 11.1.4.1.2.1.1 Definition

This test can only be performed if minimum QoS can be set by the user.

##### 11.1.4.1.2.1.2 Conformance requirement

In order to request a Secondary PDP context activation with the same PDP address and APN as an already active PDP context, the UE shall send an ACTIVATE SECONDARY PDP CONTEXT REQUEST message to the network, enter the state PDP-ACTIVE-PENDING and start timer T3380. If the QoS offered by the network is acceptable to UE, then upon receipt of the message ACTIVATE SECONDARY PDP CONTEXT ACCEPT the UE shall stop timer T3380.

In GSM the UE shall initiate establishment of the logical link for the LLC SAPI indicated by the network, with the offered QoS and selected radio priority level, if no logical link has been already established for that SAPI.

## Reference

3GPP TS 24.008 clauses 6.1.3.2 and 6.1.3.2.1.

##### 11.1.4.1.2.1.3 Test purpose

To test the behaviour of the UE when the SS responds to a Secondary PDP context activation request with a lower QoS than that requested.

##### 11.1.4.1.2.1.4 Method of test

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

## Related ICS/IXIT statements

- PS Supported yes/no
- User setting of Minimum QoS supported yes/no
- Method of setting minimum QoS
- Method of context activation

- Secondary PDP context activation supported    yes/no

### Test procedure

The requested QoS and Minimum QoS are set. A PDP context activation is requested by the user and accepted by the SS. Secondary context activation is requested by the user. On receipt of the ACTIVATE SECONDARY PDP CONTEXT REQUEST message an ACTIVATE SECONDARY PDP CONTEXT ACCEPT is returned by the SS with a QoS lower than the requested but higher than or equal to the minimum. The SS then sends a MODIFY PDP CONTEXT REQUEST message and the UE shall respond with a MODIFY PDP CONTEXT ACCEPT message to confirm the context is active.

### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3		←	ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	UE			Initiate a secondary PDP context activation
5	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	Request a Secondary PDP context activation
6		←	ACTIVATE SECONDARY PDP CONTEXT ACCEPT	Accept a Secondary PDP context activation
7		←	MODIFY PDP CONTEXT REQUEST (NETWORK TO UE DIRECTION)	Send a modify request to UE for the activated context
8	→		MODIFY PDP CONTEXT ACCEPT (UE TO NETWORK DIRECTION)	Accept the modification request from network to show context is activated

### Specific message contents

None.

#### 11.1.4.1.2.1.5 Test requirements

To pass the test when the SS responds to a Secondary PDP context activation request, initiated by the UE, with the QoS lower than the requested but higher than or equal to the minimum, the UE shall complete the Secondary PDP context activation procedure. To see if the PDP context activation was successful, SS shall request PDP context modification and UE shall accept it.

#### 11.1.4.1.2.2 QoS rejected by UE

##### 11.1.4.1.2.2.1 Definition

This test can only be performed if minimum QoS can be set by the user.

##### 11.1.4.1.2.2.2 Conformance requirement

In order to request a Secondary PDP context activation with the same PDP address and APN as an already active PDP context, the UE shall send an ACTIVATE SECONDARY PDP CONTEXT REQUEST message to the network.

Upon receipt of the message ACTIVATE SECONDARY PDP CONTEXT ACCEPT offering a QoS which is not acceptable to the UE, the UE shall initiate the PDP context deactivation procedure.

### Reference

3GPP TS 24.008 clauses 6.1.3.2 and 6.1.3.2.1.

## 11.1.4.1.2.2.3 Test purpose

To test the behaviour of the UE when the QoS, offered by SS in response to a Secondary PDP context activation request is not acceptable to the UE.

## 11.1.4.1.2.2.4 Method of test

## Initial conditions

## System Simulator:

1 cell, default parameters.

## User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

## Related ICS/IXIT statements

- PS Supported yes/no
- User setting of Minimum QoS supported yes/no
- Method of setting minimum QoS
- Method of context activation
- Secondary PDP context activation supported yes/no

## Test procedure

The requested QoS and Minimum QoS are set. PDP context activation is requested by the user and accepted by the SS. Secondary PDP context activation is requested by the user. On receipt of the ACTIVATE SECONDARY PDP CONTEXT REQUEST message an ACTIVATE SECONDARY PDP CONTEXT ACCEPT message is returned by the SS with the QoS lower than the minimum. The UE shall then send a DEACTIVATE PDP CONTEXT REQUEST message for the secondary PDP context. A DEACTIVATE PDP CONTEXT ACCEPT message will be sent in return by the SS.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	UE			Initiate a secondary PDP context activation
5	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	Request a Secondary PDP context activation
6	←		ACTIVATE SECONDARY PDP CONTEXT ACCEPT	Accept the Secondary PDP context activation with QoS lower than Minimum QoS
7	→		DEACTIVATE PDP CONTEXT REQUEST	Request deactivation of the secondary PDP context
8	←		DEACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context deactivation

## Specific message contents

In step 3 *Negotiated QoS* IE is equal to *Requested QoS* IE in step 2 and step 5.

In step 7 SM cause IE shall have value #37: QoS not accepted.

Tear down indicator IE shall not be included in the DEACTIVATE PDP CONTEXT REQUEST message because only the PDP context for this specific TI shall be deactivated.

#### 11.1.4.1.2.2.5 Test requirements

The UE shall reject the QoS offered by the SS in response to a Secondary PDP context activation request, if the QoS is not acceptable to the UE.

#### 11.1.4.1.2.3 LLC SAPI rejected by the UE

##### 11.1.4.1.2.3.1 Definition

This test can only be performed if LLC SAPI can be set by the user.

##### 11.1.4.1.2.3.2 Conformance Requirement

In order to request a PDP context activation with the same PDP address and APN as an already active PDP context, the UE shall send an ACTIVATE SECONDARY PDP CONTEXT REQUEST message to the network.

Upon receipt of an ACTIVATE SECONDARY PDP CONTEXT REQUEST, the network shall select a radio priority level based on the QoS negotiated and shall reply with an ACTIVATE SECONDARY PDP CONTEXT ACCEPT message, if the request can be accepted.

Upon receipt of the message ACTIVATE SECONDARY PDP CONTEXT ACCEPT, the UE shall stop timer T3380 and enter the state PDP-ACTIVE.

In GSM the UE shall initiate establishment of the logical link for the LLC SAPI indicated by the network if no logical link has been already established for that SAPI. If the LLC SAPI indicated by the network can not be supported by the UE, the UE shall initiate the PDP context deactivation procedure.

##### 11.1.4.1.2.3.3 Test Purpose

To verify the behaviour of the UE when the network responds to the ACTIVATE SECONDARY PDP CONTEXT REQUEST message with a negotiated LLC SAPI which is not supported by the UE.

#### Reference

3GPP TS 24.008, clause 6.1.3.2.1.

##### 11.1.4.1.2.3.4 Method of test

#### Initial conditions

##### System Simulator:

1 cell, default parameters.

##### User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

#### Related ICS/IXIT statements

- PS Supported yes/no
- User setting of LLC SAPI supported yes/no
- Method of setting LLC SAPI
- Method of context activation

- Secondary PDP context activation supported    yes/no

### Test procedure

The requested LLC SAPI is set. This is the only LLC SAPI supported by the UE. A PDP context activation is requested by the user and accepted by the SS. A secondary PDP context activation is requested by the user. On receipt of the ACTIVATE SECONDARY PDP CONTEXT REQUEST message an ACTIVATE SECONDARY PDP CONTEXT ACCEPT message is returned by the SS with the LLC SAPI not supported by the UE. The UE shall then send a DEACTIVATE PDP CONTEXT REQUEST message for the secondary PDP context. A DEACTIVATE PDP CONTEXT ACCEPT message will be sent in return by the SS.

### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3		←	ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	UE			Initiate a secondary PDP context activation
5	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	Request a Secondary PDP context activation
6		←	ACTIVATE SECONDARY PDP CONTEXT ACCEPT	Accept the Secondary PDP context activation with LLC SAPI not supported by the UE
7	→		DEACTIVATE PDP CONTEXT REQUEST	Request deactivation of all PDP contexts
8		←	DEACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context deactivation

### Specific message contents

In step 3 *Negotiated LLC SAPI* IE is equal to *Requested LLC SAPI* IE in step 2 and step 5.

In step 7 SM cause IE shall have value #25: LLC or SNDCP failure. Also, *Tear down indicator* IE shall be included in the DEACTIVATE PDP CONTEXT REQUEST message to deactivate all PDP contexts for this PDP address.

## 11.1.4.2 Unsuccessful Secondary PDP Context Activation Procedure Initiated by the UE

### 11.1.4.2.1 Definition

### 11.1.4.2.2 Conformance requirement

Upon receipt of an ACTIVATE SECONDARY PDP CONTEXT REQUEST message, the network may reject the UE initiated PDP context activation by sending an ACTIVATE SECONDARY PDP CONTEXT REJECT message to the UE. Upon receipt of an ACTIVATE SECONDARY PDP CONTEXT REJECT message, the UE shall stop timer T3380 and enter the state PDP-INACTIVE.

### Reference

3GPP TS 24.008 clauses 6.1.3.2 and 6.1.3.2.2.

### 11.1.4.2.3 Test purpose

To test the behaviour of the UE when network rejects the UE initiated Secondary PDP context activation.

## 11.1.4.2.4 Method of test

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE and is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

## Related ICS/IXIT statements

- PS Supported yes/no
- Method of context activation
- Secondary PDP context activation supported yes/no

## Test procedure

A PDP context activation is requested by the user and accepted by the SS. Secondary context activation is requested by the user. On receipt of the ACTIVATE SECONDARY PDP CONTEXT REQUEST message from the UE, an ACTIVATE SECONDARY PDP CONTEXT REJECT with cause #43 'unknown PDP context' is returned by the SS. SS shall wait for T3380 seconds to ensure that the UE sends no more ACTIVATE SECONDARY PDP CONTEXT REQUEST messages.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	UE			Initiate a secondary PDP context activation
5	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	Request a Secondary PDP context activation
6	←		ACTIVATE SECONDARY PDP CONTEXT REJECT	SS rejects the Secondary PDP context activation with cause '#43: unknown PDP context'
7		SS		Wait for T3380 seconds to ensure no further activate request messages come from the UE

## Specific message contents

Step 5. The *Linked TI* information element specifies the TI which is different from the TI in the PDP context activated in steps 1-3.

## 11.1.4.2.5 Test requirements

After a secondary PDP context activation being rejected by the network, the UE shall not re-send the ACTIVATE SECONDARY PDP CONTEXT REQUEST message.



Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		UE		Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4		UE		Initiate a secondary PDP context activation
5	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	Request a Secondary PDP context activation
6		SS		T3380 seconds
7	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	Request the Secondary PDP context activation
8		SS		T3380 seconds
9	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	Request the Secondary PDP context activation
10		SS		T3380 seconds
11	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	Request the Secondary PDP context activation
12		SS		T3380 seconds
13	→		ACTIVATE SECONDARY PDP CONTEXT REQUEST	Request the Secondary PDP context activation
14		SS		Wait for T3380 seconds to ensure no further ACTIVATE SECONDARY PDP CONTEXT REQUEST messages are sent by the UE

Specific message contents

None.

#### 11.1.4.3.1.5 Test requirements

UE shall re-send the ACTIVATE SECONDARY PDP CONTEXT REQUEST to SS five times in order to initiate a Secondary PDP context, with expiry of timer T3380 between messages. After fifth try, UE shall send no more ACTIVATE SECONDARY PDP CONTEXT REQUEST messages to SS.

## 11.2 PDP context modification procedure

### 11.2.1 Network initiated PDP context modification

#### 11.2.1.1 Definition

This test can only be performed if minimum QoS can be set by the user.

#### 11.2.1.2 Conformance requirement

- 1) Upon receipt of a MODIFY PDP CONTEXT REQUEST message
  - If the UE can accept the modification requested, the UE shall reply with the MODIFY PDP CONTEXT ACCEPT message.
  - If the UE is unable to accept the modification requested, the UE shall initiate the PDP context deactivation procedure for the NSAPI that has been indicated in the message MODIFY PDP CONTEXT REQUEST - the reject cause IE value of the DEACTIVATE PDP CONTEXT REQUEST message shall indicate "QoS not accepted".
- 2) The UE shall either accept the modification request or deactivate the PDP context, it shall not ignore the modification request.

## Reference

3GPP TS 24.008 clauses 6.1.3.3 and 6.1.3.3.1.

## 11.2.1.3 Test purpose

To test the behaviour of the UE upon receipt of a MODIFY PDP CONTEXT REQUEST message from SS.

## 11.2.1.4 Method of test

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

## Related ICS/IXIT statements

- PS Supported yes/no
- User setting of Minimum QoS supported yes/no
- Method of setting minimum QoS
- Method of activating a PDP context

## Test procedure

The requested QoS and Minimum QoS are set. A PDP context is activated by the user and accepted by the SS. A MODIFY PDP CONTEXT REQUEST message is then sent to the UE with a QoS that is acceptable to the UE (higher than or equal to the minimum QoS set in the UE). The UE shall send a MODIFY PDP CONTEXT ACCEPT message in return. A MODIFY PDP CONTEXT REQUEST message is then sent to the UE with a QoS that is not acceptable to the UE (lower than the minimum QoS set in the UE). The UE shall send a DEACTIVATE PDP CONTEXT REQUEST message in return.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		UE		Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate the PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	←		MODIFY PDP CONTEXT REQUEST (NETWORK TO UE DIRECTION)	Request the modification of a PDP context, with QoS higher than or equal to the minimum QoS set in the UE
5	→		MODIFY PDP CONTEXT ACCEPT (UE TO NETWORK DIRECTION)	Accept the PDP context modification
6	←		MODIFY PDP CONTEXT REQUEST (NETWORK TO UE DIRECTION)	Request the modification of a PDP context, QoS lower than the minimum QoS set in the UE
7	→		DEACTIVATE PDP CONTEXT REQUEST	Initiate the PDP context deactivation. Cause set to 'QoS not acceptable'
8	←		DEACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context deactivation

Specific message contents

None.

#### 11.2.1.5 Test requirements

The UE shall:

- Accept PDP context modification initiated by the SS if QoS is higher than or equal to the minimum QoS set in the UE.
- Reject PDP context modification initiated by the SS if QoS is lower than the minimum QoS set in the UE.

### 11.2.2 UE initiated PDP context modification

#### 11.2.2.1 UE initiated PDP Context Modification accepted by network

##### 11.2.2.1.1 Definition

This test can only be performed if minimum QoS can be set by the user.

##### 11.2.2.1.2 Conformance requirement

In order to initiate the procedure, the UE sends the MODIFY PDP CONTEXT REQUEST message to the network, enters the state PDP-MODIFY-PENDING and starts timer T3381. The message may contain the requested new QoS and/or the TFT and the requested LLC SAPI (used in GSM).

Upon receipt of the MODIFY PDP CONTEXT REQUEST message, the network may reply with the MODIFY PDP CONTEXT ACCEPT message in order to accept the context modification. The reply message may contain the negotiated QoS and the radio priority level based on the new QoS profile and the negotiated LLC SAPI, that shall be used in GSM by the logical link.

Upon receipt of the MODIFY PDP CONTEXT ACCEPT message, the UE shall stop the timer T3381. If the offered QoS parameters received from the network differs from the QoS requested by the UE, the UE shall either accept the negotiated QoS or initiate the PDP context deactivation procedure.

#### Reference

3GPP TS 24.008 clauses 6.1.3.3 and 6.1.3.3.2.

##### 11.2.2.1.3 Test purpose

To test the behaviour of the UE upon receipt of a MODIFY PDP CONTEXT ACCEPT message from the network with

- Requested QoS;
- QoS higher than or equal to the minimum QoS set in the UE;
- QoS lower than the minimum QoS set in the UE.

##### 11.2.2.1.4 Method of test

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- User setting of Minimum QoS supported yes/no
- Method of setting minimum QoS
- Method of activating a PDP context

Test procedure

The requested QoS and Minimum QoS are set. A PDP context is activated by the user and accepted by the SS. The UE initiates a PDP context modification by sending a MODIFY PDP CONTEXT REQUEST message with new QoS. The SS accepts the context modification and replies with the MODIFY PDP CONTEXT ACCEPT message with the QoS requested.

The UE initiates new PDP context modification with higher QoS. The SS is unable to provide requested QoS, so it replies by sending MODIFY PDP CONTEXT ACCEPT message with new QoS that is lower than requested but still acceptable to the UE (higher than or equal to the minimum QoS set in the UE).

The UE initiates new PDP context modification with new QoS. The SS is unable to provide requested QoS, so it replies by sending MODIFY PDP CONTEXT ACCEPT message with QoS that is not acceptable to the UE (lower than the minimum QoS set in the UE). The UE shall send a DEACTIVATE PDP CONTEXT REQUEST message in return and SS shall respond with a DEACTIVATE PDP CONTEXT ACCEPT message.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		UE		Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	→		MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION)	Request the modification of a PDP context, with new QoS
5	←		MODIFY PDP CONTEXT ACCEPT (NETWORK TO UE DIRECTION)	Accept the PDP context modification with QoS requested
6	→		MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION)	Request the modification of a PDP context, with new QoS
7	←		MODIFY PDP CONTEXT ACCEPT (NETWORK TO UE DIRECTION)	Accept the PDP context modification with QoS higher than the minimum QoS set in UE
8	→		MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION)	Request the modification of a PDP context, with new QoS
9	←		MODIFY PDP CONTEXT ACCEPT (NETWORK TO UE DIRECTION)	Accept the PDP context modification with QoS lower than the minimum QoS set in UE
10	→		DEACTIVATE PDP CONTEXT REQUEST	Initiate the PDP context deactivation. Cause set to 'QoS not acceptable'
11	←		DEACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context deactivation

Specific message contents

None.



- Method of activating a PDP context

### Test procedure

A PDP context is activated by the user and accepted by the SS. The UE initiates a PDP context modification by sending a MODIFY PDP CONTEXT REQUEST message. The SS rejects the context modification and replies with the MODIFY PDP CONTEXT REJECT with cause set to # 26: insufficient resources.

### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		UE		Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	→		MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION)	Request the modification of a PDP context
5	←		MODIFY PDP CONTEXT REJECT	SS rejects PDP context modification
6		SS		Wait for T3381 seconds to ensure no further MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION) messages are sent by the UE

### Specific message contents

None.

#### 11.2.2.2.5 Test requirements

After receiving MODIFY PDP CONTEXT REJECT message from the network, UE shall not resend PDP context modification request.

## 11.2.3 Abnormal cases

### 11.2.3.1 T3381 Expiry

#### 11.2.3.1.1 Definition

#### 11.2.3.1.2 Conformance requirement

On the first expiry of timer T3381, the UE shall re-send the MODIFY PDP CONTEXT REQUEST message, reset and restart timer T3381. This retransmission is repeated four times, i.e. on the fifth expiry of timer T3381, the UE may continue to use the previously negotiated QoS or it may initiate the PDP context deactivation procedure.

### Reference

3GPP TS 24.008 clause 6.1.3.3.4 a) case: In the UE.

#### 11.2.3.1.3 Test purpose

To test the behaviour of the UE when SS does not reply to MODIFY PDP CONTEXT REQUEST message.

11.2.3.1.4 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

Related ICS/IXIT statements

- PS Supported yes/no
- Method of activating a PDP context

Test procedure

A PDP context activation is requested by the user and accepted by the SS. The UE shall send MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION) message five times with T3381 seconds between each message. After this no further MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION) messages shall be sent by the UE.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3		←	ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context activation
4	→		MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION)	Request modification of the PDP context, with new QoS
5		SS		T3381 seconds
6	→		MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION)	Request modification of the PDP context, with new QoS
7		SS		T3381 seconds
8	→		MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION)	Request modification of the PDP context, with new QoS
9		SS		T3381 seconds
10	→		MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION)	Request modification of the PDP context, with new QoS
11		SS		T3381 seconds
12	→		MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION)	Request modification of the PDP context, with new QoS
13		SS		Wait for T3381 seconds to ensure no further MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION) messages are sent by the UE

Specific message contents

None.

#### 11.2.3.1.5 Test requirements

UE shall re-send the MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION) to SS five times in order to initiate the PDP context modification, with expiry of timer T3381 between messages. After fifth try, UE shall send no more MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION) messages to SS.

### 11.2.3.2 Collision of UE and network initiated PDP context modification procedures

#### 11.2.3.2.1 Definition

#### 11.2.3.2.2 Conformance requirement

A collision of a UE and network initiated PDP context modification procedures is identified by the UE if a MODIFY PDP CONTEXT REQUEST message is received from the network after the UE has sent a MODIFY PDP CONTEXT REQUEST message itself, and both messages contain the same TI and the UE has not yet received a MODIFY PDP CONTEXT ACCEPT message from the network.

In the case of such a collision, the network initiated PDP context modification shall take precedence over the UE initiated PDP context modification. The UE shall terminate internally the UE initiated PDP context modification procedure, enter the state PDP-ACTIVE and proceed with the network initiated PDP context modification procedure by sending a MODIFY PDP CONTEXT ACCEPT message.

#### Reference

3GPP TS 24.008 clause 6.1.3.3.4 b).

#### 11.2.3.2.3 Test purpose

To test behaviour of the UE when it identifies collision of the UE and SS initiated PDP context modification with the same TI.

#### 11.2.3.2.4 Method of test

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

#### Related ICS/IXIT statements

- PS Supported yes/no
- Method of activating a PDP context

#### Test procedure

A PDP context is activated by the user and accepted by the SS. The UE initiates a PDP context modification by sending a MODIFY PDP CONTEXT REQUEST message. Then the SS initiates the PDP context modification by sending MODIFY PDP CONTEXT REQUEST message with the same TI. The UE shall reply to the SS initiated PDP context modification procedure by sending MODIFY PDP CONTEXT ACCEPT message with the same TI.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		UE		Initiate a PDP context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context activation
4	→		MODIFY PDP CONTEXT REQUEST (UE TO NETWORK DIRECTION)	Request modification of the PDP context
5	←		MODIFY PDP CONTEXT REQUEST (NETWORK TO UE DIRECTION)	Request modification of the PDP context with the same TI
6		UE		UE identifies collision, terminates internally the UE initiated PDP context modification procedure
7	→		MODIFY PDP CONTEXT ACCEPT (UE TO NETWORK DIRECTION)	Accept SS initiated PDP context modification

Specific message contents

Steps 4 and 5 - The TI IE value is the same, with TI flag set to "0" identifying both, the UE and the network, as transaction initiator. TI flag indicates to the UE that it is attempting to allocate the same TI value simultaneously with the SS.

Step 7 - The TI flag set to "1" indicating that the message belongs to the transaction initiated by the other side, in this case SS.

Steps 4, 5 and 7 - Bit7, Bit6 and Bit5 of the TI IE are the same.

#### 11.2.3.2.5 Test requirements

In step 6, the UE shall terminate internally the UE initiated PDP context modification procedure and proceed with SS initiated PDP context modification.

## 11.3 PDP context deactivation procedures

### 11.3.1 PDP context deactivation initiated by the UE

#### 11.3.1.1 Definition

#### 11.3.1.2 Conformance requirement

In order to deactivate a PDP context, the UE sends a DEACTIVATE PDP CONTEXT REQUEST message to the network, enters the state PDP-INACTIVE-PENDING and starts timer T3390. The message contains the transaction identifier (TI) in use for the PDP context to be deactivated and a cause code that typically indicates one of the following causes:

- #26: insufficient resources;
- #36: regular PDP context deactivation; or
- #37: QoS not accepted.

The network shall reply with the DEACTIVATE PDP CONTEXT ACCEPT message. Upon receipt of the DEACTIVATE PDP CONTEXT ACCEPT message, the UE shall stop timer T3390. In UMTS, the network shall initiate the release of Radio Access Bearer associated with this PDP context.

Whenever any session management message except REQUEST PDP CONTEXT ACTIVATION or SM-STATUS is received by the UE specifying a transaction identifier which is not recognised as relating to an active context or to a context that is in the process of activation or deactivation, the UE shall send a SM-STATUS message with cause #81 "invalid transaction identifier value" using the received transaction identifier value including the extension octet and remain in the PDP-INACTIVE state.

#### Reference

3GPP TS 24.008 clauses 6.1.3.4, 6.1.3.4.1 and 8.3.2 (b).

#### 11.3.1.3 Test purpose

To test the behaviour of the UE upon receipt of a DEACTIVATE PDP CONTEXT ACCEPT message from the SS in PDP context deactivation procedure initiated by the UE.

#### 11.3.1.4 Method of test

##### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

##### Related ICS/IXIT statements

- PS Supported yes/no
- Method of activating a PDP context
- Method of deactivating the PDP context

##### Test procedure

A PDP context is activated by the user and accepted by the SS. PDP context deactivation is then requested by the user. The UE shall send a DEACTIVATE PDP CONTEXT REQUEST message to the SS. The SS shall then reply with a DEACTIVATE PDP CONTEXT ACCEPT message. The SS shall then wait for T3390 seconds to ensure T3390 has been stopped and that no further messages are sent from the UE. The SS shall then send a MODIFY PDP CONTEXT REQUEST for the deactivated context and the UE shall reply with an SM STATUS message with cause #81 'transaction identifier not known'.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		UE		Initiate a context activation
1a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to either Originating Conversational Call, Originating Streaming Call, Originating Interactive Call, Originating Background Call or Originating High Priority Signalling
1b	→		SERVICE REQUEST	
1c		SS		The SS starts ciphering and integrity protection.
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
2a		SS		The SS establishes the RAB.
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4		UE		Initiate a context deactivation
5	→		DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a PDP context
6	←		DEACTIVATE PDP CONTEXT ACCEPT	SS accepts the PDP context deactivation and starts waiting for 'T3390'.
6a		SS		The SS releases the RAB.
7		SS		SS waits for expiry of 'T3390' seconds to ensure no further deactivate request messages are sent
8	←		MODIFY PDP CONTEXT REQUEST (NETWORK TO UE DIRECTION)	Send a modify request to UE for the deactivated context.
9	→		SM STATUS	Cause set to #81

### Specific message contents

Steps 2 and 5. TI flag (bit 8) in TI IE is set to 0 (transaction initiated by the UE).

Step 3, 6 and 8. TI flag in TI IE is set to 1.

Steps 2, 3, 5, 6 and 8. The value of TIO IE (bits 5-7) of the transaction identifier (TI) is the same in these test steps.

#### 11.3.1.5 Test requirements

At step 1a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to one of the following causes:

- Originating Conversational Call;
- Originating Streaming Call;
- Originating Interactive Call;
- Originating Background Call or
- Originating High Priority Signalling.

In PDP context deactivation procedure initiated by the UE, upon receipt of a DEACTIVATE PDP CONTEXT ACCEPT message from the SS, the UE shall deactivate PDP context associated with given PDP address and TI.

Then, upon modification procedure initiated by the network, for deactivated PDP context, UE shall reply with SM STATUS message with cause #81.

## 11.3.2 PDP context deactivation initiated by the network

### 11.3.2.1 Definition

### 11.3.2.2 Conformance requirement

In order to deactivate a PDP context, the network sends a DEACTIVATE PDP CONTEXT REQUEST message to the MS and starts timer T3395. The message contains the transaction identifier in use for the PDP context to be deactivated and a cause code that typically indicates one of the following causes:

# 36: regular PDP context deactivation;

# 38: network failure; or

# 39: reactivation requested.

The UE shall, upon receipt of this message, reply with a DEACTIVATE PDP CONTEXT ACCEPT message. Upon receipt of the DEACTIVATE PDP CONTEXT ACCEPT message, the network shall stop the timer T3395. In UMTS, the network shall initiate the release of Radio Access Bearer associated with this PDP context.

### Reference

3GPP TS 24.008 clauses 6.1.3.4, 6.1.3.4.2.

### 11.3.2.3 Test purpose

To test the behaviour of the UE upon receipt of a DEACTIVATE PDP CONTEXT REQUEST message from the SS.

### 11.3.2.4 Method of test

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

#### Related ICS/IXIT statements

- PS Supported yes/no
- Method of activating a PDP context

#### Test procedure

A PDP context is activated by the user and accepted by the SS. A DEACTIVATE PDP CONTEXT REQUEST message is then sent by the SS. The UE shall reply with a DEACTIVATE PDP CONTEXT ACCEPT message. The SS shall then send a MODIFY PDP CONTEXT REQUEST for the deactivated context and the UE shall reply with an SM STATUS message with cause #81 'invalid transaction identifier value'.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		UE		Initiate a context activation SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to either Originating Conversational Call, Originating Streaming Call, Originating Interactive Call, Originating Background Call or Originating High Priority Signalling
1a		SS		
1b		→	SERVICE REQUEST	
1c		SS		The SS starts ciphering and integrity protection.
2		→	ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
2a		SS		The SS establishes the RAB.
3		←	ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4		←	DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a PDP context
5		→	DEACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context deactivation.
5a		SS		The SS releases the RAB.
6		←	MODIFY PDP CONTEXT REQUEST (NETWORK TO UE DIRECTION)	Send a modify request to UE for the deactivated context.
7		→	SM STATUS	Cause set to #81

Specific message contents

Steps 2 and 5. TI flag (bit 8) in TI IE is set to 0 (transaction initiated by the UE).

Steps 3, 4 and 6. TI flag in TI IE is set to 1.

Steps 2, 3, 4, 5 and 6. The value of TIO IE (bits 5-7) of the transaction identifier (TI) is the same in these test steps.

### 11.3.2.5 Test requirements

At step 1a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to one of the following causes:

- Originating Conversational Call;
- Originating Streaming Call;
- Originating Interactive Call;
- Originating Background Call or
- Originating High Priority Signalling.

Upon receipt of a request for deactivation of a PDP context from the SS, the UE shall deactivate PDP context. Then, upon modification procedure initiated by the network, for deactivated PDP context, UE shall reply with SM STATUS message with cause #81, as confirmation that previously SS requested PDP context deactivation was performed by the UE.

### 11.3.3 Abnormal cases

#### 11.3.3.1 T3390 Expiry

##### 11.3.3.1.1 Definition

##### 11.3.3.1.2 Conformance requirement

- On the first expiry of timer T3390, the UE shall resend the message DEACTIVATE PDP CONTEXT REQUEST.
- On the second expiry of timer T3390, the UE shall resend the message DEACTIVATE PDP CONTEXT REQUEST.
- On the third expiry of timer T3390, the UE shall resend the message DEACTIVATE PDP CONTEXT REQUEST.
- On the fourth expiry of timer T3390, the UE shall resend the message DEACTIVATE PDP CONTEXT REQUEST.
- On the fifth expiry of timer T3390, the UE shall release all resources allocated and shall erase the PDP context related data.

#### Reference

3GPP TS 24.008 clause 6.1.3.4.3 a) case In the UE.

##### 11.3.3.1.3 Test purpose

To test the behaviour of the UE when the SS does not reply to a DEACTIVATE PDP CONTEXT REQUEST message from the UE.

##### 11.3.3.1.4 Method of test

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

#### Related ICS/IXIT statements

- PS Supported yes/no
- Method of activating a PDP context
- Method of deactivating a PDP context

#### Test procedure

A PDP context is activated by the user and accepted by the SS. PDP context deactivation is then requested by the user. The UE shall send a DEACTIVATE PDP CONTEXT REQUEST message five times with T3390 seconds between each message. T3390 seconds after the fifth message the SS shall send a MODIFY PDP CONTEXT REQUEST message for the deactivated context and the UE shall reply with SM STATUS with cause set to #81 'Transaction identifier not known'.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		UE		Initiate a context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4		UE		Initiate a context deactivation
5	→		DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a PDP context
6		SS		T3390 seconds
7	→		DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a PDP context
8		SS		T3390 seconds
9	→		DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a PDP context
10		SS		T3390 seconds
11	→		DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a PDP context
12		SS		T3390 seconds
13	→		DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a PDP context
14		SS		Wait T3390 seconds
15	←		MODIFY PDP CONTEXT REQUEST (NETWORK TO UE DIRECTION)	Try to modify the deactivated context.
16	→		SM STATUS	Cause set to #81

Specific message contents

None.

#### 11.3.3.1.5 Test requirements

If SS does not respond to UE initiated PDP context deactivation procedure, the UE shall retransmit a DEACTIVATE PDP CONTEXT REQUEST five times, with T3390 timer expiry between the successive messages, before releasing resources allocated to the PDP context and deleting PDP context related data.

#### 11.3.3.2 Collision of UE and network initiated PDP context deactivation requests

##### 11.3.3.2.1 Definition

##### 11.3.3.2.2 Conformance requirement

If the UE and the network initiated PDP context deactivation requests collide, the UE and the network shall each reply with the message DEACTIVATE PDP CONTEXT ACCEPT and shall stop timer T3390 and T3395, respectively.

Reference

3GPP TS 24.008 clause 6.1.3.4.3 b).

##### 11.3.3.2.3 Test purpose

To test the behaviour of the UE when there is a collision between an UE initiated and network initiated context deactivation.

## 11.3.3.2.4 Method of test

## Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN

## Related ICS/IXIT statements

- PS Supported yes/no
- Method of activating a PDP context
- Method of deactivating a PDP context

## Test procedure

A PDP context is activated by the user and accepted by the SS. Context deactivation is then requested by the user. Upon receipt of the DEACTIVATE PDP CONTEXT REQUEST message the SS sends a DEACTIVATE PDP CONTEXT REQUEST message. The UE shall reply with only one DEACTIVATE PDP CONTEXT ACCEPT message. Upon receipt of this message the SS sends a DEACTIVATE PDP CONTEXT ACCEPT message.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Initiate a context activation
2	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context
3	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
4	UE			Initiate a context deactivation
5	→		DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a PDP context
6	←		DEACTIVATE PDP CONTEXT REQUEST	Request a deactivation of a PDP context
7	→		DEACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context deactivation
8	←		DEACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context deactivation

## Specific message contents

None.

## 11.3.3.2.5 Test requirements

When UE and SS initiated PDP context deactivation requests collide, the UE shall reply with DEACTIVATE PDP CONTEXT ACCEPT to the SS.

## 11.4 Unknown or Unforeseen Transaction Identifier/Non-semantic Mandatory Information Element Errors

### 11.4.1 Error cases

#### 11.4.1.1 Definition

#### 11.4.1.2 Conformance requirement

The mobile station shall ignore a session management message with TI EXT bit = 0. Otherwise, the following procedures shall apply:

- Whenever any session management message, except REQUEST PDP CONTEXT ACTIVATION or SM-STATUS, is received by the UE specifying a transaction identifier which is not recognized as relating to an active context or to a context that is in the process of activation or deactivation, the UE shall send a SM-STATUS message with cause #81 "invalid transaction identifier value" using the received transaction identifier value including the extension octet and remain in the PDP-INACTIVE state.
- When REQUEST PDP CONTEXT ACTIVATION message is received with a transaction identifier flag set to "1", this message shall be ignored.

When on receipt of a message,

- an "imperative message part" error; or
- a "missing mandatory IE" error.

is diagnosed or when a message containing:

- a syntactically incorrect mandatory IE; or
- an IE unknown in the message, but encoded as "comprehension required"; or
- an out of sequence IE encoded as "comprehension required".

is received, the UE shall proceed as follows:

- If the message was a SM message, except DEACTIVATE PDP CONTEXT REQUEST and REQUEST PDP CONTEXT ACTIVATION, the SM-STATUS message with cause # 96 "invalid mandatory information" shall be returned.
  - a) If the message is a DEACTIVATE PDP CONTEXT REQUEST, a DEACTIVATE PDP CONTEXT ACCEPT message shall be returned. All resources allocated for that context shall be released.
  - b) If the message is a REQUEST PDP CONTEXT ACTIVATION, a REQUEST PDP CONTEXT REJECT message with cause # 96 "Invalid mandatory information" shall be returned.
- If a mobile station receives a GMM message or SM message with message type not defined for the PD or not implemented by the receiver, it shall return a status message (GMM STATUS or SM STATUS depending on the protocol discriminator) with cause #97 'message type non-existent or not implemented'.
- If the mobile station receives a message not compatible with the protocol state, the mobile station shall ignore the message except for the fact that, if an RR connection exists, it returns a status message (STATUS, MM STATUS depending on the protocol discriminator) with cause #98 "Message type not compatible with protocol state". When the message was a GMM message the GMM-STATUS message with cause #98 "Message type not compatible with protocol state" shall be returned. When the message was a SM message the SM-STATUS message with cause #98 'Message type not compatible with protocol state' shall be returned.

Other syntactic errors.

This clause applies to the analysis of the value part of an information element. It defines the following terminology:

- An IE is defined to be syntactically incorrect in a message if it contains at least one value defined as 'reserved', or if its value part violates syntactic rules given in the specification of the value part. However it is not a syntactical error that a type 4 standard IE specifies in its length indicator a greater length than possible according to the value part specification: extra bits are ignored.

## Reference

3GPP TS 24.008 clauses 8.3.2, 8.4 and 8.5.

3GPP TS 24.007 clause 11.4.2.

### 11.4.1.3 Test purpose

To test the behaviour of the UE when messages with unknown or unforeseen transaction identifiers or non-semantical mandatory information element errors occur.

### 11.4.1.4 Method of test

#### Initial conditions

System Simulator:

1 cell, default parameters.

User Equipment:

The UE is in GMM-state "GMM-REGISTERED, normal service" with valid P-TMSI and CKSN.

#### Related ICS/IXIT statements

- PS supported    yes/no
- Method of context activation

#### Test procedure

A PDP context activation is requested by the SS with the transaction identifier set to '1'. The UE shall not respond to this request.

A PDP context is then activated from the UE. An invalid accept messages is sent by the SS. The UE replies with SM STATUS message. After T3380 seconds UE sends second autogenerated ACTIVATE PDP CONTEXT REQUEST message. SS again replies with invalid ACTIVATE PDP CONTEXT ACCEPT and UE returns SM STATUS message. After further T3380 seconds UE sends third autogenerated ACTIVATE PDP CONTEXT REQUEST message. SS replies with unknown message and UE returns SM STATUS with cause #97 'message type non-existent or not implemented'. After T3380 seconds the UE sends next autogenerated ACTIVATE PDP CONTEXT REQUEST message, SS replies with MODIFY PDP CONTEXT REQUEST and UE returns SM STATUS with cause #98 'message type not compatible with protocol state'. After T3380 seconds the UE sends last autogenerated ACTIVATE PDP CONTEXT REQUEST message. SS replies with valid accept message.

A deactivate message is then sent from the SS with a different transaction identifier to the one used in the activate request message sent by the UE. The UE shall reply with a SM STATUS message with cause #81 'invalid transaction identifier value'.

Two invalid modification messages are then sent to the UE in turn. The UE shall respond each time with a SM-STATUS message with cause # 96 "invalid mandatory information".

Last MODIFY PDP CONTEXT message sent from SS has TI EXT bit = 0. The UE does not respond to this message.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	←		REQUEST PDP CONTEXT ACTIVATION	Request the activation of a PDP context with the transaction identifier flag set to "1"
2		SS		Wait T3385 seconds to ensure UE does not request context activation
3		UE		Initiate a context request
4	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context from the UE
5	←		ACTIVATE PDP CONTEXT ACCEPT	Unknown IE encoded as 'comprehension required'
6	→		SM STATUS	Cause set to #96
7		SS		Wait T3380 seconds
8	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context from the UE (auto-generated)
9	←		ACTIVATE PDP CONTEXT ACCEPT	Out of sequence IE encoded as 'comprehension required'
10	→		SM STATUS	Cause set to #96
11		SS		Wait T3380 seconds
12	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context from the UE (auto-generated)
13	←		UNKNOWN MESSAGE	Message with unknown message type
14	→		SM STATUS	Cause set to #97
15		SS		Wait T3380 seconds
16	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context from the UE (auto-generated)
17	←		MODIFY PDP CONTEXT REQUEST	Request modification of PDP context
18	→		SM STATUS	Cause set to #98
19		SS		Wait T3380 seconds
20	→		ACTIVATE PDP CONTEXT REQUEST	Activate a PDP context from the UE (auto-generated)
21	←		ACTIVATE PDP CONTEXT ACCEPT	Accept the PDP context
22	←		DEACTIVATE PDP CONTEXT REQUEST	Try to deactivate the context with a different transaction identifier to that used to activate the context
23	→		SM STATUS	Cause set to # 81
24	←		MODIFY PDP CONTEXT REQUEST(NETWORK TO UE DIRECTION)	Request the modification of the PDP context ('New QoS' mandatory IE missing in the message)
25	→		SM STATUS	Cause set to # 96
26	←		MODIFY PDP CONTEXT REQUEST(NETWORK TO UE DIRECTION)	Request the modification of the PDP context (with 'Requested LLC SAPI' set to reserved value '1100')
27	→		SM STATUS	Cause set to # 96
28	←		MODIFY PDP CONTEXT REQUEST(NETWORK TO UE DIRECTION)	Request the modification of the PDP context (TI EXT bit = 0)
29		SS		Wait T3386 seconds to ensure UE does not respond

11.4.1.5

Test requirements

TBD.

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## 12 Elementary procedure for Packet Switched Mobility Management

### 12.1 Applicability, default conditions and default messages

All test cases for PS mobility management apply for all PS mobiles unless otherwise stated in a specific test. Within each test case, the ICS statement indicates whether the test shall be performed for mobiles that can only operate in mode - class A, only in mode - class C, or in both mode - class A and C. For some procedures, the mobile class is of no importance.

Note that only the layer 3 messages are described in the document. The mapping of the layer 3 messages to lower layers and the use of logical channels is not described in the present document.

The terms 'PS/CS mode of operation' and 'PS mode of operation' are not used in the present document with some exceptions. Instead the terms 'UE operation mode A' and 'UE operation mode C' are used.

The default conditions and default message contents not specified in this clause must be set as in "PS default conditions"

Below is a list of the RAI values and the corresponding RAC, LAC and MCC used in the test cases:

RAI-1: MCC1/MNC1/LAC1/RAC1 (Used if only one cell)

RAI-2: MCC2/MNC1/LAC1/RAC1

RAI-3: MCC1/MNC1/LAC2/RAC1

RAI-4: MCC1/MNC1/LAC1/RAC2

RAI-5: MCC1/MNC1/LAC1/RAC3

RAI-6: MCC2/MNC1/LAC2/RAC1

RAI-7: MCC2/MNC1/LAC1/RAC2

RAI-8: MCC1/MNC2/LAC1/RAC1

RAI-9: MCC1/MNC2/LAC2/RAC1

RAI10: MCC1/MNC2/LAC1/RAC2

RAI-11: MCC1/MNC3/LAC1/RAC1

RAI-12: MCC1/MNC1/LAC2/RAC2

If the User Equipment initial condition specifies that the mobile has a valid IMSI but the initial condition does not mention P-TMSI, then that shall be interpreted as that the mobile has no valid P-TMSI.

The tests are based on 3GPP TS 24.008.

### 12.2 PS attach procedure

This procedure is used to indicate for the network that the IMSI is available for traffic by establishment of a GMM context.

#### 12.2.1 Normal PS attach

The normal PS attach procedure is a GMM procedure used by PS UEs of UE operation mode A or C to IMSI attach for PS services only.

## 12.2.1.1 PS attach / accepted

### 12.2.1.1.1 Definition

### 12.2.1.1.2 Conformance requirement

- 1) If the network accepts the PS attach procedure (signalled by an IMSI) and allocates a P-TMSI, the UE shall acknowledge the P-TMSI and continue communication with the P-TMSI.
- 2) If the network accepts the PS attach procedure (signalled by P-TMSI) and reallocates a new P-TMSI, the UE shall acknowledge the new P-TMSI and continue communication with the new P-TMSI.
- 3) If the network accepts the PS attach procedure (signalled by a P-TMSI) from the UE without reallocation of the old P-TMSI, the UE shall continue communication with the old P-TMSI.

### Reference

3GPP TS 24.008 clause 4.7.3.1

### 12.2.1.1.3 Test purpose

To test the behaviour of the UE if the network accepts the PS attach procedure.

The following cases are identified:

- 1) P-TMSI / P-TMSI signature is allocated;
- 2) P-TMSI / P-TMSI signature is reallocated;
- 3) Old P-TMSI / P-TMSI signature is not changed.

### 12.2.1.1.4 Method of test

#### Initial condition

#### System Simulator:

One cell operating in network operation mode II.

#### User Equipment:

The UE has a valid IMSI.

#### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

UE operation mode C Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

#### Test procedure

- 1) The UE sends an ATTACH REQUEST message with identity IMSI. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. The UE acknowledge the P-TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the new P-TMSI.
- 2) The UE sends an ATTACH REQUEST message with identity P-TMSI. The SS reallocates a new P-TMSI and returns ATTACH ACCEPT message with the new P-TMSI. The UE acknowledge the P-TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the new P-TMSI. The UE will not answer signalling addressed to the old P-TMSI.

- 3) The UE sends an ATTACH REQUEST message with identity P-TMSI. The SS accepts the P-TMSI and returns ATTACH ACCEPT message without any P-TMSI. Further communication UE - SS is performed by the old P-TMSI.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set to attach to the PS services only (see ICS). If this is not supported by the UE, goto step 26.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2a	SS			SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
5a	SS			The SS releases the RRC connection.
6	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services. Paging cause: Terminating interactive call
6a	SS			SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating interactive call".
7	->		SERVICE REQUEST	Service type = "paging response"
7a	SS			The SS starts integrity protection and releases the RRC connection.
8	UE			The UE is switched off or power is removed (see ICS).
8a	SS			SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach" (message not sent if power is removed).
9	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
9a	SS			The SS releases the RRC connection.
10	UE			The UE is powered up or switched on and initiates an attach (see ICS).
10a	SS			SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 Routing area identity = RAI-1
11a	<-		AUTHENTICATION AND CIPHERING REQUEST	
11b	->		AUTHENTICATION AND CIPHERING RESPONSE	
11c	SS			The SS starts integrity protection.
12	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
13	->		ATTACH COMPLETE	
14			Void	
14b			Void	
14c	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.

Step	Direction		Message	Comments
	UE	SS		
14d		SS		SS verifies that the UE transmits an RRC CONNECTION REQUEST message. SS will reject this request. The IE "Establishment cause" is not checked.
15	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
16	UE			No response from the UE to the request. This is checked for 10 seconds.
17	UE			The UE is switched off or power is removed (see ICS).
17a		SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach" (message not sent if power is removed).
18	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
18a		SS		The SS releases the RRC connection.
19		UE		The UE is powered up or switched on and initiates an attach (see ICS).
19a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
20	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
20a	<-		AUTHENTICATION AND CIPHERING REQUEST	
20b	->		AUTHENTICATION AND CIPHERING RESPONSE	
20c		SS		The SS starts integrity protection.
21	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
22	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services. Paging cause: Terminating interactive call
22a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating interactive call".
22b			Void	
22c			Void	
23	->		SERVICE REQUEST	Service type = "paging response"
23aa		SS		The SS starts integrity protection and releases the RRC connection.
23a			Void	
23b			Void	
24	UE			The UE is switched off or power is removed (see ICS).
24a		SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach" (message not sent if power is removed).
25	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
25a		SS		The SS releases the RRC connection.
26		UE		The UE is set to attach to both the PS and non-PS services (see ICS) and the test is repeated from step 2 to step 25b.

Specific message contents

None.

### 12.2.1.1.5 Test requirements

At step 2a, 10a and 19a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 6a and 22a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Terminating Interactive Call".

At step 8a, 17a and 24a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, 11 and 20, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

UE shall perform the following actions depending on the Mobile identity in the ATTACH REQUEST message and on the Mobile identity in the ATTACH ACCEPT message.

Case 1) The Mobile identity in the ATTACH REQUEST message is the IMSI and the Mobile identity in the ATTACH ACCEPT message is the P-TMSI.

At step5, UE shall:

- acknowledge the P-TMSI by sending the ATTACH COMPLETE message.

Case 2) The Mobile identity in the ATTACH REQUEST message is the P-TMSI and the Mobile identity in the ATTACH ACCEPT message is the new P-TMSI.

At step13, UE shall:

- acknowledge the new P-TMSI by sending the ATTACH COMPLETE message.

At step23, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

### 12.2.1.2 PS attach / rejected / IMSI invalid / illegal UE

#### 12.2.1.2.1 Definition

#### 12.2.1.2.2 Conformance requirement

- 1) If the network rejects a PS attach procedure from the User Equipment with the cause 'Illegal UE', the User Equipment shall consider USIM invalid for PS services until power is switched off or USIM is removed.
- 2) If the network rejects a PS attach procedure from the User Equipment with the cause 'Illegal UE' the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.
- 3) If the network rejects a PS attach procedure from the User Equipment with the cause 'Illegal UE', the User Equipment shall delete the LAI.

#### Reference

3GPP TS 24.008 clause 4.7.3.1.

#### 12.2.1.2.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'illegal UE'.

#### 12.2.1.2.4 Method of test

#### Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A with MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2).

All three cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'Illegal UE'. The SS checks that the UE does not perform PS attach in the same or another PLMN.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The following messages are sent and shall be received on cell A. The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
3a	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
5	<-		ATTACH REJECT	GMM cause = 'Illegal UE'.
6	SS			The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell". (see note)
7	UE			Cell B is preferred by the UE.
8	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
9	UE			The UE initiates an attach by MMI or by AT command.
10	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
11	SS			The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell". (see note)
12	UE			Cell C is preferred by the UE.
13	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
14	UE			The UE initiates an attach by MMI or by AT command.
15	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
16	UE			If possible (see ICS) switch off is performed. Otherwise the power is removed.
17	UE			The UE is powered up or switched on.
18	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI.
19	UE			The UE initiates an attach (see ICS).
20	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
20a	<-		AUTHENTICATION AND CIPHERING REQUEST	
20b	->		AUTHENTICATION AND CIPHERING RESPONSE	
20c	SS			The SS starts integrity protection.

21	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
22	->	ATTACH COMPLETE	The UE is switched off or power is removed (see ICS).
23	UE		
24	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

### Specific message contents

None.

#### 12.2.1.2.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, 10, 13 and 15, UE shall:

- not send the ATTACH REQUEST message to SS, even if there is an instruction of attach request from MMI or from AT command.

At step20, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

#### 12.2.1.3 PS attach / rejected / IMSI invalid / PS services not allowed

##### 12.2.1.3.1 Definition

##### 12.2.1.3.2 Conformance requirement

- 1) If the network rejects a PS attach procedure from the User Equipment with the cause 'PS services not allowed', the User Equipment shall consider USIM invalid for PS services until power is switched off or USIM is removed.
- 2) If the network rejects a PS attach procedure from the User Equipment with the cause 'PS services not allowed' the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

### Reference

3GPP TS 24.008 clause 4.7.3.1.

##### 12.2.1.3.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'PS services not allowed' (no valid PS-subscription for the IMSI).

##### 12.2.1.3.4 Method of test

### Initial condition

### System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (HPLMN, RAI-1) and cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2).

Both cells are operating in network operation mode II.

## User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

## Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No

USIM removal possible without powering down Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

## Test procedure

The SS rejects a normal attach with the cause value 'PS services not allowed'. The SS checks that the UE does not perform PS attach in another PLMN.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 17.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
3a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
5	<-		ATTACH REJECT	GMM cause = 'PS services not allowed'
5a		SS		The SS releases the RRC connection.
6		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell". (see note)
7	UE			Cell B is preferred by the UE.
8	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
9	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
10	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
10a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
11a	<-		AUTHENTICATION AND CIPHERING REQUEST	
11b	->		AUTHENTICATION AND CIPHERING RESPONSE	
11c		SS		The SS starts integrity protection.
12	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
13	->		ATTACH COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
15a		SS		The SS releases the RRC connection.
16				Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
17	UE			The UE is set in UE operation mode A(see ICS) and the test is repeated from step 3 to step 15.
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

Specific message contents

None.

#### 12.2.1.3.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step8, UE shall:

- not perform a PS attach procedure.

At step11, after the UE is switched on or a USIM is replaced, UE shall:

- perform the PS attach procedure.

### 12.2.1.4 PS attach / rejected / PLMN not allowed

#### 12.2.1.4.1 Definition

#### 12.2.1.4.2 Conformance requirement

- 1) If the network rejects a PS attach procedure from the User Equipment with the cause 'PLMN not allowed' the User Equipment shall:
  - 1.1 not perform PS attach when switched on in the same routing area or location area.
  - 1.2 not perform PS attach when in the same PLMN and when that PLMN is not selected manually.
  - 1.3 delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.
  - 1.4 store the PLMN in the 'forbidden PLMN' list.
- 2) If the network rejects a PS attach procedure from the User Equipment with the cause 'PLMN not allowed' the User Equipment shall perform PS attach when a new PLMN is entered.
- 3) If the network rejects a PS attach procedure from the User Equipment with the cause 'PLMN not allowed' and if after that the PLMN from which this rejection was received, is manually selected, the User Equipment shall perform a PS attach procedure.

#### Reference

3GPP TS 24.008 clause 4.7.3.1.

#### 12.2.1.4.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'PLMN not allowed'.

#### 12.2.1.4.4 Method of test

#### 12.2.1.4.4.1 Test procedure 1

#### Initial condition

System Simulator:

Four cells (not simultaneously activated), cell A in MCC1/MNC2/LAC1/RAC1 (RAI-8), cell B in MCC1/MNC2/LAC1/RAC1 (RAI-8), cell C in MCC1/MNC2/LAC2/RAC1 (RAI-9) and cell D in MCC2/MNC1/LAC1/RAC1 (RAI-2).

All four cells are operating in network operation mode II (in case of UE operation mode A). The PLMN of the four cells should NOT be that of the UE Home PLMN.

#### User Equipment:

The UE has a valid P-TMSI-1 and RAI-8. UE is Idle Updated on cell A.

#### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

#### Test procedure

The SS rejects a PS attach with the cause value 'PLMN not allowed'. The SS checks that the UE does not perform PS attach if activated in the same routing area or location area and performs PS attach only when a new PLMN is entered.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A.
2	UE			The UE is set in UE operation mode C (see ICS).
3		SS		The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell". Set the cell type of cell D to the "Non-Suitable cell". (see note)
3a	UE		Registration on CS	The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE. See TS 34.108 This is applied only for UE in UE operation mode A.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-8
5	<-		ATTACH REJECT	GMM cause = 'PLMN not allowed'
6	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
7		UE		The following messages are sent and shall be received on cell B.
8		SS		The UE is switched off. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell". (see note)
9		UE		The UE is powered up or switched on.
10		UE		Cell B is preferred by the UE.
11		UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
12		SS		The following messages are sent and shall be received on cell C.
13		UE		Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell". (see note)
14		UE		Cell C is preferred by the UE. No ATTACH REQUEST sent to SS (SS waits 30 seconds).
15		SS		The following messages are sent and shall be received on cell D.
16		UE		Set the cell type of cell C to the "Non-Suitable cell". Set the cell type of cell D to the "Serving cell". (see note)
17		UE	Registration on CS	Cell D is preferred by the UE. See TS 34.108 This is applied only for UE in UE operation mode A.
18		UE		The UE initiates an attach automatically, by MMI or by AT command.
19	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
19a	<-		AUTHENTICATION AND CIPHERING REQUEST	
19b	->		AUTHENTICATION AND CIPHERING RESPONSE	
19c		SS		The SS starts integrity protection.

20	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
21	->	ATTACH COMPLETE	The UE is switched off or power is removed (see ICS).
22	UE		
23	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

#### 12.2.1.4.4.2 Test procedure 2

##### Initial condition

##### System Simulator:

One cell operating in network operation mode II: MCC2/MNC1/LAC1/RAC1 (RAI-2). The PLMN of the cell should NOT be that of the Mobile Station Home PLMN.

##### User Equipment:

The UE has a valid P-TMSI-1 and RAI-2. UE is Idle Updated on cell A.

##### Related ICS/IXIT statements

Support of PS service Yes/No  
 UE operation mode C Yes/No  
 UE operation mode A Yes/No (only if mode C not supported)  
 Switch off on button Yes/No  
 Automatic PS attach procedure at switch on or power on Yes/No

##### Test procedure

The SS rejects a PS attach with the cause value 'PLMN not allowed'. The subscribers access rights is changed to allow PS attach. Then the PLMN from which this rejection was received is manually selected and the SS check that a PS attach is performed.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C or A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2a	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1
4	<-		ATTACH REJECT	Routing area identity = RAI-2 GMM cause = 'PLMN not allowed'
5	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds)
6	UE			The current PLMN is selected manually.
7	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
8	UE			The UE initiates an attach automatically, by MMI or by AT command.
9	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
9a	<-		AUTHENTICATION AND CIPHERING REQUEST	
9b	->		AUTHENTICATION AND CIPHERING RESPONSE	
9c	SS			The SS starts integrity protection.
10	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
11	->		ATTACH COMPLETE	
12	UE			The UE is switched off or power is removed (see ICS).
13	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

## Specific message contents

None.

## 12.2.1.4.5 Test requirements

## Test requirements for test procedure 1

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step6, UE shall:

- not perform PS attach procedure.

UE shall perform the following actions depending on the PLMN or the routing area or the location area

Case 1) UE is in the same routing area or location area when the power is switched on,

At step11, UE shall:

- not perform PS attach procedure.

Case2) UE is in the same PLMN, and this PLMN is not selected manually

At step14, UE shall:

- not perform PS attach procedure.

Case3) UE is in a new PLMN.

At step19, UE shall:

- perform the PS attach procedure.

#### Test requirements for test procedure 2

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step5, UE shall:

- not perform PS attach procedure.

At step9, when the UE is in the new PLMN, and this PLMN is selected manually, UE shall

- perform the PS attach procedure.

### 12.2.1.5a PS attach / rejected / roaming not allowed in this location area

#### 12.2.1.5a.1 Definition

#### 12.2.1.5a.2 Conformance requirement

- 1) If the network rejects a PS attach procedure from the User Equipment with the cause 'roaming not allowed in this location area' the User Equipment shall:
  - 1.1 not perform PS attach when in the same location area.
  - 1.2 delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.
  - 1.3 store the LA in the 'forbidden location areas for roaming' list.
  - 1.4 perform PS attach when a new location area is entered.
  - 1.5 Periodically search for its HPLMN.
- 2) The User Equipment shall reset the list of 'Forbidden location areas for roaming' when switched off or when the USIM is removed.
- 3) The UE shall be capable of storing at least 6 entries in the list of 'Forbidden location areas for roaming'.

#### Reference

3GPP TS 24.008 clause 4.7.3.1.

#### 12.2.1.5a.3 Test purpose

##### Test purpose 1

To test that on receipt of a rejection using the 'roaming not allowed in this location area' cause code, the UE ceases trying to attach on that location area. Successful PS attach procedure is possible in other location areas.

##### Test purpose 2

To test that if the UE is switched off or the USIM is removed the list of 'forbidden location areas for roaming' is cleared.

### Test purpose 3

To test that at least 6 entries can be held in the list of 'forbidden location areas for roaming' (the requirement in 3GPP TS 24.008 is to store at least 10 entries. This is not fully tested by the third procedure).

### Test purpose 4

To test that if a cell of the Home PLMN is available then the UE returns to it in preference to any other available cell.

#### 12.2.1.5a.4 Method of test

##### 12.2.1.5a.4.1 Test procedure 1

### Initial condition

#### System Simulator:

Three cells (not simultaneously activated), cell A in MCC2/MNC1/LAC1/RAC1 (RAI-2, Not HPLMN), cell B in

MCC2/MNC1/LAC2/RAC1 (RAI-6, Not HPLMN) and cell C in MCC2/MNC1/LAC1/RAC2 (RAI-7, Not HPLMN).

All three cells are operating in network operation mode II.

#### User Equipment:

The UE has a valid P-TMSI-1 and RAI-2.

### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

### Test procedure

The SS rejects a PS attach with the cause value 'Roaming not allowed in this area'. A new attempt for a PS attach is not possible. Successful PS attach / detach procedures are performed in another location area. A new attempt for a PS attach is performed in the 1<sup>st</sup> location area. This attempt shall not succeed, as the LA is on the forbidden list.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 19.
3		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
3a	UE		Registration on CS	The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE. See TS 34.108 This is applied only for UE in UE operation mode A.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-2
5	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
6	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
7		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell". (see note)
8	UE			Cell B is preferred by the UE.
9	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
10	UE			Parameter mobile identity is IMSI. The UE initiates an attach automatically, by MMI or by AT command.
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
11a	<-		AUTHENTICATION AND CIPHERING REQUEST	
11b	->		AUTHENTICATION AND CIPHERING RESPONSE	
11c	SS			The SS starts integrity protection.
12	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-6
13	->		ATTACH COMPLETE	
14	UE			The UE initiates a PS detach (without power off) by MMI or by AT command .
15	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
16	<-		DETACH ACCEPT	
17		SS		The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell". (see note)
18	UE			Cell C is preferred by the UE.
19	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds). The UE is switched off or power is removed (see ICS)

20 21	UE SS		UE is switched off. Set the cell type of cell C to the "Non-Suitable cell". (see note)
22	UE		The UE is set in UE operation mode A if supported (see ICS) and the test is repeated from step 2 to step 20.
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

#### 12.2.1.5a.4.2 Test procedure 2

##### Initial condition

##### System Simulator:

One cell in MCC2/MNC1/LAC1/RAC1 (RAI-2, Not HPLMN) operating in network operation mode II.

##### User Equipment:

The UE has a valid P-TMSI-1 and RAI-2.

##### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

##### Test procedure

The SS rejects a PS attach updating with the cause value 'Roaming not allowed in this area'. The UE is switched off for 10 s and switched on again. The SS check that a PS attach is possible on the cell on which the PS attach had been rejected.

If USIM removal is possible without switching off: The SS rejects a PS attach with the cause value 'Roaming not allowed in this area'. The USIM is removed and inserted in the UE. The SS check that a PS attach is possible on the cell on which the PS attach had been rejected.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			If UE operation mode C is supported, the UE is set in UE operation mode C (see ICS). If UE operation mode C is not supported, the UE is set in UE operation mode A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2a	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-2
4	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
5	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
6	UE			If possible (see ICS) switch off is performed. Otherwise the power is removed.
7	UE			The UE is powered up or switched on and initiates an attach (see ICS).
8	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
9	->		ATTACH REQUEST	Parameter mobile identity is IMSI Attach type = 'PS attach' Mobile identity = IMSI
9a	<-		AUTHENTICATION AND CIPHERING REQUEST	
9b	->		AUTHENTICATION AND CIPHERING RESPONSE	
9c	SS			The SS starts integrity protection.
10	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
11	->		ATTACH COMPLETE	
12	UE			The UE is switched off or power is removed (see ICS).
13	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

## 12.2.1.5a.4.3 Test procedure 3

## Initial condition

## System Simulator:

Six cells (not simultaneously activated), cell A in MCC2/MNC1/LAC1/RAC1 (RAI-2, Not HPLMN), cell B in MCC2/MNC1/LAC2/RAC1 (RAI-3, Not HPLMN), cell C in MCC2/MNC1/LAC3/RAC1 (Not HPLMN), cell D in MCC2/MNC1/LAC4/RAC1 (Not HPLMN), cell E in MCC2/MNC1/LAC5/RAC1 (Not HPLMN), cell F in MCC2/MNC1/LAC6/RAC1 (Not HPLMN).

All six cells are operating in network operation mode II (in case of UE operation mode A).

## User Equipment:

The UE has a valid P-TMSI-1 and RAI-2.

#### Related ICS/IXIT statements

Support of PS service Yes/No  
UE operation mode C Yes/No  
UE operation mode A Yes/No (only if mode C not supported)  
Switch off on button Yes/No  
Automatic PS attach procedure at switch on or power on Yes/No

#### Test procedure

The SS rejects a PS attach with the cause value 'Roaming not allowed in this area'. This is done for 6 different location areas. Then the SS checks that the UE does not attempt to perform an attach procedure on the non-allowed location areas.

Different types of UE may use different methods to periodically clear the list of forbidden areas (e.g. every day at 12am) for roaming. If the list is cleared while the test is being run, it may be necessary to re-run the test.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell". Set the cell type of cell D to the "Non-Suitable cell". Set the cell type of cell E to the "Non-Suitable cell". Set the cell type of cell F to the "Non-Suitable cell". (see note) The UE is set in UE operation mode C (see ICS).
		SS		
	2	UE		
	3	UE		
	3a	UE	Registration on CS	
	4	->	ATTACH REQUEST	
5	<-	ATTACH REJECT	The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE. See TS 34.108 This is applied only in case of UE operation mode A. Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-2 GMM cause = 'Roaming not allowed in this area'	
6	UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds)	
7		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell". (see note) Cell B is preferred by the UE. See TS 34.108 This is applied only in case of UE operation mode A. Parameter mobile identity is IMSI. The UE initiates an attach automatically, by MMI or by AT command. Attach type = 'PS attach' Mobile identity = IMSI GMM cause = 'Roaming not allowed in this area' No ATTACH REQUEST sent to SS (SS waits 30 seconds).
	8	UE		
	9	UE	Registration on CS	
	10	UE		
	11	->	ATTACH REQUEST	
	12	<-	ATTACH REJECT	
	13	UE		
14		SS		The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell". (see note) Cell C is preferred by the UE. See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI. The UE initiates an attach automatically, by MMI or by AT command. Attach type = 'PS attach' Mobile identity = IMSI
	15	UE		
	16	UE	Registration on CS	
	17	UE		
	18	->	ATTACH REQUEST	

Step	Direction		Message	Comments
	UE	SS		
19	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
20	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
21		SS		The following messages are sent and shall be received on cell D. Set the cell type of cell C to the "Non-Suitable cell". Set the cell type of cell D to the "Serving cell". (see note)
22	UE		Registration on CS	Cell D is preferred by the UE.
23	UE			See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI.
24	UE			The UE initiates an attach automatically, by MMI or by AT command.
25	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
26	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
27	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
28		SS		The following messages are sent and shall be received on cell E. Set the cell type of cell D to the "Non-Suitable cell". Set the cell type of cell E to the "Serving cell". (see note)
29	UE		Registration on CS	Cell E is preferred by the UE.
30	UE			See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI.
31	UE			The UE initiates an attach automatically, by MMI or by AT command.
32	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
33	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
34	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
35		SS		The following messages are sent and shall be received on cell F. Set the cell type of cell E to the "Non-Suitable cell". Set the cell type of cell F to the "Serving cell". (see note)
36	UE		Registration on CS	Cell F is preferred by the UE.
37	UE			See TS 34.108 This is applied only for UE in UE operation mode A. The UE initiates an attach automatically, by MMI or by AT command.
38	UE			
39	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
40	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
41	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds)
42		SS		The following messages are sent and shall be received on cell E. Set the cell type of cell E to the "Serving cell". Set the cell type of cell F to the "Non-Suitable cell". (see note)

Step	Direction		Message	Comments
	UE	SS		
43		SS		Cell E is preferred by the UE. The UE initiates an attach automatically, by MMI or by AT command. No ATTACH REQUEST sent to SS (SS waits 30 seconds).
44		UE		
45		UE		
46		SS		The following messages are sent and shall be received on cell C. Set the cell type of cell C to the "Serving cell". Set the cell type of cell E to the "Non-Suitable cell". (see note) Cell C is preferred by the UE. The UE initiates an attach automatically, by MMI or by AT command. No ATTACH REQUEST sent to SS (SS waits 30 seconds).
47		SS		
48		UE		
49		UE		
50		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell C to the "Non-Suitable cell". (see note) Cell A will be preferred by the UE. The UE initiates an attach automatically, by MMI or by AT command. No ATTACH REQUEST sent to SS (SS waits 30 seconds).
51		SS		
52		UE		
53		UE		
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

#### 12.2.1.5a.4.4 Test procedure4

##### Initial condition

##### System Simulator:

Two cells, cell A in MCC2/MNC1/LAC1/RAC1 (not HPLMN, RAI-2) and cell B in MCC1/MNC1/LAC1/RAC1 (HPLMN, RAI-1).  
Both cells are operating in network operation mode II (in case of UE operation mode A).

##### User Equipment:

The UE has a valid P-TMSI-1 and RAI-2.

##### Related ICS/IXIT statements

Support of PS service Yes/No  
 UE operation mode C Yes/No  
 UE operation mode A Yes/No (only if mode C not supported)  
 Switch off on button Yes/No  
 Automatic PS attach procedure at switch on or power on Yes/No

##### Test procedure

The SS rejects a PS attach with the cause value 'Roaming not allowed in this area A second cell belonging to the HPLMN is activated. It is checked that the UE returns to its HPLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A.
2	UE			The UE is set in UE operation mode C (see ICS).
3		SS		The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)
3a	UE		Registration on CS	The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE. See TS 34.108 This is applied only in case of UE operation mode A.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-2
5	<-		ATTACH REJECT	GMM cause = 'Roaming not allowed in this area'
6	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
7		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
8	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI.
9	UE			The UE initiates an attach automatically, by MMI or by AT command.
10	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
10a	<-		AUTHENTICATION AND CIPHERING REQUEST	
10b	->		AUTHENTICATION AND CIPHERING RESPONSE	
10c	SS			The SS starts integrity protection.
11	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
12	->		ATTACH COMPLETE	
13	UE			The UE is switched off or power is removed (see ICS).
14	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

Specific message contents

None.

### 12.2.1.5a.5 Test requirements

#### Test requirements for Test procedure1

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step6, when the UE receives the ATTACH REJECT message with GMM cause = 'Roaming not allowed in this area', UE shall:

- not perform the PS attach procedure.

At step11, when the new location area is entered, UE shall:

- perform the PS attach procedure

At step19, when the rejected location area is entered, UE shall

- not perform PS attach procedure.

#### Test requirements for Test procedure2

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step5, after the UE receives the ATTACH REJECT message with GMM cause = 'Roaming not allowed in this area', UE shall:

- not perform PS attach procedure.

At step9, when the UE is switched off or USIM is replaced, UE shall:

- perform the PS attach procedure.

#### Test requirements for Test procedure3

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step6, 13, 20, 27, 34 and 41, after the UE receives the ATTACH REJECT message with GMM cause = 'Roaming not allowed in this area', UE shall:

- not perform PS attach procedure.

At step11, 18, 25, 32 and 39 , UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step45, 49 and 53, UE shall:

- not perform PS attach procedure.

#### Test requirements for Test procedure4

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step6, when the UE receives the ATTACH REJECT message with GMM cause = 'Roaming not allowed in this area', UE shall:

- not perform PS attach procedure.

At step10, when a new location area is entered, UE shall:

- perform the PS attach procedure.

## 12.2.1.5b PS attach / rejected / No Suitable Cells In Location Area

### 12.2.1.5b.1 Definition

### 12.2.1.5b.2 Conformance requirement

- (1) If the network rejects a PS attach procedure from the User Equipment with the cause 'No Suitable Cells In Location Area', the User Equipment shall:
  - 1.1 not perform PS attach when in the same location area.
  - 1.2 delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.
  - 1.3 store the LA in the 'forbidden location areas for roaming' list.
  - 1.4 not delete the list of "equivalent PLMNs".
  - 1.5 perform PS attach when a new location area is entered.

### Reference

3GPP TS 24.008 clauses 4.7.3.1.

### 12.2.1.5b.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'No Suitable Cells In Location Area'.

### 12.2.1.5b.4 Method of test

#### Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC2/RAC1 (RAI-6)

All three cells are operating in network operation mode II.

The PLMN contains Cell C is equivalent to the PLMN that contains Cell A.

User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

#### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

### Test procedure

The SS rejects a PS attach with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall search for a suitable cell in a different location area on the same PLMN and shall perform PS attach procedure in that cell.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
				The following messages are sent and shall be received on cell A.
1	UE			The UE is set in UE operation mode A (see ICS).
2		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-suitable cell". Set the cell type of cell C to the "Non-suitable cell". (see note)
3	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 Routing area identity = RAI-1 Equivalent PLMNs = MCC2,MNC1
6	<-		DETACH REQUEST	Detach type = re-attach required
7	->		DETACH ACCEPT	
8		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". (see note) The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C
9	UE		Registration on CS	See TS 34.108 This is applied only in case of UE operation mode A.
10	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
11	<-		ATTACH REJECT	GMM cause = 'No Suitable Cells In Location Area'
12		SS		The SS initiates the RRC connection release. The following message are sent and shall be received on cell C.
13	UE		Registration on CS	See TS 34.108
14	UE			The UE initiates an attach automatically, by MMI or by AT command.
15	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
16	<-		AUTHENTICATION AND CIPHERING REQUEST	
17	->		AUTHENTICATION AND CIPHERING RESPONSE	
18		SS		The SS starts integrity protection.
19	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-6
20	->		ATTACH COMPLETE	
21	UE			The UE is switched off or power is removed (see ICS).
22	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE: The definitions for "Suitable neighbour cell", "Non-suitable cell" and "Serving cell" are specified in TS 34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

Specific message contents

None.

#### 12.2.1.5b.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step15, when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- perform the PS attach procedure.

#### 12.2.1.5c PS attach / rejected / Location area not allowed

##### 12.2.1.5c.1 Definition

##### 12.2.1.5c.2 Conformance requirement

- 1) If the network rejects a PS attach procedure from the User Equipment with the cause 'Location area not allowed' the User Equipment shall:
  - 1.1 delete any RAI, P-TMSI, P-TMSI signature and PS ciphering key sequence number.
  - 1.2 set the PS update status to GU3 ROAMING NOT ALLOWED.
  - 1.3 reset the attach attempt counter.
  - 1.4 store the LAI in the list of "forbidden location areas for regional provision of service".
    - 1.1 perform a cell selection.
    - 1.2 not delete the list of "equivalent PLMNs".
- 2) If the network rejects a PS attach procedure from the User Equipment with the cause 'Location area not allowed' and if the User Equipment is IMSI attached via MM procedures the User Equipment shall:
  - 2.1 set the update status to U3 ROAMING NOT ALLOWED.
  - 2.2 delete any TMSI, LAI and ciphering key sequence number.
  - 2.3 reset the location update attempt counter.

#### Reference

3GPP TS 24.008 clause 4.7.3.1.

##### 12.2.1.5c.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'Location area not allowed'.

##### 12.2.1.5c.4 Method of test

#### Initial condition

System Simulator:

Three cells cell A with MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell C in MCC2/MNC1/LAC2/RAC1 (RAI-6).

All three cells are operating in network operation mode II (in case of UE operation mode A).

The PLMN contains Cell C is equivalent to the PLMN that contains Cell A.

## User Equipment:

The UE has a valid P-TMSI-1, RAI-1.

## Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

## Test procedure

The SS rejects a PS attach with the cause value 'Location area not allowed'. The SS checks that the UE does not perform MM IMSI attach while in the same location area and performs PS attach when a new equivalent PLMN is entered.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A.
2	UE			The UE is set in UE operation mode A (see ICS).
3		SS		The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the " Non-suitable cell ". Set the cell type of cell C to the " Non-suitable cell " (see note)
3	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 Routing area identity = RAI-1 Equivalent PLMNs = MCC2,MNC1
6	<-		DETACH REQUEST	Detach type = re-attach required
7	->		DETACH ACCEPT	
8		SS		The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the " Suitable neighbour cell ". Set the cell type of cell C to the " Suitable neighbour cell " (see note) The SS configures power level of each Cell as follows. Cell A > Cell B > Cell C
9	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
10	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1
11	<-		ATTACH REJECT	GMM cause = 'Location area not allowed'
12	UE			The UE performs cell selection. The following messages are sent and shall be received on cell C.
13	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
14	<-		AUTHENTICATION AND CIPHERING REQUEST	
15	->		AUTHENTICATION AND CIPHERING RESPONSE	
16	SS			The SS starts integrity protection.
17	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-6
18	->		ATTACH COMPLETE	
19	UE			No MM IMSI attach request sent to SS (SS waits 30 seconds).
20	UE			The UE is switched off or power is removed (see ICS).
21	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE:	The definitions for "Suitable neighbour cell", "Non-suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

Specific message contents

None.

#### 12.2.1.5c.5 Test requirements

At step4 and 10, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step12, UE shall:

- perform cell selection.

At step13, UE shall:

- perform PS attach procedure with Mobile identity = IMSI.

At step19, UE shall:

- not perform MM IMSI attach

#### 12.2.1.5d PS attach / rejected / PS services not allowed in this PLMN

##### 12.2.1.5d.1 Definition

##### 12.2.1.5d.2 Conformance requirement

- 1) If the network rejects a PS attach procedure from the User Equipment with the cause 'PS service not allowed in this PLMN' the User Equipment shall:
  - 1.1 delete any RAI, P-TMSI, P-TMSI signature and PS ciphering key sequence number.
  - 1.2 set the PS update status to GU3 ROAMING NOT ALLOWED.
  - 1.3 store the PLMN identity in the "forbidden PLMNs for PS service" list.
  - 1.4 perform a PLMN selection instead of a cell selection.
- 2) If the UE is in UE operation mode A and the network is in network operation mode II the User Equipment shall:
  - 2.1 be still IMSI attached for CS services in the network..

#### Reference

3GPP TS 24.008 clause 4.7.3.1.

##### 12.2.1.5d.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'PS service not allowed in this PLMN'.

##### 12.2.1.5d.4 Method of test

#### Initial condition

System Simulator:

Three cells cell A with MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC2/MNC1/LAC1/RAC2 (RAI-7).

All three cells are operating in network operation mode II (in case of UE operation mode A).

The PLMN contains Cell C is equivalent to the PLMN that contains Cell A.

## User Equipment:

The UE has a valid P-TMSI-1, RAI-1.

## Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

## Test procedure

The SS rejects a PS attach with the cause value 'PS service not allowed in this PLMN'. The SS checks that the UE performs PS attach with attach type = PS attach when a new equivalent PLMN is entered.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A.
2	UE			The UE is set in UE operation mode A (see ICS).
3		SS		The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the " Non-suitable cell ". Set the cell type of cell C to the " Non-suitable cell " (see note)
4	UE		Registration on CS	The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE. See TS 34.108 This is applied only for UE in UE operation mode A.
5	->		ATTACH REQUEST	Mobile identity = TMSI-1 Attach type = 'PS attach'
6	<-		ATTACH ACCEPT	Mobile identity = P-TMSI-1 Attach result = 'PS only attached'
7	<-		DETACH REQUEST	Mobile identity = P-TMSI-1 Routing area identity = RAI-1 Equivalent PLMNs = MCC2,MNC1
8	->		DETACH ACCEPT	Detach type = re-attach required
9		SS		The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the " Suitable neighbour cell ". Set the cell type of cell C to the " Suitable neighbour cell " (see note)
10	->		ATTACH REQUEST	Attach type = 'PS attach'
11	<-		ATTACH REJECT	Mobile identity = P-TMSI-1 GMM cause = 'PS service not allowed in this PLMN'
12	UE			The UE performs PLMN selection. The following messages are sent and shall be received on cell C.
13	->		ATTACH REQUEST	Attach type = 'PS attach'
14	<-		AUTHENTICATION AND CIPHERING REQUEST	Mobile identity = IMSI
15	->		AUTHENTICATION AND CIPHERING RESPONSE	
16	SS			The SS starts integrity protection.
17	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-7
18	->		ATTACH COMPLETE	
19	UE		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
20		SS		No response from the UE to the request. This is checked for 10 seconds.
21	->		RRC CONNECTION REQUEST	
22	<-		RRC CONNECTION SETUP	
23	->		RRC CONNECTION SETUP COMPLETE	
24	->		PAGING RESPONSE	
25	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.

26	->	RRC CONNECTION RELEASE COMPLETE	
27	UE		The UE is switched off or power is removed (see ICS).
28	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
NOTE: The definitions for "Suitable neighbour cell", "Non-suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

### Specific message contents

None.

#### 12.2.1.5d.5 Test requirements

At step5 and 10, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step12, UE shall:

- perform PLMN selection.

At step13, UE shall:

- perform PS attach procedure with Mobile identity = IMSI to the equivalent cell.

At step21, UE shall:

- respond the Paging for CS domain service.

#### 12.2.1.6 PS attach / abnormal cases / access barred due to access class control

##### 12.2.1.6.1 Definition

##### 12.2.1.6.2 Conformance requirement

- 1) The UE shall not perform PS attach procedure, but stays in the current serving cell and applies normal cell reselection process.
- 2) The User Equipment shall perform the PS attach procedure when:
  - 2.1 Access is granted.
  - 2.2 Cell is changed.

### Reference

3GPP TS 24.008 clause 4.7.3.1.

##### 12.2.1.6.3 Test purpose

###### Test purpose1

To test the behaviour of the UE in case of access class control (access is granted).

###### Test purpose2

To test the behaviour of the UE in case of access class control (Cell is changed).

12.2.1.6.4 Method of test

12.2.1.6.4.1 Test procedure1

#### Initial condition

An access class x (0-15) is arbitrarily chosen. The USIM is programmed with this access class x. Communication with User Equipments using access class x is initially indicated to be barred.

#### System Simulator:

One cell operating in network operation mode II.  
Access class x barred.

#### User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

#### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

#### Test procedure

The SS indicates access class x barred. A PS attach procedure is not performed.

The SS indicates that access class x is not barred. A PS attach procedure is performed.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The USIM is programmed with access class x.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 12.
3	UE			The UE is powered up or switched on and attempts to initiate an attach (see ICS).
4	UE			No ATTACH REQUEST sent to SS, as access class x is barred (SS waits 30 seconds).
5	SS			The access class x is not barred anymore.
6	UE			The UE initiates a PS attach either automatically or manually (see ICS).
7	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
7a	<-		AUTHENTICATION AND CIPHERING REQUEST	
7b	->		AUTHENTICATION AND CIPHERING RESPONSE	
7c	SS			The SS starts integrity protection.
8	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
9	->		ATTACH COMPLETE	
10	UE			The UE is switched off or power is removed (see ICS).
11	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
12	SS			The SS is set in network operation mode II.
13	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 3 to step 11.

## 12.2.1.6.4.2 Test procedure2

## Initial condition

An access class x (0-15) is arbitrarily chosen. The USIM is programmed with this access class x. Communication with User Equipments using access class x is indicated to be barred on cell A.

## System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) has access class x barred, cell B in MCC1/MNC1/LAC1/RAC1 (RAI-1) has access class x not barred.

Both cells are operating in network operation mode II (in case of UE operation mode A).

## User Equipment:

The UE has a valid P-TMSI-2 and RAI-1.

## Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

## Test procedure

The SS indicates access class x barred. A PS attach procedure is not performed.

A cell change is performed into a cell where access class x is not barred. A PS attach procedure is performed.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE	SS		The USIM is programmed with access class x. The following messages are sent and shall be received on cell A.
2		SS		The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)
3	UE			The UE is set in UE operation mode C (see ICS).
4	UE			The UE is powered up or switched on and attempts to initiate an attach (see ICS).
5	UE			No ATTACH REQUEST sent to SS, as access class x is barred (SS waits 30 seconds).
6		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
7	UE			The UE initiates an attach either automatically or manually (see ICS).
8	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 Routing area identity = RAI-1
8a	<-		AUTHENTICATION AND CIPHERING REQUEST	
8b	->		AUTHENTICATION AND CIPHERING RESPONSE	
8c	SS			The SS starts integrity protection.
9	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
10	->		ATTACH COMPLETE	
11	UE			The UE is switched off or power is removed (see ICS).
12	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

## Specific message contents

None.

## 12.2.1.6.5 Test requirements

## Test requirements for Test procedure1

At step4, when the UE access class x is barred, UE shall:

- not perform a PS attach procedure.

At step7, when the UE access class x is granted, UE shall:

initiate the PS attach procedure.

Test requirements for Test procedure2

At step5, when the UE access class x is barred, UE shall:

- not perform a PS attach procedure.

At step8, when the serving cell is changed, UE shall:

- initiate the PS attach procedure.

## 12.2.1.7 PS attach / abnormal cases / change of routing area

12.2.1.7.1 Definition

12.2.1.7.2 Conformance requirement

When a change of routing area is performed before ATTACH ACCEPT message is received by the UE, the UE shall abort the PS attach procedure and re-initiate it immediately.

Reference

3GPP TS 24.008 clause 4.7.3.1.

12.2.1.7.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

12.2.1.7.4 Method of test

Initial condition

System Simulator:

One cell with MCC1/MNC1/LAC1/RAC1 (RAI-1)

The cell is operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a PS attach procedure. The ATTACH ACCEPT message is delayed from the SS. The UE receive a new routing area code. The UE shall re-initiate a PS attach procedure in the new routing area.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. The UE is set in UE operation mode C (see ICS). The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". (see note) The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE. SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration". Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1 No response to the ATTACH REQUEST message is given by the SS.
2	UE			
3		SS		
3a	UE			
4		SS	ATTACH REQUEST	
5	->			
6			Void	The SS conveys updated CN system information for the PS domain to the UE in connected mode, including a new routing area code.  The UE automatically re-initiates the attach. Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1  The SS starts integrity protection. No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'PS only attached' Routing area identity = RAI-4 The UE is switched off or power is removed (see ICS). Message not sent if power is removed. Detach type = 'power switched off, PS detach' The SS releases the RRC connection.
6a	<-		UTRAN MOBILITY INFORMATION	
6b	->		UTRAN MOBILITY INFORMATION CONFIRM	
7	UE			
8		SS	ATTACH REQUEST	
8a	<-		AUTHENTICATION AND CIPHERING REQUEST	
8b	->		AUTHENTICATION AND CIPHERING RESPONSE	
8c	SS			
9	<-		ATTACH ACCEPT	
10	UE			
11	->		DETACH REQUEST	
11a				
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

## Specific message contents

## UTRAN MOBILITY INFORMATION (step 6a)

The contents of the UTRAN MOBILITY INFORMATION message in this test case is identical to the default message in TS 34.108, with the following exceptions.

Information Element	Value/remark
New U-RNTI	Not Present
New C-RNTI	Not Present
UE Timers and constants in connected mode	Not Present
CN information info	
- PLMN identity	Not Present
- CN common GSM-MAP NAS system information	Not Present
- CN domain related information	
- CN domain identity	CS domain
- CN domain specific GSM-MAP NAS system info	
- T3212	30
- ATT	1
- CN domain specific DRX cycle length coefficient	7
- CN domain related information	
- CN domain identity	PS domain
- CN domain specific GSM-MAP NAS system info	
- RAC	RAC-2
- NMO	1 (Network Mode of Operation II)
- CN domain specific DRX cycle length coefficient	7

#### 12.2.1.7.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected sequence.

At step8, as the UE has received a new RAI in the UTRAN MOBILITY INFORMATION message before the ATTACH ACCEPT message or the ATTACH REJECT message is received by the UE, the UE shall:

- abort the PS attach procedure and re-initiate the PS attach procedure immediately with new information elements.

#### 12.2.1.8 PS attach / abnormal cases / power off

##### 12.2.1.8.1 Definition

##### 12.2.1.8.2 Conformance requirement

When power is switched off before ATTACH ACCEPT message is received by the UE, the UE shall abort the PS attach procedure and perform a PS detach procedure.

##### Reference

3GPP TS 24.008 clause 4.7.3.

##### 12.2.1.8.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

##### 12.2.1.8.4 Method of test

##### Initial condition

##### System Simulator:

One cell operating in network operation mode II.

##### User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

#### Related ICS/IXIT statements

Support of PS service Yes/No  
 UE operation mode C Yes/No  
 UE operation mode A Yes/No  
 Switch off on button Yes/No  
 Automatic PS attach procedure at switch on or power on Yes/No

#### Test procedure

The UE is switched off after initiating an attach procedure. A PS detach is automatically performed by the UE before power is switched off.

#### Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 7.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4		SS		No response to the ATTACH REQUEST message is given by the SS.
5	UE			The UE is powered off and initiates a PS detach (with power off) by
6	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'
7	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 6.

#### Specific message contents

None.

#### 12.2.1.8.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step6, when power is switched off before ATTACH ACCEPT message is received, UE shall:

- abort the PS attach procedure and perform the PS detach procedure.

#### 12.2.1.9 PS attach / abnormal cases / PS detach procedure collision

##### 12.2.1.9.1 Definition

##### 12.2.1.9.2 Conformance requirement

- 1) When a DETACH REQUEST message is received by the UE (any cause except re-attach) while waiting for an ATTACH ACCEPT message, the UE shall terminate the PS attach procedure and continue with the PS detach procedure.
- 2) When a DETACH REQUEST message is received by the UE (cause re-attach) while waiting for an ATTACH ACCEPT message, the UE shall ignore the PS detach procedure and continue with the PS attach procedure.

## Reference

3GPP TS 24.008 clause 4.7.3.1.

### 12.2.1.9.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

### 12.2.1.9.4 Method of test

## Initial condition

### System Simulator:

One cell operating in network operation mode II.

### User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

## Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No (only if mode C not supported)

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

## Test procedure

The UE initiates a PS attach procedure. The SS does not answer the PS attach procedure, but initiates a PS detach procedure (any cause except re-attach). The UE shall terminate the PS attach procedure and continue with the PS detach procedure.

The UE initiates a PS attach procedure. The SS does not answer the PS attach procedure, but initiates a PS detach procedure (cause re-attach). The UE shall ignore the PS detach procedure and continue with the PS attach.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4	SS			The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
5	<-		DETACH REQUEST	Detach type = 're-attach not required'
6	->		DETACH ACCEPT	
7	UE			The UE initiates the attach procedure by MMI or AT command.
8	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
9	SS			The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
10	<-		DETACH REQUEST	Detach type = 're-attach required'
11	UE			The UE ignores the DETACH REQUEST message and continue with the attach procedure.
12	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
13	->		ATTACH COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

## Specific message contents

None.

## 12.2.1.9.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

UE shall perform the following actions depending on the Detach type in the DETACH REQUEST message.

Case1) Detach type = 're-attach not required' GMM cause is not re-attach

At step6, when the DETACH REQUEST message is received by the UE while waiting for an ATTACH ACCEPT message, UE shall:

- terminate the PS attach procedure and continue with the PS detach procedure.

Case2) Detach type = 're-attach required'

At step11, when the DETACH REQUEST message is received by the UE while waiting for an ATTACH ACCEPT message, UE shall:

- ignore the PS detach procedure and continue with the PS attach procedure.

## 12.2.2 Combined PS attach

### 12.2.2.1 Combined PS attach / PS and non-PS attach accepted

#### 12.2.2.1.1 Definition

#### 12.2.2.1.2 Conformance requirement

- 1) If the network accepts the combined PS attach procedure (signalled by an IMSI) and allocates a P-TMSI, the UE shall acknowledge the P-TMSI and continue communication with the P-TMSI.
- 2) If the network accepts the combined PS attach procedure (signalled by P-TMSI) and reallocates a new P-TMSI, the UE shall acknowledge the new P-TMSI and continue communication with the new P-TMSI.
- 3) If the network accepts the combined PS attach procedure (signalled by a P-TMSI) from the UE without reallocation of the previously used P-TMSI, the UE shall continue communication with the previously used P-TMSI.
- 4) If the network accepts the combined PS attach procedure and determines that IMSI shall be used in CS operations, the UE shall continue communication with the IMSI for CS operations.
- 5) If the network accepts the combined PS attach procedure and determines that a TMSI shall be used in CS operations, the UE shall continue communication with the TMSI for CS operations.

#### Reference

3GPP TS 24.008 clause 4.7.3.2.

#### 12.2.2.1.3 Test purpose

To test the behaviour of the UE if the network accepts the PS attach procedure.

The following cases are identified:

- 1) P-TMSI / P-TMSI signature is allocated;
- 2) P-TMSI / P-TMSI signature is reallocated;
- 3) Old P-TMSI / P-TMSI signature is not changed;
- 4) Mobile terminating CS call is allowed with IMSI;
- 5) Mobile terminating CS call is not allowed with TMSI.

#### 12.2.2.1.4 Method of test

##### Initial condition

##### System Simulator:

One cell operating in network operation mode I.

##### User Equipment:

The UE has a valid IMSI.

##### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode A	Yes/No
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

## Test procedure

- 1) The UE sends an ATTACH REQUEST message with identity IMSI. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. The UE acknowledge the P-TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the new P-TMSI. For CS calls, the IMSI is used.
- 2) The UE is CS paged in order to verify that the IMSI is used for CS calls.
- 3) The UE is PS paged in order to verify that the new P-TMSI is used for PS services.
- 4) The UE sends an ATTACH REQUEST message with identity P-TMSI. The SS allocates a new P-TMSI and returns ATTACH ACCEPT message with the new P-TMSI and a new TMSI. The UE acknowledge the P-TMSI and the TMSI by sending ATTACH COMPLETE message. Further communication UE - SS is performed by the new P-TMSI. For CS calls, the new TMSI is used. The UE is CS paged in order to verify that the new TMSI is used for CS services.
- 5) The UE is PS paged in order to verify that the new P-TMSI is used for PS services. The UE will not answer signalling addressed to the old P-TMSI.
- 6) The UE sends an ATTACH REQUEST message with identity P-TMSI. The SS accepts the P-TMSI and returns ATTACH ACCEPT message without any P-TMSI. Further communication UE - SS is performed by the previously used P-TMSI.
- 7) The UE is PS paged in order to verify that the previously used P-TMSI is used for PS services.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
3a		<-	AUTHENTICATION AND CIPHERING REQUEST	
3b		->	AUTHENTICATION AND CIPHERING RESPONSE	
3c		SS		The SS starts integrity protection.
4		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity =IMSI Routing area identity = RAI-1
5		->	ATTACH COMPLETE	
5a		SS		The SS releases the RRC connection and waits 5s to allow the UE to read system information.
6		<-	PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services. Paging cause = "Terminating conversational call"
7		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating conversational call".
8			Void	
9			Void	
10		->	PAGING RESPONSE	Mobile identity = IMSI
11		SS		The SS releases the RRC connection and waits 5s to allow the UE to read system information.
12			Void	
13		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging for PS services Paging cause = "Terminating interactive call"
13a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating interactive call".
13b			Void	
13c			Void	
14		->	SERVICE REQUEST	service type = "paging response"
14aa		SS		The SS starts integrity protection.
14a		SS		The SS releases the RRC connection.
14b			Void	
15	UE			The UE is switched off or power is removed (see ICS).
15a		SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach".
16		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
16a		SS		If the power was not removed, the SS releases the RRC connection.
17	UE			The UE is powered up or switched on and initiates an attach (see ICS).

Step	Direction		Message	Comments
	UE	SS		
17a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
18	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 TMSI status = no valid TMSI available Routing area identity = RAI-1
18a	<-		AUTHENTICATION AND CIPHERING REQUEST	
18b	->		AUTHENTICATION AND CIPHERING RESPONSE	
18c	SS			The SS starts integrity protection.
19	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
20	->		ATTACH COMPLETE	
21			Void	
21b			Void	
21c	SS			The SS releases the RRC connection and waits 5s to allow the UE to read system information.
22	<-		PAGING TYPE 1	Mobile identity = TMSI-1 Paging order is for CS services. Paging cause = "Terminating conversational call"
23	SS			SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating conversational call".
24			Void	
25			Void	
26	->		PAGING RESPONSE	Mobile identity = TMSI-1
27	SS			The SS releases the RRC connection and waits 5s to allow the UE to read system information.
28			Void	
29	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging for PS services Paging cause = "Terminating interactive call"
29a	SS			SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating interactive call".
29b			Void	
29c			Void	
30	->		SERVICE REQUEST	service type = "paging response"
30aa	SS			The SS starts integrity protection.
30a	SS			The SS releases the RRC connection and waits 5s to allow the UE to read system information.
30b			Void	
31	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging for PS services Paging cause = "Terminating interactive call"
32	UE			No response from the UE to the request. This is checked for 10 seconds.
33	UE			The UE is switched off or power is removed (see ICS).
33a	SS			SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach".
34	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
34a	SS			If the power was not removed, the SS releases the RRC connection.
35	UE			The UE is powered up or switched on and initiates an attach (see ICS).

Step	Direction		Message	Comments
	UE	SS		
35a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
36	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-2 Routing area identity = RAI-1 TMSI status = valid TMSI available
36a	<-		AUTHENTICATION AND CIPHERING REQUEST	
36b	->		AUTHENTICATION AND CIPHERING RESPONSE	
36c	SS			The SS starts integrity protection.
37	<-		ATTACH ACCEPT	No new mobile identity assigned. TMSI and P-TMSI not included. Attach result = 'Combined PS / IMSI attached' P-TMSI-3 signature Routing area identity = RAI-1
37a	SS			The SS releases the RRC connection and waits 5s to allow the UE to read system information.
38	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging for PS services Paging cause = "Terminating interactive call"
38a	SS			SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating interactive call".
38b			Void	
38c			Void	
39	->		SERVICE REQUEST	service type = "paging response"
39aa	SS			The SS starts integrity protection.
39a	SS			The SS releases the RRC connection.
39b			Void	
40	UE			The UE is switched off or power is removed (see ICS).
40a	SS			SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach".
41	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
42		SS		If the power was not removed, the SS releases the RRC connection.

### Specific message contents

None.

#### 12.2.2.1.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

Case 1) SS accept the combined PS attach procedure (signalled by an IMSI) and allocates a P-TMSI.

At step5, UE shall

- send the ATTACH COMPLETE message.

At step10, when the UE receives the paging message for CS domain with Mobile identity = IMSI, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step14, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-1, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

Case 2) SS accepts the combined PS attach procedure (signalled by P-TMSI) and reallocates a new P-TMSI and TMSI.

At step20, UE shall:

- send the ATTACH COMPLETE message.

At step26, when the UE receives the paging message for CS domain with Mobile identity = TMSI, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step30, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-2, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

Case 3) SS accepts the combined PS attach procedure (signalled by a P-TMSI) from the UE without reallocation of the previously used P-TMSI.

At step39, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-2, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

## 12.2.2.2 Combined PS attach / PS only attach accepted

### 12.2.2.2.1 Definition

### 12.2.2.2.2 Conformance requirement

- 1) If the network accepts the combined PS attach procedure, but GMM cause code 'IMSI unknown in HLR' is sent to the UE the User Equipment shall delete the stored TMSI, LAI and CKSN. The User Equipment shall consider USIM invalid for non-PS services until power is switched off or USIM is removed.
- 2) If the network accepts the combined PS attach procedure, but GMM cause code 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is sent to the UE, an UE operation mode A UE may perform an MM IMSI attach procedure.

### Reference

3GPP TS 24.008 clause 4.7.3.2.

### 12.2.2.2.3 Test purpose

#### Test purpose1

To test the behaviour of the UE if the network accepts the PS attach procedure with indication PS only, GMM cause 'IMSI unknown in HLR'.

#### Test purpose2

To test the behaviour of the UE which does not support an automatic MM IMSI attach if the network accepts the PS attach procedure with indication PS only, GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion'.

#### Test purpose 3

To test the behaviour of the UE which supports an automatic MM IMSI attach if the network accepts the PS attach procedure with indication PS only, GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion'.

12.2.2.2.4 Method of test

12.2.2.2.4.1 Test procedure1

Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE sends an ATTACH REQUEST message with identity IMSI. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. GMM cause 'IMSI unknown in HLR' is indicated from SS. Further communication UE - SS is performed by the P-TMSI. CS services are not possible.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI  TMSI status = no valid TMSI available
3a		<-	AUTHENTICATION AND CIPHERING REQUEST	
3b		->	AUTHENTICATION AND CIPHERING RESPONSE	
3c		SS		The SS starts integrity protection.
4		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature GMM cause = 'IMSI unknown in HLR' Routing area identity = RAI-1
5		->	ATTACH COMPLETE	
6		<-	PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
7	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
8	UE			The UE is switched off or power is removed (see ICS).
9		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

## 12.2.2.2.4.2 Test procedure2

## Initial condition

## System Simulator:

One cell operating in network operation mode I. T3212 and T3302 is set to 6 minutes.

## User Equipment:

The UE has a valid TMSI, P-TMSI and RAI.

## Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

## Test procedure

The UE sends an ATTACH REQUEST message. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is indicated from SS. The cause code is arbitrarily chosen. The UE sends a ROUTING AREA UPDATE REQUEST message. The SS returns a ROUTING AREA UPDATE ACCEPT message. GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is indicated from SS. The cause code is arbitrarily chosen. The ROUTING AREA UPDATE procedure is repeated four times. An UE operation mode A UE may then perform an MM IMSI attach procedure (according to the ICS statement). Further communication UE - SS is performed by the P-TMSI. The existence of a signalling channel is verified by a request for mobile identity.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A and no automatic MM IMSI attach procedure is indicated (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1 TMSI status = valid TMSI available or IE is omitted
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature  Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
5	->		ATTACH COMPLETE	
7	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-2 signature Routing area identity = RAI-1
8	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-3 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
10	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-3 signature Routing area identity = RAI-1
11	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-4 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
12	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-4 signature Routing area identity = RAI-1
13	SS			The SS verifies that the time between the previous routing area update accept and routing area update request is T3311.
14	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-5 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)

Step	Direction		Message	Comments
	UE	SS		
16		->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-5 signature Routing area identity = RAI-1
17		<-	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-6 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
18-20 21			(void)	
21	UE			The UE is switched off or power is removed (see ICS).
22		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'. Stop the sequence.

#### 12.2.2.2.4.3 Test procedure 3

##### Initial condition

##### System Simulator:

One cell operating in network operation mode I. T3212 and T3302 is set to 6 minutes.

##### User Equipment:

The UE has a valid TMSI, P-TMSI and RAI.

##### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

##### Test procedure

The UE sends an ATTACH REQUEST message. The SS allocates a P-TMSI and returns ATTACH ACCEPT message with a P-TMSI. GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is indicated from SS. The cause code is arbitrarily chosen. The UE sends a ROUTING AREA UPDATE REQUEST message. The SS returns a ROUTING AREA UPDATE ACCEPT message. GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is indicated from SS. The cause code is arbitrarily chosen. The ROUTING AREA UPDATE procedure is repeated four times. An UE operation mode A UE may then perform an MM IMSI attach procedure (according to the ICS statement). Further communication UE - SS is performed by the P-TMSI. The existence of a signalling channel is verified by a request for mobile identity.

##### Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			Automatic MM IMSI attach procedure is indicated (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1 TMSI status = valid TMSI available or IE is omitted
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI not included. Attach result = 'PS only attached' P-TMSI-2 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
5	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-2 signature Routing area identity = RAI-1
6	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-3 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
7	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-3 signature Routing area identity = RAI-1
8	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-4 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
9	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-4 signature Routing area identity = RAI-1
10	SS			The SS verifies that the time between the previous routing area update accept and routing area update request is T3311.
11	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-5 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
12	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA / LA updating with IMSI attach' P-TMSI-5 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available

Step	Direction		Message	Comments
	UE	SS		
13		SS		The SS verifies that the time between the previous routing area update accept and routing area update request is T3311.
14	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-6 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
15	UE			An automatic MM IMSI attach procedure is initiated.
16	UE		Registration on CS	Optional step. See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is TMSI Steps 4917 - 5523 are only performed if the UE has performed the Registration Procedure in step 4116.
17	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
18	->		RRC CONNECTION REQUEST	
19	<-		RRC CONNECTION SETUP	
20	->		RRC CONNECTION SETUP COMPLETE	
21	->		PAGING RESPONSE	Mobile identity = TMSI-1
22	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
23	->		RRC CONNECTION RELEASE COMPLETE	
24	UE			The UE is switched off or power is removed (see ICS).
25	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

#### Specific message contents

None.

#### 12.2.2.2.5 Test requirements

##### Test requirements for Test purpose1

At step3, when the UE is powered up or switched on, UE shall:

- initiate the Combined PS attach procedure with information elements specified in the above Expected Sequence.

At step7, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

##### Test requirements for Test purpose2

At step3, when the UE is powered up or switched on, UE shall:

- initiate the Combined PS attach procedure with information elements specified in the above Expected Sequence.

At step7, 10, 12 and 16, when the routing area updating attempt counter is less than 5 and the stored RAI is equal to the RAI of the current serving cell, UE shall:

- perform the combined routing area update procedure indicating "combined RA/LA updating with IMSI attach".

### Test requirements for Test purpose3

At step3, when the UE is powered up or switched on, UE shall:

- initiate the Combined PS attach procedure with information elements specified in the above Expected Sequence.

At step5, 7, 9 and 11, when the routing area updating attempt counter is less than 5 and the stored RAI is equal to the RAI of the current serving cell, UE shall:

- perform the combined routing area update procedure indicating "combined RA/LA updating with IMSI attach".

At step16, UE shall:

- perform MM location updating procedure.

At step21, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

## 12.2.2.3 Combined PS attach / PS attach while IMSI attach

### 12.2.2.3.1 Definition

### 12.2.2.3.2 Conformance requirement

If the PS UE is already attached for non-PS services by the MM specific attach procedure, but wants to perform an attach for PS services, the combined PS attach procedure is performed.

### Reference

3GPP TS 24.008 clause 4.7.3.2.

### 12.2.2.3.3 Test purpose

To test the behaviour of the UE if PS attach performed while IMSI attached.

### 12.2.2.3.4 Method of test

#### Initial condition

#### System Simulator:

One cell operating in network operation mode I. ATT flag is set.

#### User Equipment:

The UE has a valid TMSI-1, P-TMSI-1 and RAI-1.

#### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

## Test procedure

The UE is forced to register for CS services but not to PS services. The SS verifies that the UE does not respond to paging messages for PS domain. Then the UE is triggered to perform the PS attach procedure and the SS verifies that it responds to PS paging messages.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS) and configured not to perform an automatic PS attach at switch on.
2	UE			The UE is powered up or switched on. No PS attach is performed (see ICS).
3			Registration on CS	See TS 34.108 Location updating type = IMSI attach.
4	<-		PAGING TYPE1	The SS allocates TMSI-1 Mobile identity = P-TMSI-1 Paging order is for PS services.
5	UE			No response from the UE to the request. This is checked for 10 seconds.
6	UE			The UE is triggered to perform a PS attach.
7	->		ATTACH REQUEST	Attach type = 'PS attach while IMSI attached' or 'Combined PS / IMSI attached' Mobile identity =P-TMSI-1 Routing area identity = RAI-1
7a	<-		AUTHENTICATION AND CIPHERING REQUEST	
7b	->		AUTHENTICATION AND CIPHERING RESPONSE	
7c	SS			The SS starts integrity protection.
8	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' No new mobile identity assigned. TMSI and P-TMSI not included P-TMSI-2 signature Routing area identity = RAI-1
9	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10	->		RRC CONNECTION REQUEST	
11	<-		RRC CONNECTION SETUP	
12	->		RRC CONNECTION SETUP COMPLETE	
13	->		SERVICE REQUEST	service type = "paging response"
14	<-		RRC CONNECTION RELEASE	
15	->		RRC CONNECTION RELEASE COMPLETE	
16	UE			The UE is switched off or power is removed (see ICS).
17	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

## Specific message contents

None.

## 12.2.2.3.5 Test requirements

UE is already attached for non-PS service with the MM specific attach procedure.

At step5, UE shall:

- not respond to the paging message for PS domain.

At step7, when the UE is requested to attach for PS services, UE shall:

- perform the combined PS attach procedure.

At step13, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

## 12.2.2.4 Combined PS attach / rejected / IMSI invalid / illegal ME

### 12.2.2.4.1 Definition

### 12.2.2.4.2 Conformance requirement

- 1) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'Illegal ME', the User Equipment shall consider USIM invalid for PS and non-PS services until power is switched off or USIM is removed.
- 2) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'Illegal ME', the User Equipment shall delete the stored TMSI, LAI, CSKN, RAI, PS-CKSN, P-TMSI and P-TMSI signature.

### Reference

3GPP TS 24.008 clause 4.7.3.2

### 12.2.2.4.3 Test purpose

To test the behaviour of the UE if the network rejects the combined PS attach procedure of the UE with the cause 'Illegal ME'.

### 12.2.2.4.4 Method of test

#### Initial condition

#### System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC2/MNC1/LAC1/RAC1(RAI-2).  
All three cells are operating in network operation mode I.

#### User Equipment:

The UE has a valid TMSI-1, P-TMSI-1 and RAI-1.

#### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode A	Yes/No
USIM removal possible without powering down	Yes/No
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

#### Test procedure

The SS rejects a PS attach with the cause value 'Illegal ME'. The SS checks that the UE does not perform PS attach in the same or another PLMN. CS services are not possible as the USIM is blocked for CS services. PS services are not possible as the USIM is blocked for PS services.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or 'PS attach while IMSI attached' Mobile identity = P-TMSI-1 Routing area identity = RAI-1 TMSI status = valid TMSI available or IE is omitted
5	<-		ATTACH REJECT	GMM cause 'Illegal ME'.
6	UE		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
7	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
8	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services
9	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
10	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
11	UE			No response from the UE to the request. This is checked for 10 seconds.
12		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell". (see note)
13	UE			Cell B is preferred by the UE.
14	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
15	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services
16	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
17		SS		The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell". (see note)
18	UE			Cell C is preferred by the UE.
19	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
20	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for PS services
21	UE			No response from the UE to the request. This is checked for 10 seconds.
22	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
23	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).

Step	Direction		Message	Comments
	UE	SS		
24	UE			Step 25 is only performed for non-auto attach UE.
25	UE		Registration on CS	A location updating procedure is initiated. See TS34.108
26	UE			Parameter Mobile identity is IMSI.
27	->		ATTACH REQUEST	UE initiates an attach automatically (see ICS), by MMI or AT commands. Attach type = 'Combined PS / IMSI attach' or 'PS attach while IMSI attached' Mobile identity = IMSI TMSI status = no valid TMSI available
27a	<-		AUTHENTICATION AND CIPHERING REQUEST	
27b	->		AUTHENTICATION AND CIPHERING RESPONSE	
27c	SS			The SS starts integrity protection.
28	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-2
29	->		ATTACH COMPLETE	
30	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
31	->		RRC CONNECTION REQUEST	
32	<-		RRC CONNECTION SETUP	
33	->		RRC CONNECTION SETUP COMPLETE	
34	->		PAGING RESPONSE	Mobile identity = TMSI-2
35	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
36	->		RRC CONNECTION RELEASE COMPLETE	
37	UE			The UE is switched off or power is removed (see ICS).
38	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

### Specific message contents

None.

#### 12.2.2.4.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step7, 9 and 16, when the UE receives the paging message for CS domain, UE shall,

- not respond to the paging message for CS domain.

At step11 and 21, when the UE receives the paging message for PS domain, UE shall,

- not respond to the paging message for PS domain.

At step27, when the USIM is replaced, UE shall:

- perform the combined PS attach procedure.

At step34, when the UE receives the paging message for CS domain, UE shall,

- respond to the paging message for CS domain by sending the RAGING RESPONSE message.

### 12.2.2.5 Combined PS attach / rejected / PS services and non-PS services not allowed

#### 12.2.2.5.1 Definition

#### 12.2.2.5.2 Conformance requirement

- 1) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'PS services and non-PS services not allowed', the User Equipment shall consider USIM invalid for PS and non-PS services until power is switched off or USIM is removed.
- 2) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'PS services and non-PS services not allowed', the User Equipment shall delete the stored TMSI, LAI, CSKN, RAI, PS-CKSN, P-TMSI and P-TMSI signature.

#### Reference

3GPP TS 24.008 clause 4.7.3.2.

#### 12.2.2.5.3 Test purpose

To test the behaviour of the UE if the network rejects the combined PS attach procedure of the UE with the cause 'PS services and non-PS services not allowed'.

#### 12.2.2.5.4 Method of test

##### Initial condition

##### System Simulator:

- Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2). Both cells are operating in network operation mode I.

##### User Equipment:

- The UE has a valid TMSI-1, P-TMSI-1 and RAI-1.

##### Related ICS/IXIT statements

- Support of PS service Yes/No
- UE operation mode A Yes/No
- Switch off on button Yes/No
- Automatic PS attach procedure at switch on or power on Yes/No

##### Test procedure

The SS rejects a PS attach with the cause value 'PS services and non-PS services not allowed'. The SS checks that the UE does not perform PS attach in the same or another PLMN. CS services are not possible as the USIM is blocked for CS services. PS services are not possible as the USIM is blocked for PS services.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or 'PS attach while IMSI attached' Mobile identity =P-TMSI-1 Routing area identity = RAI-1
5	<-		ATTACH REJECT	GMM cause 'PS services and non-PS services not allowed'
6	UE			The SS verifies that the UE does not attempt to access the network. (SS waits 30 seconds).
7	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
8	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
9	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS Paging.
10	UE			No response from the UE to the request. This is checked for 10 seconds
11		SS		Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell". (see note)
12			(void)	
13	UE			The SS verifies that the UE does not attempt to access the network. (SS waits 30 seconds).
14	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
15	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
16	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
17	UE			No response from the UE to the request. This is checked for 10seconds.
18	UE			If possible (see ICS) switch off is performed. Otherwise the power is removed.
19	UE		Registration on CS	The UE is powered up or switched. See TS 34.108 This step is applied only for non-auto attach UE. Location Update Procedure initiated from the UE. Parameter mobile identity is IMSI.
20	UE			UE initiates an attach automatically (see ICS), by MMI or AT commands.
21	UE			
22	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or 'PS attach while IMSI attached' Mobile identity = IMSI TMSI status = no valid TMSI available
22a	<-		AUTHENTICATION AND CIPHERING REQUEST	
22b	->		AUTHENTICATION AND CIPHERING RESPONSE	
22c	SS			The SS starts integrity protection.

Step	Direction		Message	Comments
	UE	SS		
23		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-2
24		->	ATTACH COMPLETE	
25		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
26		->	RRC CONNECTION REQUEST	
27		<-	RRC CONNECTION SETUP	
28		->	RRC CONNECTION SETUP COMPLETE	
29		->	PAGING RESPONSE	Mobile identity = TMSI-1
30		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
31		->	RRC CONNECTION RELEASE COMPLETE	
32		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging is for PS services.
33		->	RRC CONNECTION REQUEST	
34		<-	RRC CONNECTION SETUP	
35		->	RRC CONNECTION SETUP COMPLETE	
36		->	SERVICE REQUEST	Service type = "paging response"
37		<-	RRC CONNECTION RELEASE	
38		->	RRC CONNECTION RELEASE COMPLETE	
39	UE			The UE is switched off or power is removed (see ICS).
40		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

### Specific message contents

None.

#### 12.2.2.5.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step8 and 14, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step10 and 17, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step22, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure.

At step29, when the UE receives the paging message for CS domain, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step36, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

## 12.2.2.6 Combined PS attach / rejected / PS services not allowed

### 12.2.2.6.1 Definition

### 12.2.2.6.2 Conformance requirement

- 1) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'PS services not allowed', the User Equipment shall consider USIM invalid for PS services until power is switched off or USIM is removed.
- 2) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'PS services not allowed' the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.
- 3) A PS class AUE shall perform an MM IMSI attach procedure.

### Reference

3GPP TS 24.008 clause 4.7.3.2

### 12.2.2.6.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'PS services not allowed'.

### 12.2.2.6.4 Method of test

#### Initial condition

#### System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2).  
Both cells are operating in network operation mode I.  
ATT flag set to 1

#### User Equipment:

The UE has a valid TMSI, P-TMSI-1 and RAI-1.

#### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode A	Yes/No
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

#### Test procedure

The SS rejects a normal attach with the cause value 'PS services not allowed'. The SS checks that the UE does not perform PS attach. PS services are not possible. An UE operation mode A UE shall perform an MM IMSI attach.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
2	UE			The UE is powered up or switched on.
2a	UE		Registration on CS	See TS 34.108 This step is applied only for non-auto attach UE.
2b	UE			Location Update Procedure initiated from the UE. Parameter mobile identity is TMSI-1.
3	->		ATTACH REQUEST	UE initiates an attach automatically (see ICS), via MMI or AT commands. Attach type = 'Combined PS / IMSI attach' or 'PS attach while IMSI attached' Mobile identity = P-TMSI-1
4	<-		ATTACH REJECT	Routing area identity = RAI-1 GMM cause 'PS services not allowed'
5	UE			An automatic MM IMSI attach procedure is initiated.
6	UE		Registration on CS	See TS 34.108 Location updating type = IMSI attach.
7	<-		PAGING TYPE1	The SS allocates TMSI-2. Mobile identity = TMSI-2 Paging order is for CS services.
8	->		RRC CONNECTION REQUEST	
9	<-		RRC CONNECTION SETUP	
10	->		RRC CONNECTION SETUP COMPLETE	
11	->		PAGING RESPONSE	Mobile identity = TMSI-2
12	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signaling link.
13	->		RRC CONNECTION RELEASE COMPLETE	
14		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell". (see note)
15	UE			Cell B is preferred by the UE.
16	UE			A location updating procedure is initiated.
17	UE		Registration on CS	See TS 34.108 Location updating type = normal.
18	<-		PAGING TYPE1	The SS allocates TMSI-1. Mobile identity = TMSI-1 Paging order is for CS services.
19	->		RRC CONNECTION REQUEST	
20	<-		RRC CONNECTION SETUP	
21	->		RRC CONNECTION SETUP COMPLETE	
22	->		PAGING RESPONSE	Mobile identity = TMSI-1
23	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
24	->		RRC CONNECTION RELEASE COMPLETE	
25	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging is for PS services
26	UE			No response from the UE to the request. This is checked for 10seconds.
27	UE			If possible (see ICS) switch off is performed. Otherwise the power is removed.

Step	Direction		Message	Comments
	UE	SS		
27a	UE			If switch off is performed then UE performs IMSI detach procedure.
28 28a	UE UE		Registration on CS	The UE is powered up or switched. See TS 34.108 This step is applied only for non-auto attach UE. Location Update Procedure initiated from the UE. Parameter mobile identity is TMSI-1.
28b	UE			UE initiates an attach automatically (see ICS), via MMI or AT commands.
29	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or 'PS attach while IMSI attached' Mobile identity = IMSI
29a	<-		AUTHENTICATION AND CIPHERING REQUEST	
29b	->		AUTHENTICATION AND CIPHERING RESPONSE	
29c 30	SS <-		ATTACH ACCEPT	The SS starts integrity protection. Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-2 Routing area identity = RAI-2
31 32	-> <-		ATTACH COMPLETE PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
33 34 35	-> <- ->		RRC CONNECTION REQUEST RRC CONNECTION SETUP RRC CONNECTION SETUP COMPLETE	
36 37	-> <-		PAGING RESPONSE RRC CONNECTION RELEASE	Mobile identity = TMSI-2 After sending of this message, the SS waits for disconnection of the CS signalling link.
38	->		RRC CONNECTION RELEASE COMPLETE	
39	UE			The UE is switched off or power is removed (see ICS).
40	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

### Specific message contents

None.

#### 12.2.2.6.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step6, if the UE is PS class A, UE shall:

- perform the MM IMSI attach procedure.

At step11, 22 and 36, when the UE receives the paging message for CS domain, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step26, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step29, UE shall:

- perform the PS attach procedure.

### 12.2.2.7a Combined PS attach / rejected / location area not allowed

#### 12.2.2.7a.1 Definition

#### 12.2.2.7a.2 Conformance requirement

- 1) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'location area not allowed' the User Equipment shall:
  - 1.1 not perform combined PS attach when in the same location area.
  - 1.2 delete the stored LAI, CKSN, TMSI, RAI, PS-CKSN, P-TMSI and P-TMSI signature.
  - 1.3 store the LA in the 'forbidden location areas for regional provision of service'.
  - 1.4 not delete the list of "equivalent PLMNs".
  - 1.5 perform a cell selection.
- 2) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'location area not allowed' the User Equipment shall:
  - 2.1 perform combined PS attach when a new location area is entered.
  - 2.2 delete the list of forbidden LAs when power is switched off.

#### Reference

3GPP TS 24.008 clauses 4.7.3.2.

#### 12.2.2.7a.3 Test purpose

To test the behaviour of the UE if the network rejects the combined PS attach procedure with the cause 'Location Area not allowed'.

To test that the UE deletes the list of forbidden LAs when power is switched off.

#### 12.2.2.7a.4 Method of test

#### Initial condition

##### System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC2/MNC1/LAC2/RAC1 (RAI-6).  
All cells are operating in network operation mode I.

The PLMN that contains Cell C is equivalent to the PLMN that contains Cell A.

##### User Equipment:

The UE has a valid TMSI, P-TMSI and RAI.

#### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode A	Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

#### Test procedure

The SS rejects a combined PS attach with the cause value 'Location Area not allowed'. The SS checks that the UE does not perform combined PS attach while in the location area, performs PS attach when a new location area is entered and deletes the list of forbidden LAs when switched off. CS services are not possible unless an IMSI attach procedure is performed.

Different types of UE may use different methods to periodically clear the list of forbidden location areas (e.g. every day at 12am). If the list is cleared while the test is being run, it may be necessary to re-run the test.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
2		SS		The UE is set in UE operation mode A (see ICS).
3		UE		The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
3a	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or "PS Attach while IMSI attached" Mobile identity = P-TMSI-1
3b	<-		ATTACH ACCEPT	Routing area identity = RAI-1 Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1 Equivalent PLMNs = MCC2,MNC1
3c	<-		DETACH REQUEST	Detach type = re-attach required
3d	->		DETACH ACCEPT	
4	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or "PS Attach while IMSI attached" Mobile identity = P-TMSI-1 Routing area identity = RAI-1
5	<-		ATTACH REJECT	GMM cause 'Location Area not allowed'
6	UE			No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
7	<-		PAGING TYPE1	Mobile identity = TMSI Paging order is for CS services.
8	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
9	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10	->			No response from the UE to the request. This is checked for 10 seconds
11		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell". (see note)
11a	UE			The UE performs cell selection.
12	UE			Cell B is preferred by the UE.
13	UE			No ATTACH REQUEST or LOCATION UPDATING REQ is sent to SS (SS waits 60 seconds)
15	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
16	UE			No response from the UE to the request. This is checked for 10seconds.
17	UE			The UE initiates an attach by MMI or AT command.
18				No attach is performed by the UE. This is checked for 10 seconds.
				The following messages are sent and shall be received on cell C.

Step	Direction		Message	Comments
	UE	SS		
19		SS		Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell". (see note)
19a	UE			The UE performs cell selection
20	UE			Cell C is preferred by the UE. Step 20a is only performed for non-auto attach UE and is optional.
20a	UE		Registration on CS	Parameter Mobile identity is IMSI. See TS 34.108
20b	UE			UE initiates an attach automatically (see ICS) via MMI or AT commands.
21	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
21a	<-		AUTHENTICATION AND CIPHERING REQUEST	
21b	->		AUTHENTICATION AND CIPHERING RESPONSE	
21c	SS			The SS starts integrity protection.
22	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-6
23	->		ATTACH COMPLETE	
24	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
25	->		RRC CONNECTION REQUEST	
26	<-		RRC CONNECTION SETUP	
27	->		RRC CONNECTION SETUP COMPLETE	
28	->		PAGING RESPONSE	Mobile identity = TMSI-1
29	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
30	->		RRC CONNECTION RELEASE COMPLETE	
31	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
32	->		RRC CONNECTION REQUEST	
33	<-		RRC CONNECTION SETUP	
34	->		RRC CONNECTION SETUP COMPLETE	
35	->		SERVICE REQUEST	Service type = "paging response"
36	<-		RRC CONNECTION RELEASE	
37	->		RRC CONNECTION RELEASE COMPLETE	
38	UE			The UE is switched off or power is removed (see ICS).
39	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
40	UE			The following messages are sent and shall be received on cell B. Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell". (see note)
41	UE			Cell B is preferred by the UE. The UE is powered up or switched on and initiates an attach (see ICS).
42				Step 43 is only performed for non-auto attach UE.
43	UE		Registration on CS	See TS 34.108
44	UE			UE initiates an attach automatically (see ICS), by MMI or AT commands.

Step	Direction		Message	Comments
	UE	SS		
45	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or 'PS Attach while IMSI attached' Mobile identity = P-TMSI-1 Routing area identity = RAI-6
45a	<-		AUTHENTICATION AND CIPHERING REQUEST	
45b	->		AUTHENTICATION AND CIPHERING RESPONSE	
45c		SS		The SS starts integrity protection.
46	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-4
47	->		ATTACH COMPLETE	
48	<-		PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
49	->		RRC CONNECTION REQUEST	
50	<-		RRC CONNECTION SETUP	
51	->		RRC CONNECTION SETUP COMPLETE	
52	->		PAGING RESPONSE	Mobile identity = TMSI-2
53	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
54	->		RRC CONNECTION RELEASE COMPLETE	
55	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
56	->		RRC CONNECTION REQUEST	
57	<-		RRC CONNECTION SETUP	
58	->		RRC CONNECTION SETUP COMPLETE	
59	->		SERVICE REQUEST	service type = "paging response"
60	<-		RRC CONNECTION RELEASE	
61	->		RRC CONNECTION RELEASE COMPLETE	
62		UE		The UE is switched off or power is removed (see ICS).
63	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

### Specific message contents

None.

#### 12.2.2.7a.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence

At step6, when the UE receives the ATTACH REJECT message with GMM cause = 'Location Area not allowed', UE shall:

- not initiate MM location updating procedure.

At step8, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step10 and 16, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step13 and 18, when the UE is in the same location area, UE shall:

- not perform PS attach procedure.

At step21, when the UE enters a new location area, UE shall

- perform the combined PS attach procedure.

At step28 and 52, when the UE receives the paging message for CS domain, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step35 and 59, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step45, when the UE is powered up or switched on, UE shall:

- perform the combined PS attach procedure.

### 12.2.2.7b Combined PS attach / rejected / No Suitable Cells In Location Area

#### 12.2.2.7b.1 Definition

#### 12.2.2.7b.2 Conformance requirement

- 1) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'No Suitable Cells In Location Area', the User Equipment shall:
  - 1.1 not perform combined PS attach when in the same location area.
  - 1.2 delete the stored LAI, CKSN, TMSI, RAI, PS-CKSN, P-TMSI and P-TMSI signature.
  - 1.3 store the LA in the 'forbidden location areas for roaming'.
  - 1.4 not delete the list of "equivalent PLMNs".
- 2) If the network rejects a combined PS attach procedure from the User Equipment with the cause 'No Suitable Cells In Location Area', the User Equipment shall:
  - 2.1 search for a suitable cell in a different location area on the same PLMN.

#### Reference

3GPP TS 24.008 clauses 4.7.3.2.

#### 12.2.2.7b.3 Test purpose

To test the behaviour of the UE if the network rejects the combined PS attach procedure with the cause 'No Suitable Cells In Location Area'.

#### 12.2.2.7b.4 Method of test

#### Initial condition

#### System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2)

## User Equipment:

The UE has valid TMSI, P-TMSI and RAI

The PLMN contains Cell C is equivalent to the PLMN that contains Cell A.

## Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

## Test procedure

The SS rejects a combined PS attach with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall search for a suitable cell in a different location area on the same PLMN and shall perform combined PS attach procedure in that cell

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following message are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1 Equivalent PLMNs = MCC2,MNC1
6	<-		DETACH REQUEST	Detach type = re-attach required
7	->		DETACH ACCEPT	
8		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". (see note) The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C
9	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
10	<-		ATTACH REJECT	GMM cause = 'No Suitable Cells In Location Area'
11		SS		The SS initiates the RRC connection release. The following message are sent and shall be received on cell B.
12	UE			The UE initiates an attach automatically, by MMI or by AT command.
13	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
14	<-		AUTHENTICATION AND CIPHERING REQUEST	
15	->		AUTHENTICATION AND CIPHERING RESPONSE	
16		SS		The SS starts integrity protection.
17	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-3
18	->		ATTACH COMPLETE	
19	UE			The UE is switched off or power is removed (see ICS).
20	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

Specific message contents

None.

#### 12.2.2.7b.5 Test requirements

At step4 and 9, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected sequence.

At step13, when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- initiate the combined PS attach procedure.

#### 12.2.2.7c Combined PS attach / rejected / Roaming not allowed in this location area

##### 12.2.2.7c.1 Definition

##### 12.2.2.7c.2 Conformance requirement

- 1) If the network rejects a PS attach procedure from the User Equipment with the cause 'Roaming area not allowed in this location area' the User Equipment shall:
  - 1.1 delete any RAI, P-TMSI, P-TMSI signature and PS ciphering key sequence number.
  - 1.2 set the PS update status to GU3 ROAMING NOT ALLOWED.
  - 1.3 delete any TMSI, LAI and ciphering key sequence number.
  - 1.4 store the LAI in the list of "forbidden location areas for roaming".
  - 1.5 perform a PLMN selection.

##### Reference

3GPP TS 24.008 clause 4.7.3.1.

##### 12.2.2.7c.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'Roaming not allowed in this location area'.

##### 12.2.2.7c.4 Method of test

##### Initial condition

##### System Simulator:

Three cells cell A with MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC1/MNC1/LAC2/RAC2 (RAI-12)  
All three cells are operating in network operation mode I.

##### User Equipment:

The UE has valid TMSI, P-TMSI and RAI.

##### Related ICS/IXIT statements

Support of PS service Yes/No  
 UE operation mode A Yes/No (only if mode C not supported)  
 Switch off on button Yes/No  
 Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a PS attach with the cause value 'Roaming area not allowed in this location area'. The SS checks that the UE performs PLMN selection.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or "PS Attach while IMSI attached" Mobile identity = P-TMSI-1
5	<-		ATTACH REJECT	Routing area identity = RAI-1 GMM cause = 'Roaming area not allowed in this location area'
6	UE			No LOCATION UPDATING REQ and ATTACH REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
7	<-		PAGING TYPE1	Mobile identity = TMSI Paging order is for CS services.
8	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
9	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10	->			No response from the UE to the request. This is checked for 10 seconds
11	UE			UE performs PLMN selection.
12		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell". (see note)
13	UE			Cell B is preferred by the UE.
14	UE			No LOCATION UPDATING REQ is sent to SS (SS waits 60 seconds)
15	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
15a	<-		AUTHENTICATION AND CIPHERING REQUEST	
15b	->		AUTHENTICATION AND CIPHERING RESPONSE	
15c	SS			The SS starts integrity protection.
16	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-4
17	->		ATTACH COMPLETE	
18		SS		The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell". (see note)
19	UE			Cell C is preferred by the UE.
20	UE		Registration on CS	Parameter Mobile identity is IMSI. See TS 34.108
21	UE			UE initiates an attach automatically (see ICS) via MMI or AT commands.

Step	Direction		Message	Comments
	UE	SS		
22		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
23		->	RRC CONNECTION REQUEST	
24		<-	RRC CONNECTION SETUP	
25		->	RRC CONNECTION SETUP COMPLETE	
26		->	PAGING RESPONSE	Mobile identity = TMSI-1
27		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
28		->	RRC CONNECTION RELEASE COMPLETE	
29		<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
30		->	RRC CONNECTION REQUEST	
31		<-	RRC CONNECTION SETUP	
32		->	RRC CONNECTION SETUP COMPLETE	
33		->	SERVICE REQUEST	Service type = "paging response"
34		<-	RRC CONNECTION RELEASE	
35		->	RRC CONNECTION RELEASE COMPLETE	
36	UE			The UE is switched off or power is removed (see ICS).
37		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

#### Specific message contents

None.

#### 12.2.2.7c.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step6, UE shall:

- not perform MM IMSI attach and PS attach.

At step8, UE shall:

- not respond to paging for CS domain service.

At step10, UE shall:

- not respond to paging for PS domain service.

At step15, UE shall:

- perform PS attach procedure.

At step20, UE shall:

- perform MM IMSI attach procedure.

## 12.2.2.7d Combined PS attach / rejected / PS services not allowed in this PLMN

### 12.2.2.7d.1 Definition

### 12.2.2.7d.2 Conformance requirement

- 1) If the network rejects a PS attach procedure from the User Equipment with the cause 'PS service not allowed in this PLMN' the User Equipment shall:
  - 1.1 delete any RAI, P-TMSI, P-TMSI signature and PS ciphering key sequence number.
  - 1.2 set the PS update status to GU3 ROAMING NOT ALLOWED.
  - 1.3 store the PLMN identity in the "forbidden PLMNs for PS service" list.
- 2) If the UE is in UE operation mode A the User Equipment shall:
  - 2.1 perform IMSI attach for non-GPRS services by use of the MM IMSI attach procedure.

### Reference

3GPP TS 24.008 clause 4.7.3.1.

### 12.2.2.7d.3 Test purpose

To test the behaviour of the UE if the network rejects the PS attach procedure of the UE with the cause 'PS service not allowed in this PLMN'.

### 12.2.2.7d.4 Method of test

#### Initial condition

#### System Simulator:

Two cells cell A with MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2). All two cells are operating in network operation mode I.

The PLMN contains Cell B is equivalent to the PLMN that contains Cell A.

#### User Equipment:

The UE has a valid P-TMSI-1, RAI-1.

#### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode C	Yes/No
UE operation mode A	Yes/No (only if mode C not supported)
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

#### Test procedure

The SS rejects a PS attach with the cause value 'PS service not allowed in this PLMN'. The SS checks that the UE does not perform PS attach and performs an IMSI attach for non-PS services by use of the MM IMSI attach procedure when in the same cell.

After the cell is changed to equivalent PLMN, the UE shall perform PS attach procedure.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A.
2	UE			The UE is set in UE operation mode A (see ICS).
3		SS		The SS is set in network operation mode I. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the " Non-suitable cell ". (see note)
4	UE		Registration on CS	The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
5	->		ATTACH REQUEST	See TS 34.108 This is applied only for UE in UE operation mode A. Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1
6	<-		ATTACH ACCEPT	Routing area identity = RAI-1 Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 Equivalent PLMNs = MCC2,MNC1
7	<-		DETACH REQUEST	Detach type = re-attach required
8	->		DETACH ACCEPT	
9	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
10	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1
11	<-		ATTACH REJECT	Routing area identity = RAI-1 GMM cause = 'PS service not allowed in this PLMN'
12	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
13		SS		Set the cell type of cell A to the " Non-suitable cell ". Set the cell type of cell B to the " Serving cell". (see note) The following messages are sent and shall be received on cell B.
14	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
15	<-		AUTHENTICATION AND CIPHERING REQUEST	
16	->		AUTHENTICATION AND CIPHERING RESPONSE	
17		SS		The SS starts integrity protection.
18	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-2
19	->		ATTACH COMPLETE	
20	UE			The UE is switched off or power is removed (see ICS).
21	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

Specific message contents

None.

#### 12.2.2.7d.5 Test requirements

At step5 and 10, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step4 and 9, UE shall:

- perform MM IMSI attach.

At step12, UE shall:

- not perform PS attach procedure.

At step14, UE shall:

- perform PS attach procedure.

#### 12.2.2.8 Combined PS attach / abnormal cases / attempt counter check / miscellaneous reject causes

##### 12.2.2.8.1 Definition

##### 12.2.2.8.2 Conformance requirement

- 1) When a combined PS attach procedure is rejected with the attempt counter less than five, the User Equipment shall repeat the combined PS attach procedure after T3311 timeout.
- 2) When a combined PS attach procedure is rejected with the attempt counter five, the User Equipment shall delete the stored TMSI, LAI, CKSN, P-TMSI, P-TMSI signature, PS CKSN and RAI and start T3302.
- 3) When the T3302 expire, a new combined PS attach procedure shall be initiated.

GMM cause codes that can be selected are:

'IMSI unknown in HLR'

'UE identity cannot be derived by the network'

'Network failure'

'Congestion'

'retry upon entry into a new cell'

'Semantically incorrect message'

'Invalid mandatory information'

'Message type non-existent or not implemented'

'Message type not compatible with the protocol state'

'Information element non-existent or not implemented'

'Conditional IE error'

'Message not compatible with the protocol state'

'Protocol error, unspecified'

## Reference

3GPP TS 24.008 clause 4.7.3.2.

### 12.2.2.8.3 Test purpose

To test the behaviour of the UE with respect to the attempt counter.

### 12.2.2.8.4 Method of test

#### Initial condition

System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid TMSI, P-TMSI and RAI.

#### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No Automatic PS attach procedure at switch on or power on Yes/No

Switch off on button Yes/No

#### Test procedure

The UE initiates a combined PS attach procedure (attempt counter zero).

The SS rejects the attach with an arbitrarily chosen cause code.

The UE initiates a new combined PS attach procedure (attempt counter one) after T3311 expires.

The SS rejects the attach with an arbitrarily chosen cause code.

The UE initiates a new combined PS attach procedure (attempt counter two) after T3311 expires.

The SS rejects the attach with an arbitrarily chosen cause code.

The UE initiates a new combined PS attach procedure (attempt counter three) after T3311 expires.

The SS rejects the attach with an arbitrarily chosen cause code.

The UE initiates a new combined PS attach procedure (attempt counter four) after T3311 expires.

The SS rejects the attach with an arbitrarily chosen cause code.

The UE shall not perform a new successful attach procedure after 15 seconds.

The UE initiates a combined PS attach procedure with attempt counter zero after T3302 expires without P-TMSI, P-TMSI signature, PS CKSN and RAI.

T3302; set to 10 minutes.

T3311; 15 seconds.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1 Routing area identity = RAI-1
4	<-		ATTACH REJECT	Arbitrarily chosen GMM cause T3302 with value 10 min.
5	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
6	SS			The SS verifies that the time between the attach reject and attach request is T3311
7	<-		ATTACH REJECT	Arbitrarily chosen GMM cause T3302 with value 10 min.
8	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
9	SS			The SS verifies that the time between the attach reject and attach request is T3311
10	<-		ATTACH REJECT	Arbitrarily chosen GMM cause T3302 with value 10 min.
11	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
12	SS			The SS verifies that the time between the attach reject and attach request is T3311
13	<-		ATTACH REJECT	Arbitrarily chosen GMM cause T3302 with value 10 min.
14	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =P-TMSI-1 Routing area identity = RAI-1
15	SS			The SS verifies that the time between the attach reject and attach request is T3311
16	<-		ATTACH REJECT	Arbitrarily chosen GMM cause T3302 with value 10 min.
17	UE		Registration on CS	See TS 34.108
(optional step)				This is applied only for UE in UE operation mode A. Location Update Procedure may be initiated from the UE.
20	<-		PAGING TYPE1	Parameter mobile identity is IMSI. Paging order is for PS services. Mobile identity = P-TMSI-1
21	UE			No response from the UE to the request. This is checked for 10seconds.
21a	->		ATTACH REQUEST	Attach type = 'Combined PS/IMSI attach' or 'PS attach while IMSI attached' Mobile identity = IMSI TMSI status =no valid TMSI available
22	SS			The SS verifies that the UE does not attempt to attach for T3302 .
23	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' 'PS attach while IMSI attached' Mobile identity = IMSI TMSI status = no valid TMSI available
23a	<-		AUTHENTICATION AND CIPHERING REQUEST	
23b	->		AUTHENTICATION AND CIPHERING RESPONSE	
23c	SS			The SS starts integrity protection.

Step	Direction		Message	Comments
	UE	SS		
24		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity P-TMSI-1 P-TMSI signature Mobile identity = TMSI-1 Routing area identity = RAI-1
25		->	ATTACH COMPLETE	
26		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services..
27		->	RRC CONNECTION REQUEST	
28		<-	RRC CONNECTION SETUP	
29		->	RRC CONNECTION SETUP COMPLETE	
30		->	PAGING RESPONSE	Mobile identity = TMSI-1
31		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
32		->	RRC CONNECTION RELEASE COMPLETE	
33		<-	PAGING TYPE1	Mobile identity = P-TMSI-1
33a		->	RRC CONNECTION REQUEST	
33b		<-	RRC CONNECTION SETUP	
33c		->	RRC CONNECTION SETUP COMPLETE	
34		->	SERVICE REQUEST	Service type = "paging response"
34a		<-	RRC CONNECTION RELEASE	
34b		->	RRC CONNECTION RELEASE COMPLETE	
35		UE		The UE is switched off or power is removed (see ICS).
36		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

### Specific message contents

None.

### 12.2.2.8.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

UE shall perform the following actions depending on the conditions described below.

Case1) A combined PS attach procedure is rejected with the attempt counter less than five

At step6, 9, 12 and 15, when the timer T3311 timeout has occurred, UE shall:

- repeat the combine PS attach procedure.

Case2) A combined PS attach procedure is rejected with the attempt counter five

At step21, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

Case3) The T3302 expires

At step23, UE shall:

- re-initiate the new combined PS attach procedure.

At step30, when the UE receives the paging message for CS domain, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step34, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

## 12.2.2.9 Combined PS attach / abnormal cases / PS detach procedure collision

### 12.2.2.9.1 Definition

### 12.2.2.9.2 Conformance requirement

- 1) When a DETACH REQUEST message is received by the UE (any cause except re-attach) while waiting for an ATTACH ACCEPT message or ATTACH REJECT message, the UE shall terminate the combined PS attach procedure and continue with the combined PS detach procedure.
- 2) When a DETACH REQUEST message is received by the UE (cause re-attach) while waiting for an ATTACH ACCEPT message or ATTACH REJECT message, the UE shall ignore the combined PS detach procedure and continue with the combined PS attach procedure.

### Reference

3GPP TS 24.008 clause 4.7.3.2.

### 12.2.2.9.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

### 12.2.2.9.4 Method of test

#### Initial condition

#### System Simulator:

One cell operating in network operation mode I.

#### User Equipment:

The UE has valid TMSI, P-TMSI and RAI. UE is Idle Updated.

#### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Re-attach automatically when the network commands a detach with no cause value Yes/No

#### Test procedure

The UE initiates a combined PS attach procedure. The SS does not answer the combined PS attach procedure, but initiates a combined PS detach procedure (any cause except re-attach). The UE shall terminate the combined PS attach procedure and continue with the combined PS detach procedure.

The UE initiates a combined PS attach procedure. The SS does not answer the combined PS attach procedure, but initiates a combined PS detach procedure (cause re-attach). The UE shall ignore the combined PS detach procedure and continue with the combined PS attach. CS services are also possible.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4	SS			The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
5	<-		DETACH REQUEST	Detach type = 're-attach not required'
6	->		DETACH ACCEPT	
7			(void)	
8			(void)	
9	UE			The UE is attached by MMI or AT command if the UE does not re-attach automatically upon receiving a network initiated detach with no cause value, (see IXIT).
10	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
11	SS			The SS ignores the ATTACH REQUEST message and initiates a detach procedure.
12	<-		DETACH REQUEST	Detach type = 're-attach required'
13	UE			The UE ignores the DETACH REQUEST message and continue with the attach procedure
14	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-1
15	->		ATTACH COMPLETE	
16	<-		PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
17	->		RRC CONNECTION REQUEST	
18	<-		RRC CONNECTION SETUP	
19	->		RRC CONNECTION SETUP COMPLETE	
20	->		PAGING RESPONSE	Mobile identity = TMSI-2
21	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
22	->		RRC CONNECTION RELEASE COMPLETE	
23	<-		PAGING TYPE1	Paging order is for PS services. Mobile identity = P-TMSI-2
23a	->		RRC CONNECTION REQUEST	
23b	<-		RRC CONNECTION SETUP	
23c	->		RRC CONNECTION SETUP COMPLETE	
24	->		SERVICE REQUEST	Service type = "paging response"
24a	<-		RRC CONNECTION RELEASE	
24b	->		RRC CONNECTION RELEASE COMPLETE	
25	UE			The UE is switched off or power is removed (see ICS).
26	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

## Specific message contents

None.

#### 12.2.2.9.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

UE shall perform the following actions depending on the Detach type described below.

Case1) Detach type is not re-attach

At step6, UE shall:

- respond to DETACH REQUEST message by sending DETACH ACCEPT message.

Case2) Detach type is re-attach

At step13, UE shall:

- ignore the PS detach procedure.

At step15, UE shall:

- send the ATTACH COMPLETE message.

At step20, when the UE receives the paging message for CS domain, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step24, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

## 12.3 PS detach procedure

### 12.3.1 UE initiated PS detach procedure

#### 12.3.1.1 PS detach / power off / accepted

##### 12.3.1.1.1 Definition

##### 12.3.1.1.2 Conformance requirement

The UE detaches the IMSI for PS services if the UE is switched off.

##### Reference

3GPP TS 24.008 clause 4.7.4.1

##### 12.3.1.1.3 Test purpose

To test the behaviour of the UE for the detach procedure.

##### 12.3.1.1.4 Method of test

##### Initial condition

##### System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

#### Related ICS/IXIT statements

Support of PS service Yes/No  
 UE operation mode C Yes/No  
 UE operation mode A Yes/No  
 Switch off on button Yes/No  
 Automatic PS attach procedure at switch on or power on Yes/No

#### Test procedure

The UE performs a PS attach procedure.

The UE sends a DETACH REQUEST message to the SS.

#### Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set o attach to the PS services only (see ICS). If that is not supported by the UE, goto step 8.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2a	SS			SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
5a	SS			The SS releases the RRC connection.
6	UE			The UE is switched off (see ICS).
6a	SS			SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Detach".
7	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'
7a	SS			The SS releases the RRC connection.
8	UE			The UE is set to attach to both the PS and non-PS services (see ICS) and the test is repeated from step 2 to step 7.

#### Specific message contents

None.

#### 12.3.1.1.5 Test requirements

At step 2a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 6a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step7, when the UE is switched off, UE shall:

- send the DETACH REQUEST message to SS with the Detach type = 'power switched off, PS detach'.

### 12.3.1.2 PS detach / accepted

#### 12.3.1.2.1 Definition

#### 12.3.1.2.2 Conformance requirement

- 1) The UE detaches the IMSI for PS services if the UE is ordered to do so with MMI or AT commands.
- 2) Upon completion of the subsequent attach, routing area update, service request or detach procedure the used P-TMSI signature shall be deleted.

#### Reference

3GPP TS 24.008 clause 4.7.4.1.

3GPP TS 24.008 clause 4.7.1.3

#### 12.3.1.2.3 Test purpose

To test the behaviour of the UE for the detach procedure, including treatment of P-TMSI signature.

#### 12.3.1.2.4 Method of test

##### Initial condition

##### System Simulator:

One cell operating in network operation mode II.

##### User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

#### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode C	Yes/No
UE operation mode A	Yes/No
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No
UE PS Release	Yes/No

#### Test procedure

The UE performs a PS attach procedure.

The UE sends a DETACH REQUEST message to the SS.

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

The UE performs a PS attach procedure.

The UE sends a DETACH REQUEST message to the SS.

### Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set to attach to the PS services only (see ICS). If that is not supported by the UE, goto step 18.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2a	SS			SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
5a	SS			The SS releases the RRC connection.
5			(void)	
6	UE			The UE initiates a PS detach (without power off) by MMI or AT command.
6a	SS			SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Detach"
7	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
7a	SS			The SS starts integrity protection.
8	<-		DETACH ACCEPT	
8a	SS			The SS releases the RRC connection.
9	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10	UE			No response from the UE to the request. This is checked for 10 seconds.
11	UE			The UE initiates an attach by MMI or AT commands
12	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
13	<-		ATTACH ACCEPT	No new mobile identity assigned Attach result = 'PS only attached' Routing area identity = RAI-1
14	UE			The UE initiates a PS detach (without power off) by MMI or AT command.
15	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
16	SS -> MS		DETACH ACCEPT	
17			(void)	
18	UE			The UE is set to attach to both PS and non-PS services (see ICS) and the test is repeated from step 2 to step 16.

### Specific message contents

None.

### 12.3.1.2.5 Test requirements

At step 2a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 6a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step7 and 15, UE shall:

- sends the DETACH REQUEST message(without power off) to SS.

At step10, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step 12, UE shall

- initiate ATTACH REQUEST message without P-TMSI signature IE.

### 12.3.1.3 PS detach / abnormal cases / attempt counter check / procedure timeout

#### 12.3.1.3.1 Definition

#### 12.3.1.3.2 Conformance requirement

- 1) When a T3321 timeout has occurred during a PS detach procedure with the attempt counter less than five, the User Equipment shall repeat the PS detach procedure.
- 2) When a T3321 timeout has occurred during a PS detach procedure with the attempt counter five, the User Equipment shall not repeat the procedure.

#### Reference

3GPP TS 24.008 clause 4.7.4.1.

#### 12.3.1.3.3 Test purpose

To test the behaviour of the UE with respect to the attempt counter.

#### 12.3.1.3.4 Method of test

##### Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

##### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode C	Yes/No
UE operation mode A	Yes/No
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

### Test procedure

The UE performs a PS attach procedure.

The UE initiates a PS detach procedure (attempt counter zero). The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The UE initiates a new PS detach procedure (attempt counter one) after T3321 expires. The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The UE initiates a new PS detach procedure (attempt counter two) after T3321 expires. The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The UE initiates a new PS detach procedure (attempt counter three) after T3321 expires. The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The UE initiates a new PS detach procedure (attempt counter four) after T3321 expires. The SS does not answer with DETACH ACCEPT message before T3321 timeout.

The UE initiates a new PS detach procedure with attempt counter five (after T3321 expires). The SS does not answer with DETACH ACCEPT message before T3321 timeout.

At T3321 timeout in the UE, the UE then deletes the logical link since the retransmissions have been repeated four times.

The UE performs a new PS attach procedure.

T3321; 15 seconds.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 25.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'PS only attached' Routing area identity = RAI-1
5	UE			The UE initiates a PS detach (without power off) by MMI or AT command.
6	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
7	SS			No response is given from the SS.
8	SS			The SS verifies that the time between the detach requests is 15 seconds
9	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
10	SS			No response is given from the SS.
11	SS			The SS verifies that the time between the detach requests is 15 seconds
12	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
13	SS			No response is given from the SS.
14	SS			The SS verifies that the time between the detach requests is 15 seconds
15	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
16	SS			No response is given from the SS.
17	SS			The SS verifies that the time between the detach requests is 15 seconds
18	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
19	SS			No response is given from the SS within 40 seconds and SS verifies that the UE will not send a DETACH REQUEST again.
20	UE			Initialte a PS attach
21	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
21a	<-		AUTHENTICATION AND CIPHERING REQUEST	
21b	->		AUTHENTICATION AND CIPHERING RESPONSE	
21c	SS			The SS starts integrity protection.
22	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'PS only attached' Routing area identity = RAI-1
23				UE is switched off or power is removed (see ICS)
24	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
25	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 2 to step 24.

Specific message contents

None.

#### 12.3.1.3.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attaché procedure with the information elements specified in the above Expected Sequence.

At step9, 12, 15 and 18, when a T3321 expires with the attempt counter less than five, UE shall:

- initiate the new PS detach procedure.

At step19, when the attempt counter is greater than or equal to five, UE shall:

- not repeat the PS detach procedure.

At step20, UE shall:

- initiate the PS attaché procedure.

### 12.3.1.4 PS detach / abnormal cases / GMM common procedure collision

#### 12.3.1.4.1 Definition

#### 12.3.1.4.2 Conformance requirement

When any of the GMM common messages P-TMSI REALLOCATION COMMAND, GMM STATUS or GMM INFORMATION is received by the UE while waiting for a DETACH ACCEPT message with detach cause different from "power off", the UE shall ignore the GMM common message.

#### Reference

3GPP TS 24.008 clause 4.7.4.1.

#### 12.3.1.4.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

#### 12.3.1.4.4 Method of test

#### Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

#### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode C	Yes/No
UE operation mode A	Yes/No (only if mode C not supported)
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

## Test procedure

The following test procedure is repeated for sequence counter k = 1,2,3:

The UE performs a PS attach.

The UE initiates a PS detach. The SS initiates a P-TMSI REALLOCATION COMMAND message (k=1), a GMM STATUS message (k=2) and a GMM INFORMATION message (k=3). The UE shall ignore the GMM common messages and continue with the PS detach procedure. The sending of the P-TMSI REALLOCATION COMMAND message (k = 1), the GMM STATUS message (k = 2), the GMM INFORMATION message (k = 3) and the DETACH ACCEPT message shall be completed within Timer T3321 -10%.

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

## Expected Sequence

The test sequence is repeated for k = 1 ... 3

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode C (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE initiates a detach (without power off) by MMI or AT command.
7	->		DETACH REQUEST	Detach type = 'normal detach, PS detach'
8A	SS			The SS sends a P-TMSI REALLOCATION COMMAND message
9A	<-		P-TMSI REALLOCATION COMMAND	
10A	UE			The UE ignores the message. This is verified for 10 seconds.
8B	SS			The SS sends a GMM STATUS message
9B	<-		GMM STATUS	
10C	UE			The UE ignores the message. This is verified for 10 seconds.
8C	SS			The SS sends a GMM INFORMATION message
9C	<-		GMM INFORMATION	
10C	UE			The UE ignores the message which is verified for 10 seconds or if GMM INFORMATION message not implemented, sends a GMM STATUS with GMM Cause 'Message type non-existent or not implemented'.
11	<-		DETACH ACCEPT	The SS responds to the DETACH REQUEST
12	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
13	UE			No response from the UE to the request. This is checked for 10 seconds.

Note: Steps 8x, 9x, 10x and 11 shall be completed within Timer T3321 -10%.

#### Specific message contents

None.

#### 12.3.1.4.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step 10A, 10B, 10C and 13, when any of the GMM common messages P-TMSI REALLOCATION COMMAND, GMM STATUS or GMM INFORMATION is received by the UE while waiting for a DETACH ACCEPT message with detach cause different from "power off, UE shall:

- ignore any of the GMM common message.

#### 12.3.1.5 PS detach / power off / accepted / PS/IMSI detach

##### 12.3.1.5.1 Definition

##### 12.3.1.5.2 Conformance requirement

The UE detach the IMSI for PS and non-PS services.

##### Reference

3GPP TS 24.008 clause 4.7.4.1.

##### 12.3.1.5.3 Test purpose

To test the behaviour of the UE for the detach procedure.

##### 12.3.1.5.4 Method of test

##### Initial condition

##### System Simulator:

One cell operating in network operation mode I.

##### User Equipment:

The UE has a valid IMSI.

##### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode A	Yes/No
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

##### Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The UE sends a DETACH REQUEST message to the SS. The UE then deletes the logical link.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set to attach to both the PS and non-PS services (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
3a		<-	AUTHENTICATION AND CIPHERING REQUEST	
3b		->	AUTHENTICATION AND CIPHERING RESPONSE	
3c		SS		The SS starts integrity protection.
4		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5		->	ATTACH COMPLETE	
5a		SS		The SS releases the RRC connection.
6		UE		The UE is switched off (see ICS).
6a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Detach".
7		->	DETACH REQUEST	Detach type = 'power switched off, combined PS / IMSI detach'
7a		SS		The SS releases the RRC connection.

## Specific message contents

None.

## 12.3.1.5.5 Test requirements

At step 2a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 6a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step 3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step 7, when the UE is switched off, UE shall:

- send the DETACH REQUEST message to SS with the Detach type = 'power switched off, combined PS / IMSI detach'.

## 12.3.1.6 PS detach / accepted / PS/IMSI detach

## 12.3.1.6.1 Definition

## 12.3.1.6.2 Conformance requirement

The UE detach the IMSI for PS and non-PS services.

## Reference

3GPP TS 24.008 clause 4.7.4.1.

### 12.3.1.6.3 Test purpose

To test the behaviour of the UE for the detach procedure.

### 12.3.1.6.4 Method of test

## Initial condition

### System Simulator:

- One cell operating in network operation mode I.

### User Equipment:

The UE has a valid IMSI.

## Related ICS/IXIT statements

- Support of PS service Yes/No
- UE operation mode A Yes/No
- Switch off on button Yes/No
- Automatic PS attach procedure at switch on or power on Yes/No
- User requested combined PS and non-PS detached without powering off Yes/No

## Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The UE sends a DETACH REQUEST message to the SS. When the UE receives the DETACH ACCEPT, the UE then deletes the logical link.

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set to attach to both the PS and non-PS services (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2a	SS			The SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
5a	SS			The SS releases the RRC connection.
6	UE			The UE initiates a detach (without power off) by MMI or AT command (see ICS).
6a	SS			The SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Detach".
7	->		DETACH REQUEST	Detach type = 'normal detach, combined PS / IMSI detach'
8	<-		DETACH ACCEPT	
8a	SS			The SS releases the RRC connection.
9	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10	UE			No response from the UE to the request. This is checked for 10 seconds.
11	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
12	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.

## Specific message contents

None.

## 12.3.1.6.5 Test requirements

At step 2a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 6a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step10, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step12, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

### 12.3.1.7 PS detach / accepted / IMSI detach

#### 12.3.1.7.1 Definition

#### 12.3.1.7.2 Conformance requirement

The UE shall detach for CS services.

#### Reference

3GPP TS 24.008 clause 4.7.4.1.

#### 12.3.1.7.3 Test purpose

To test the behaviour of the UE for the detach procedure.

#### 12.3.1.7.4 Method of test

#### Initial condition

##### System Simulator:

One cell operating in network operation mode I.

##### User Equipment:

- The UE has a valid IMSI.

#### Related ICS/IXIT statements

- Support of PS service Yes/No
- UE operation mode A Yes/No
- Switch off on button Yes/No
- Automatic PS attach procedure at switch on or power on Yes/No
- User requested non-PS detached Yes/No

#### Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The UE performs an PS detach (for non-PS services).

CS services are not possible.

The UE attach for non-PS services by a routing area update procedure and CS services are again possible.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE initiates a detach for non-PS services (without power off) (see ICS).
7	->		DETACH REQUEST	Detach type = 'normal detach, IMSI detach'
8	<-		DETACH ACCEPT	
9	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
9a	->		RRC CONNECTION REQUEST	
9b	<-		RRC CONNECTION SETUP	
9c	->		RRC CONNECTION SETUP COMPLETE	
10	->		SERVICE REQUEST	service type = "paging response"
10a	<-		RRC CONNECTION RELEASE	
10b	->		RRC CONNECTION RELEASE COMPLETE	
11	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services. Paging order is for RRC connection. This is checked during 3 seconds.
12	UE			The UE shall not initiate an RRC connection.
13	UE			This is checked during 3 seconds. The UE initiates an attach for non-PS services by a RA update procedure (see ICS).
14	->		ROUTING AREA UPDATE REQUEST	Update type = "Combined RA/LA updating with IMSI attach" P-TMSI-1 signature Routing area identity = RAI-1
15	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
16	->		ROUTING AREA UPDATE COMPLETE	
17	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
18	->		RRC CONNECTION REQUEST	
19	<-		RRC CONNECTION SETUP	
20	->		RRC CONNECTION SETUP COMPLETE	
21	->		PAGING RESPONSE	Mobile identity = TMSI-1
22	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
23	->		RRC CONNECTION RELEASE COMPLETE	
24	UE			The UE is switched off or power is removed (see ICS).

Step	Direction		Message	Comments
	UE	SS		
25		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

### Specific message contents

None.

#### 12.3.1.7.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step10, after the detach procedure (Detach type = 'normal detach, IMSI detach') is completed, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step12, after the detach procedure (Detach type = 'normal detach, IMSI detach') is completed, UE shall:

- not respond to the paging message for CS.

At step21, after the routing area updating procedure (Update type = 'Combined RA/LA updating') is completed, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

#### 12.3.1.8 PS detach / abnormal cases / change of cell into new routing area

##### 12.3.1.8.1 Definition

##### 12.3.1.8.2 Conformance requirement

When a change of cell into a new routing area is performed before DETACH ACCEPT message is received by the UE, the UE shall abort the PS detach procedure and re-initiate it after the routing area update procedure.

### Reference

3GPP TS 24.008 clause 4.7.4.1.

##### 12.3.1.8.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

##### 12.3.1.8.4 Method of test

### Initial condition

#### System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).  
Both cells are operating in network operation mode I.

#### User Equipment:

The UE has a valid IMSI.

## Related ICS/IXIT statements

Support of PS service Yes/No  
UE operation mode A Yes/No  
Switch off on button Yes/No  
Automatic PS attach procedure at switch on or power on Yes/No  
User requested combined PS and non-PS detached without powering off Yes/No

## Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

Sufficient time is given for the UE to identify the neighbour cell before the UE is triggered to initiate a PS detach procedure. The DETACH ACCEPT message is delayed from the SS.

The UE performs a cell reselection to a cell in a new routing area and performs a routing area update procedure.

The UE shall re-initiate a PS detach procedure when the routing area update procedure is finished.

The UE deletes the logical link.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
		SS		
2		UE		The UE is set in UE operation mode A (see ICS).
3		UE		The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4a		<-	AUTHENTICATION AND CIPHERING REQUEST	
4b		->	AUTHENTICATION AND CIPHERING RESPONSE	
4c		SS		The SS starts integrity protection.
5		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
6		->	ATTACH COMPLETE	
6a		SS		SS waits 30 sec.
7		UE		The UE initiates a PS detach (without power off) by MMI or AT command.
8		->	DETACH REQUEST	Detach type = 'normal detach, combined PS / IMSI detach'
9		SS		No response to the DETACH REQUEST message is given by the SS
10		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
11		UE		Cell B is preferred by the UE.
12		->	ROUTING AREA UPDATE REQUEST	The UE performs a RA update in the new cell. Update type = 'Combined RA/LA updating' P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = valid TMSI available or IE omitted
13		<-	ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updated'  Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-4
14		->	ROUTING AREA UPDATE COMPLETE	
15		->	DETACH REQUEST	The detach is automatically re-attempted. Detach type = 'normal detach, combined PS / IMSI detach'
16		<-	DETACH ACCEPT	
NOTE: The definitions for "Non-Suitable cell", "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

Specific message contents

None.

### 12.3.1.8.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step12, when a change of cell into a new routing area is performed before DETACH ACCEPT message is received by the UE, UE shall:

- abort a PS detach procedure.
- perform routing area updating procedure.

At step15, when the UE completes a routing area updating procedure, UE shall:

- re-initiate the PS detach procedure.

### 12.3.1.9 PS detach / abnormal cases / PS detach procedure collision

#### 12.3.1.9.1 Definition

#### 12.3.1.9.2 Conformance requirement

When a DETACH REQUEST is received by the UE while waiting for a DETACH ACCEPT message, the UE shall answer the network initiated PS detach procedure.

#### Reference

3GPP TS 24.008 clause 4.7.4.1.

#### 12.3.1.9.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

#### 12.3.1.9.4 Method of test

#### Initial condition

#### System Simulator:

One cell operating in network operation mode I.

#### User Equipment:

The UE has a valid IMSI.

#### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode A	Yes/No
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No
User requested combined PS and non-PS detached without powering off	Yes/No

#### Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The UE initiates a PS detach. The SS does not answer the detach procedure, but initiates a detach procedure (cause re-attach not required). The UE shall continue with the network initiated detach procedure.

The UE deletes the logical link.

PS and CS services are not possible.

#### Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A(see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE initiates a PS detach (without power off) by MMI or AT command.
7	->		DETACH REQUEST	Detach type = 'normal detach, combined PS / IMSI detach'
8	<-		DETACH REQUEST	Detach type = 're-attach not required'
9	->		DETACH ACCEPT	The UE answers the network initiated detach.
10	<-		DETACH ACCEPT	The SS answers the UE initiated detach.
11	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
12	UE			No response from the UE to the request. This is checked for 10 seconds.
13	<-		PAGING TYPE 1	Mobile identity = TMSI-1 Paging order is for CS services.
14	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.

#### Specific message contents

None.

#### 12.3.1.9.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step9, when the UE receives DETACH REQUEST message from SS before UE initiated PS detach procedure has been completed, UE shall:

- send the DETACH ACCEPT message to SS.

At step12, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step14, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

## 12.3.2 Network initiated PS detach procedure

### 12.3.2.1 PS detach / re-attach not required / accepted

#### 12.3.2.1.1 Definition

#### 12.3.2.1.2 Conformance requirement

The UE detach the IMSI for PS services.

#### Reference

3GPP TS 24.008 clause 4.7.4.2.

#### 12.3.2.1.3 Test purpose

To test the behaviour of the UE for the detach procedure.

#### 12.3.2.1.4 Method of test

#### Initial condition

##### System Simulator:

One cell operating in network operation mode II (in case of UE operation mode A).

##### User Equipment:

The UE has a valid IMSI.

#### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode C	Yes/No
UE operation mode A	Yes/No (only if mode C not supported)
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

#### Test procedure

The UE performs a PS attach procedure.

The SS sends a DETACH REQUEST message to the UE. The UE then deletes the logical link.

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The SS is set in network operation mode II. The UE is set to either attach to PS only or both the PS and non-PS services (see ICS). The UE is powered up or switched on and initiates an attach (see ICS). The SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration". Attach type = 'PS attach' Mobile identity = IMSI  The SS starts integrity protection. Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1  The SS initiates a PS detach. Detach type = 're-attach not required'
2		UE		
3		UE		
3a		SS		
4		->	ATTACH REQUEST	
4a		<-	AUTHENTICATION AND CIPHERING REQUEST	
4b		->	AUTHENTICATION AND CIPHERING RESPONSE	
4c		SS		
5		<-	ATTACH ACCEPT	
6		->	ATTACH COMPLETE	
7		SS		
8		<-	DETACH REQUEST	
9		->	DETACH ACCEPT	
9a		SS		The SS releases the RRC connection.
10		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
11		UE		No response from the UE to the request except from a possible ATTACH REQUEST (UE may send an ATTACH REQUEST when the Detach type = 're-attach not required'). This is checked for 10 seconds.

## Specific message contents

None.

## 12.3.2.1.5 Test requirements

At step 3a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step9, when the UE receives the DETACH REQUEST message from SS and the detach type IE indicates 're-attach not required', the UE shall:

- send DETACH ACCEPT message to SS.

At step11, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain, except from a possible ATTACH REQUEST.

## 12.3.2.2 PS detach / rejected / IMSI invalid / PS services not allowed

### 12.3.2.2.1 Definition

### 12.3.2.2.2 Conformance requirement

- 1) If the network performs a PS detach procedure with the cause 'PS services not allowed', the User Equipment shall consider USIM invalid for PS services until power is switched off or USIM is removed.
- 2) If the network performs a PS detach procedure with the cause 'PS services not allowed' the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

### Reference

3GPP TS 24.008 clause 4.7.4.2.

### 12.3.2.2.3 Test purpose

To test the behaviour of the UE if the network orders a PS detach procedure with the cause 'PS services not allowed' (no valid PS-subscription for the IMSI).

### 12.3.2.2.4 Method of test

#### Initial condition

#### System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (HPLMN, RAI-1) and cell B in MCC2/MNC1/LAC1/RAC1 (RAI-2).

Both cells are operating in network operation mode II.

#### User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

#### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode C	Yes/No
UE operation mode A	Yes/No
USIM removal possible without powering down	Yes/No
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

#### Test procedure

The SS performs a detach with the cause value 'PS services not allowed'. The SS checks that the UE does not perform PS attach in another PLMN.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 22.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
3a	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS			The SS starts integrity protection.
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6	->		ATTACH COMPLETE	
7	<-		DETACH REQUEST	Detach type = 're-attach not required' Cause = 'PS services not allowed'
8	->		DETACH ACCEPT	
9		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell". (see note)
10	UE			Cell B is preferred by the UE. Step 11 is only performed for UE Operation Mode A.
11	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is IMSI.
12				The UE initiates an attach automatically (see ICS), by MMI or AT commands.
13	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
14	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
15	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
16	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
16a	<-		AUTHENTICATION AND CIPHERING REQUEST	
16b	->		AUTHENTICATION AND CIPHERING RESPONSE	
16c	SS			The SS starts integrity protection.

17	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
18	->	ATTACH COMPLETE	The UE is switched off or power is removed (see ICS).
19	UE		
20	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
21			Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
22	UE		The UE is set in UE operation mode A (see ICS) and the test is repeated from step 3 to step 18.
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

### Specific message contents

None.

#### 12.3.2.2.5 Test requirements

At step4 and 15, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, when the UE receives the DETACH REQUEST message (Detach type = 're-attach not required', Cause = 'PS services not allowed') from SS, UE shall:

- send DETACH ACCEPT message.

At step13, UE shall:

- not perform PS attach procedure.

#### 12.3.2.3 PS detach / IMSI detach / accepted

##### 12.3.2.3.1 Definition

##### 12.3.2.3.2 Conformance requirement

The UE detach the IMSI for PS services.

##### Reference

3GPP TS 24.008 clause 4.7.4.2.

##### 12.3.2.3.3 Test purpose

To test the behaviour of the UE for the detach procedure.

##### 12.3.2.3.4 Method of test

##### Initial condition

##### System Simulator:

One cell operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The SS sends a DETACH REQUEST message to the UE. The UE then performs an IMSI detach (detach for non-PS services).

The SS signal to the UE, but no response is received, as the signalling link is disconnected.

The UE attach for non-PS services by a routing area update procedure. Both PS and CS services are possible.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	SS			The SS initiates a detach for non-PS services.
7	<-		DETACH REQUEST	Detach type = 'IMSI detach'
8	->		DETACH ACCEPT	
9	UE			The UE initiates an attach for non-PS services (see ICS).
10	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
11	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updating' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
12	->		ROUTING AREA UPDATE COMPLETE	
13	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
14	->		RRC CONNECTION REQUEST	
15	<-		RRC CONNECTION SETUP	
16	->		RRC CONNECTION SETUP COMPLETE	
17	->		PAGING RESPONSE	Mobile identity = TMSI-1
18	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
19	->		RRC CONNECTION RELEASE COMPLETE	
20	UE			The UE is switched off or power is removed (see ICS).
21	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

## Specific message contents

None.

## 12.3.2.3.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, when the UE receives the DETACH REQUEST message with Detach type = 'IMSI detach', UE shall;

- send the DETACH ACCEPT message to SS.

At step10, after the completion of the detach procedure, UE shall;

- perform combined routing area updating procedure.

At step17, when the UE receives the paging message for CS domain, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

## 12.3.2.4 PS detach / re-attach requested / accepted

### 12.3.2.4.1 Definition

### 12.3.2.4.2 Conformance requirement

The UE shall deactivate the logical link and re-activate it.

### Reference

3GPP TS 24.008 clause 4.7.4.2.

### 12.3.2.4.3 Test purpose

To test the behaviour of the UE for the detach procedure in case automatic re-attach.

### 12.3.2.4.4 Method of test

#### Initial condition

#### System Simulator:

One cell in operating in network operation mode I.

#### User Equipment:

The UE has a valid TMSI, P-TMSI and RAI.

#### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode A	Yes/No
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

#### Test procedure

The UE performs a combined PS attach procedure (for PS and non-PS services).

The SS sends a DETACH REQUEST message to the UE with cause re-attach. The UE then detaches for PS services. The UE automatically performs a new combined PS attach procedure (for PS and non-PS services) and PS and CS services are possible.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = TMSI-1 Routing area identity = RAI-1 No new P-TMSI and P-TMSI signature assigned
5	->		ATTACH COMPLETE	
6	SS			The SS initiates a detach with re-attach.
7	<-		DETACH REQUEST	Detach type = 're-attach required'
8	->		DETACH ACCEPT	
9	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
10	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = TMSI-1 Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
11	->		ATTACH COMPLETE	
12	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
12a	->		RRC CONNECTION REQUEST	
12b	<-		RRC CONNECTION SETUP	
12c	->		RRC CONNECTION SETUP COMPLETE	
13	->		SERVICE REQUEST	service type = "paging response"
13a	<-		RRC CONNECTION RELEASE	
13b	->		RRC CONNECTION RELEASE COMPLETE	
14	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
15	->		RRC CONNECTION REQUEST	
16	<-		RRC CONNECTION SETUP	
17	->		RRC CONNECTION SETUP COMPLETE	
18	->		PAGING RESPONSE	Mobile identity = TMSI-1
19	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
20	->		RRC CONNECTION RELEASE COMPLETE	
21	UE			The UE is switched off or power is removed (see ICS).
22	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'

## Specific message contents

None.

#### 12.3.2.4.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, when the UE receives DETACH REQUEST message with Detach type = 're-attach required', UE shall;

- send DETACH ACCEPT message to SS.

At step9, after UE completed PS detach procedure with Detach type = 're-attach required', UE shall:

- initiate the combined PS attach procedure.

At step13, when the UE receives the paging message for PS domain, UE shall;

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step18, when the UE receives the paging message for CS domain, UE shall:

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

#### 12.3.2.5 PS detach / rejected / location area not allowed

##### 12.3.2.5.1 Definition

##### 12.3.2.5.2 Conformance requirement

- 1) If the network performs a PS detach procedure with the cause 'location area not allowed' the User Equipment shall:
  - 1.1 not perform combined PS attach when in the same location area.
  - 1.2 delete the stored LAI, CKSN, TMSI, RAI, PS-CKSN, P-TMSI and P-TMSI signature.
  - 1.3 store the LA in the 'forbidden location areas for regional provision of service'.
- 2) If the network performs a PS detach procedure with the cause 'location area not allowed' the User Equipment shall:
  - 2.1 perform combined PS attach when a new location area is entered.
  - 2.2 delete the list of forbidden LAs when power is switched off.

##### Reference

3GPP TS 24.008 clauses 4.7.4.2.

##### 12.3.2.5.3 Test purpose

To test the behaviour of the UE if the network orders the PS detach procedure with the cause 'Location Area not allowed'.

To test that the UE deletes the list of forbidden LAs when power is switched off.

##### 12.3.2.5.4 Method of test

##### Initial condition

##### System Simulator:

Three cells (not simultaneously activated), cell A in MCC2/MNC1/LAC1/RAC2 (RAI-2, Not HPLMN), cell B in MCC2/MNC1/LAC1/RAC2 (RAI-7, Not HPLMN), cell C in MCC2/MNC1/LAC2/RAC1 (RAI-6, Not

HPLMN).

All cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS orders a PS detach with the cause value 'Location Area not allowed'. The SS checks that the UE does not perform combined PS attach while in the location area, performs PS attach when a new location area is entered and deletes the list of forbidden LAs when switched off. CS services are not possible unless an IMSI attach procedure is performed.

Different types of UE may use different methods to periodically clear the list of forbidden location areas (e.g. every day at 12am). If the list is cleared while the test is being run, it may be necessary to re-run the test.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS			The SS starts integrity protection.
5	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-2
6	->		ATTACH COMPLETE	
7	<-		DETACH REQUEST	Detach type = 're-attach not required' Cause 'Location Area not allowed'
8	->		DETACH ACCEPT	
9	UE			No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
10	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
11	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
12	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
13	UE			No response from the UE to the request. This is checked for 10 seconds
14		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell". (see note)
15	UE			Cell B is preferred by the UE.
16	UE			The UE initiates an attach automatically, by MMI or by AT command.
17	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds)
18	UE			No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
19	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
20	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
21	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
22				No response from the UE to the request. This is checked for 10 seconds

Step	Direction		Message	Comments
	UE	SS		
23		SS		The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell". (see note)
24	UE			Cell C is preferred by the UE. Step 25 is only performed for non-auto attach UE.
25	UE		Registration on CS	See TS34.108 Parameter mobile identity is IMSI.
optional 26	UE			The UE initiates an attach automatically (See ICS), by MMI or AT command.
27	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
28	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-6
29	->		ATTACH COMPLETE	
30	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
31	->		RRC CONNECTION REQUEST	
32	<-		RRC CONNECTION SETUP	
33	->		RRC CONNECTION SETUP COMPLETE	
34	->		PAGING RESPONSE	Mobile identity = TMSI-1
35	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
36	->		RRC CONNECTION RELEASE COMPLETE	
37	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
38	->		RRC CONNECTION REQUEST	
39	<-		RRC CONNECTION SETUP	
40	->		RRC CONNECTION SETUP COMPLETE	
41	->		SERVICE REQUEST	service type = "paging response"
42	<-		RRC CONNECTION RELEASE	
43	->		RRC CONNECTION RELEASE COMPLETE	
44	UE			The UE is switched off or power is removed (see ICS).
45	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
46	UE			The following messages are sent and shall be received on cell B. Set the cell type of cell B to the "Serving cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
47	UE			Cell B is preferred by the UE. The UE is powered up or switched on and initiates an attach (see ICS). Step 48 is only performed for non-auto attach UE.
48	UE		Registration on CS	See TS34.108 Parameter mobile identity is TMSI-1
49	UE			UE initiates an attach automatically (see ICS), by MMI or AT commands.

Step	Direction		Message	Comments
	UE	SS		
50	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-6 TMSI status = valid TMSI available Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-7  Mobile identity = TMSI-2 Paging order is for CS services.  Mobile identity = TMSI-2 After sending of this message, the SS waits for disconnection of the CS signalling link.  Mobile identity = P-TMSI-2 Paging order is for PS services.  service type = "paging response"  The UE is switched off or power is removed (see ICS). Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
51	<-		ATTACH ACCEPT	
52	->		ATTACH COMPLETE	
53	<-		PAGING TYPE1	
54	->		RRC CONNECTION REQUEST	
55	<-		RRC CONNECTION SETUP	
56	->		RRC CONNECTION SETUP COMPLETE	
57	->		PAGING RESPONSE	
58	<-		RRC CONNECTION RELEASE	
59	->		RRC CONNECTION RELEASE COMPLETE	
60	<-		PAGING TYPE1	
61	->		RRC CONNECTION REQUEST	
62	<-		RRC CONNECTION SETUP	
63	->		RRC CONNECTION SETUP COMPLETE	
64	->		SERVICE REQUEST	
65	<-		RRC CONNECTION RELEASE	
66	->		RRC CONNECTION RELEASE COMPLETE	
67	UE			
68	->		DETACH REQUEST	
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

### Specific message contents

None.

#### 12.3.2.5.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, when the UE receive the DETACH REQUEST message (Detach type = 're-attach not required', Cause = 'Location Area not allowed') from SS, UE shall:

- send the DETACH ACCEPT message.

UE shall perform the following action depending on UE location.

- 1) UE is in the same location area.

At step9 and 18, UE shall:

- not perform location updating procedure.

At step11 and 20, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for PS domain.

At step13 and 22, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step17, UE shall;

- not perform PS attach procedure.

2) UE is in the new location area.

At step27, UE shall;

- perform the combined PS attach procedure.

At step34, when the UE receives the paging message for CS domain with Mobile identity = IMSI, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step41, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-1, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step50, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence

At step57, when the UE receives the paging message for CS domain with Mobile identity = IMSI, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step64, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-1, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

### 12.3.2.6 PS detach / rejected / No Suitable Cells In Location Area

#### 12.3.2.6.1 Definition

#### 12.3.2.6.2 Conformance requirement

1. If the network performs a PS detach procedure with the cause 'No Suitable Cells In Location Area', the User Equipment shall:

1.1 delete the stored LAI, CKSN, TMSI, RAI, PS-CKSN, P-TMSI and P-TMSI signature.

1.2 store the LA in the 'forbidden location areas for roaming'.

#### Reference

3GPP TS 24.008 clauses 4.7.4.2.

#### 12.3.2.6.3 Test purpose

To test the behaviour of the UE if the network sends the DETACH REQUEST message with the cause 'No Suitable Cells In Location Area'.

#### 12.3.2.6.4 Method of test

#### Initial condition

System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2)

All three cells are operating in network operation mode II.

#### User Equipment:

The UE has valid IMSI.

#### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode A	Yes/No
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

#### Test procedure

The SS sends a DETACH REQUEST message with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall not perform combined PS attach while in the same location area on the same PLMN. The SS checks that the UE shall perform PS attach when the UE enters a suitable cell in a different location area on the same PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". (see note) The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	<-		DETACH REQUEST	Detach type = 're-attach not required' Cause 'No Suitable Cells In Location Area'
7	->		DETACH COMPLETE	
8	UE			The following message are sent and shall be received on cell B. The UE initiates an attach automatically, by MMI or by AT command.
9	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
10	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-
11	->		ATTACH COMPLETE	
12	UE			The UE is switched off or power is removed (see ICS).
13	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

Specific message contents

None.

12.3.2.6.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step9, when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- perform the PS attach procedure.

### 12.3.2.7 PS detach / rejected / Roaming not allowed in this location area

#### 12.3.2.7.1 Definition

#### 12.3.2.7.2 Conformance requirement

- 1) If the network performs a PS detach procedure with the cause 'Roaming area not allowed in this location area' the User Equipment shall:
  - 1.1 delete any RAI, P-TMSI, P-TMSI signature and PS ciphering key sequence number.
  - 1.2 set the GPRS update status to GU3 ROAMING NOT ALLOWED.
  - 1.3 reset the attach attempt counter.
  - 1.4 store the LAI in the list of "forbidden location areas for roaming".
  - 1.5 perform a PLMN selection.
- 2) If the UE is IMSI attached via MM procedures, the UE shall in addition:
  - 2.1 delete any TMSI, LAI and ciphering key sequence number.
  - 2.2 reset the location update attempt counter.

#### Reference

3GPP TS 24.008 clauses 4.7.4.2.

#### 12.3.2.7.3 Test purpose

To test the behaviour of the UE if the network orders the PS detach procedure with the cause ' Roaming area not allowed in this location area '.

#### 12.3.2.7.4 Method of test

##### Initial condition

##### System Simulator:

Three cells (not simultaneously activated), cell A in MCC2/MNC1/LAC1/RAC2 (RAI-2, Not HPLMN), cell B in MCC2/MNC1/LAC1/RAC2 (RAI-7, Not HPLMN), cell C in MCC2/MNC1/LAC2/RAC1 (RAI-6, Not HPLMN).

All cells are operating in network operation mode I.

##### User Equipment:

The UE has a valid IMSI.

##### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

##### Test procedure

The SS orders a PS detach with the cause value ' Roaming area not allowed in this location area '. The SS checks that the UE does not perform combined PS attach while in the location area, performs PS attach when a new location area is

entered and deletes the list of forbidden LAs when switched off. CS services are not possible unless an IMSI attach procedure is performed.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS			The SS starts integrity protection.
5	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-2
6	->		ATTACH COMPLETE	
7	<-		DETACH REQUEST	Detach type = 're-attach not required' Cause 'Roaming not allowed in this location area '
8	->		DETACH ACCEPT	
9	UE			No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
10	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
11	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
12	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
13	UE			No response from the UE to the request. This is checked for 10 seconds
14		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell". (see note)
15	UE			Cell B is preferred by the UE.
16	UE			The UE initiates an attach automatically, by MMI or by AT command.
17	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds)
18	UE			No LOCATION UPDATING REQ with type 'IMSI attach' is sent to the SS (SS waits 30 seconds).
19	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
20	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
21	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
22	UE			No response from the UE to the request. This is checked for 10 seconds

Step	Direction		Message	Comments
	UE	SS		
23		SS		The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell". (see note)
24	UE			Cell C is preferred by the UE. Step 25 is only performed for non-auto attach UE.
25	UE		Registration on CS	See TS34.108 Parameter mobile identity is IMSI.
26	UE			The UE initiates an attach automatically (See ICS), by MMI or AT command.
27	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
28		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-6
29		->	ATTACH COMPLETE	
30		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
31		->	RRC CONNECTION REQUEST	
32		<-	RRC CONNECTION SETUP	
33		->	RRC CONNECTION SETUP COMPLETE	
34		->	PAGING RESPONSE	Mobile identity = TMSI-1
35		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
36		->	RRC CONNECTION RELEASE COMPLETE	
37		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
38		->	RRC CONNECTION REQUEST	
39		<-	RRC CONNECTION SETUP	
40		->	RRC CONNECTION SETUP COMPLETE	
41		->	SERVICE REQUEST	service type = "paging response"
42		<-	RRC CONNECTION RELEASE	
43		->	RRC CONNECTION RELEASE COMPLETE	
44	UE			The UE is switched off or power is removed (see ICS).
45		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
46	UE			The following messages are sent and shall be received on cell B. Set the cell type of cell B to the "Serving cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
47	UE			Cell B is preferred by the UE. The UE is powered up or switched on and initiates an attach (see ICS). Step 48 is only performed for non-auto attach UE.
48	UE		Registration on CS	See TS34.108 Parameter mobile identity is TMSI-1
49	UE			UE initiates an attach automatically (see ICS), by MMI or AT commands.

Step	Direction		Message	Comments
	UE	SS		
50	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-6
51	<-		ATTACH ACCEPT	TMSI status = valid TMSI available Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-7
52	->		ATTACH COMPLETE	
53	<-		PAGING TYPE1	Mobile identity = TMSI-2 Paging order is for CS services.
54	->		RRC CONNECTION REQUEST	
55	<-		RRC CONNECTION SETUP	
56	->		RRC CONNECTION SETUP COMPLETE	
57	->		PAGING RESPONSE	Mobile identity = TMSI-2
58	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
59	->		RRC CONNECTION RELEASE COMPLETE	
60	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
61	->		RRC CONNECTION REQUEST	
62	<-		RRC CONNECTION SETUP	
63	->		RRC CONNECTION SETUP COMPLETE	
64	->		SERVICE REQUEST	service type = "paging response"
65	<-		RRC CONNECTION RELEASE	
66	->		RRC CONNECTION RELEASE COMPLETE	
67	UE			The UE is switched off or power is removed (see ICS).
68	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

### Specific message contents

None.

#### 12.3.2.7.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, when the UE receive the DETACH REQUEST message (Detach type = 're-attach not required', Cause = 'Roaming not allowed in this location area') from SS, UE shall:

- send the DETACH ACCEPT message.

UE shall perform the following action depending on UE location.

- 1) UE is in the same location area.

At step9 and 18, UE shall:

- not perform location updating procedure.

At step11 and 20, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for PS domain.

At step13 and 22, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step17, UE shall;

- not perform PS attach procedure.

2) UE is in the new location area.

At step27, UE shall;

- perform the combined PS attach procedure.

At step34, when the UE receives the paging message for CS domain with Mobile identity = IMSI, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step41, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-1, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step50, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence

At step57, when the UE receives the paging message for CS domain with Mobile identity = IMSI, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step64, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-1, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

## 12.4 Routing area updating procedure

This procedure is used to update the actual routing area of an UE in the network.

### 12.4.1 Normal routing area updating

The routing area updating procedure is a GMM procedure used by PS UEs of UE operation mode A or C that are IMSI attached for PS services only.

#### 12.4.1.1a Routing area updating / accepted

12.4.1.1a.1 Definition

12.4.1.1a.2 Conformance requirement

- 1) If the network accepts the routing area updating procedure and reallocates a P-TMSI, the UE shall acknowledge the new P-TMSI and continue communication with the new P-TMSI.
- 2) If the network accepts the routing area updating procedure from the UE without reallocation of the old P-TMSI, the UE shall continue communication with the old P-TMSI.

#### Reference

3GPP TS 24.008 clause 4.7.5.1.

## 12.4.1.1a.3 Test purpose

To test the behaviour of the UE if the network accepts the routing area updating procedure.

The following cases are identified:

- 1) P-TMSI / P-TMSI signature is reallocated.
- 2) Old P-TMSI / P-TMSI signature is not changed.

## 12.4.1.1a.4 Method of test

## Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

## Related ICS/IXIT statements

Support of PS service Yes/No  
 UE operation mode A Yes/No  
 UE operation mode C Yes/No  
 Switch off on button Yes/No  
 Automatic PS attach procedure at switch on or power on Yes/No

## Test procedure

- 1) The UE sends a ROUTING AREA UPDATE REQUEST message. The SS reallocates the P-TMSI and returns ROUTING AREA UPDATE ACCEPT message with a new P-TMSI. The UE acknowledge the new P-TMSI by sending ROUTING AREA UPDATE COMPLETE message. Further communication UE - SS is performed by the new P-TMSI. The UE will not answer signalling addressed to the old P-TMSI.
- 2) The UE sends a ROUTING AREA UPDATE REQUEST message. The SS accepts the P-TMSI and returns ROUTING AREA UPDATE ACCEPT message without any P-TMSI. Further communication UE - SS is performed by the P-TMSI.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)
2	UE			The UE is set to attach to PS services only (see ICS). If that is not supported by the UE, goto step 22.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3a		SS		The SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
4		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4a		<-	AUTHENTICATION AND CIPHERING REQUEST	

Step	Direction		Message	Comments
	UE	SS		
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	
4c		SS		The SS starts integrity protection.
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6	->		ATTACH COMPLETE	
6a		SS		The SS releases the RRC connection.
7		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
7a		SS		The SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
8	->		ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
8a		SS		The SS starts integrity protection.
9	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4
10	->		ROUTING AREA UPDATE COMPLETE	
11			Void	
11b			Void	
11c		SS		The SS releases the RRC connection.
11d	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
11e		SS		SS verifies that the UE transmits an RRC CONNECTION REQUEST message. SS will reject this request. The IE "Establishment cause" is not checked.
12	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
13		UE		No response from the UE to the request. This is checked for 10 seconds.
14		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)
15		UE		Cell A is preferred by the UE.
15a		SS		The SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
16	->		ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-4
16a		SS		The SS starts integrity protection.
17	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-2 signature Routing area identity = RAI-1
17a		SS		The SS releases the RRC connection.
18	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services. Paging cause = "Terminating interactive call".

Step	Direction		Message	Comments
	UE	SS		
18a		SS		The SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating interactive call"
18b			Void	
18c			Void	
19		->	SERVICE REQUEST	service type = "paging response"
19aa		SS		The SS starts integrity protection.
19a		SS		The SS releases the RRC connection.
19b		->	Void	
20		UE		The UE is switched off or power is removed (see ICS).
20a		SS		The SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Detach".
21		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
21a		SS		The SS releases the RRC connection.
22		UE		The UE is set to attach to both the PS and non-PS services (see ICS) and the test is repeated from step 3 to step 21b.
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

#### Specific message contents

None.

#### 12.4.1.1a.5 Test requirements

At step 3a, 7a and 15a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 18a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Terminating Interactive Call".

At step 20a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step13, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-2, UE shall:

- not respond to the paging message for PS domain.

At step16, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step19, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-1, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

## 12.4.1.1b Routing area updating / accepted / Signalling connection re-establishment

12.4.1.1b.1 Definition

12.4.1.1b.2 Conformance requirement

When the UE receives an indication from the lower layers that the RRC connection has been released with cause "Directed signalling connection re-establishment", then the UE shall enter PMM-IDLE mode and initiate immediately a normal routing area update procedure (the use of normal or combined procedure depends on the network operation mode in the current serving cell) regardless whether the routing area has been changed since the last update or not.

### Reference

3GPP TS 24.008 clause 4.7.2.5, 4.7.5.1

12.4.1.1b.3 Test purpose

To test the behaviour of the UE if the UE receives a RRC CONNECTION RELEASE message with cause = "Directed signalling connection re-establishment".

12.4.1.1b.4 Method of test

### Initial condition

#### System Simulator:

One cell(Cell A) in MCC1/MNC1/LAC1/RAC1 (RAI-1) operating in network operation mode I. ATT flag is set to 0.

#### User Equipment:

The UE has a valid TMSI, P-TMSI-1 and RAI-1

### Related ICS/IXIT statements

Support of PS service Yes/No  
 UE operation mode A Yes/No  
 UE operation mode C Yes/No  
 Switch off on button Yes/No  
 Automatic PS attach procedure at switch on or power on Yes/No

### Test procedure

- a) The UE initiates a Service request procedure in order to establish the PS signalling connection for the upper layer signalling.
- b) After the Service request procedure is complete, the SS sends the RRC CONNECTION RELEASE message with cause = "Directed signalling connection re-establishment" to the UE.
- c) After the UE release the RRC connection, the UE initiate immediately a normal routing area update procedure.

### Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available

Step	Direction		Message	Comments
	UE	SS		
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c		SS		The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity =IMSI Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
7	->		SERVICE REQUEST	Service type = "signalling",
8	<-		AUTHENTICATION AND CIPHERING REQUEST	
9	->		AUTHENTICATION AND CIPHERING RESPONSE	
10		SS		The SS initiates a security mode control procedure.
11	<-		RRC CONNECTION RELEASE	Release cause=Directed Signalling Connection Re-establishment
12	->		RRC CONNECTION RELEASE COMPLETE	
13	->		RRC CONNECTION REQUEST	
14	<-		RRC CONNECTION SETUP	
15	->		RRC CONNECTION SETUP COMPLETE	
16	->		ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-1
17	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
18	->		ROUTING AREA UPDATE COMPLETE	
19	UE			The UE is switched off or power is removed (see ICS).
20	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

#### Specific message contents

None.

#### 12.4.1.1b.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step16, UE shall;

- initiate the routing area updating procedure whether the routing area has been changed since the last update or not.

## 12.4.1.2 Routing area updating / rejected / IMSI invalid / illegal ME

### 12.4.1.2.1 Definition

### 12.4.1.2.2 Conformance requirement

- 1) If the network rejects a routing area updating procedure from the User Equipment with the cause 'Illegal ME', the User Equipment shall consider USIM invalid for PS services until power is switched off or USIM is removed.
- 2) If the network rejects a routing area updating procedure from the User Equipment with the cause 'Illegal ME', the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

### Reference

3GPP TS 24.008 clause 4.7.5.1.

### 12.4.1.2.3 Test purpose

To test the behaviour of the UE if the network rejects the routing area updating procedure of the UE with the cause 'Illegal ME'.

### 12.4.1.2.4 Method of test

#### Initial condition

#### System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2).  
All three cells are operating in network operation mode II (in case of UE operation mode A)

#### User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

#### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode C	Yes/No
UE operation mode A	Yes/No (only if mode C not supported)
USIM removal possible without powering down	Yes/No
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

#### Test procedure

The SS rejects a routing area updating with the cause value 'Illegal ME'. The SS checks that the UE does not perform PS attach in the same or another PLMN.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The following messages are sent and shall be received on cell A. The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
3a	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS			The SS starts integrity protection. No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'PS only attached'
5	<-		ATTACH ACCEPT	Routing area identity = RAI-1
6	SS			The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
7	UE			Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATE REQUEST	Update type = 'RA updating'
9	<-		ROUTING AREA UPDATE REJECT	Routing area identity = RAI-1 GMM cause = 'Illegal ME'
10	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 PAGING TYPE1 (used for NW-mode II). Paging order is for PS services.
11	UE			No response from the UE to the request. This is checked for 10 seconds.
12	SS			The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell". (see note)
13	UE			Cell C is preferred by the UE.
14	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
15	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
16	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
16a				Step 16b is only performed by UE in operation mode A

16b	UE	Registration on CS	See TS 34.108
17	->	ATTACH REQUEST	Parameter mobile identity is IMSI. Attach type = 'PS attach' Mobile identity = IMSI
17a	<-	AUTHENTICATION AND CIPHERING REQUEST	
17b	->	AUTHENTICATION AND CIPHERING RESPONSE	
17c	SS		The SS starts integrity protection.
18	<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
19	->	ATTACH COMPLETE	
20	UE		The UE is switched off or power is removed (see ICS).
21	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE: The definitions for "Non-Suitable cell", "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

### Specific message contents

None.

#### 12.4.1.2.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step11, after the routing area updating procedure is rejected with GMM cause = 'Illegal ME', UE shall;

- not respond to the paging message for PS domain.

At step14, UE shall,

- not initiate PS attach procedure.

At step17, after the UE is powered up or USIM is replaced, UE shall;

- initiate the PS attach procedure.

#### 12.4.1.3 Routing area updating / rejected / UE identity cannot be derived by the network

##### 12.4.1.3.1 Definition

##### 12.4.1.3.2 Conformance requirement

If the network rejects a routing area updating procedure from the User Equipment with the cause 'UE identity cannot be derived by the network', the User Equipment shall delete the stored RAI, PS-CKSN, P-TMSI and P-TMSI signature.

Depending on the manufacturer the UE may or may not perform a PS attach procedure.

### Reference

3GPP TS 24.008 clause 4.7.5.1.

### 12.4.1.3.3 Test purpose

To test the behaviour of the UE if the network rejects the routing area updating procedure of the UE with the cause 'UE identity cannot be derived by the network'.

### 12.4.1.3.4 Method of test

#### Initial condition

#### System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).

Both cells are operating in network operation mode II (in case of UE operation mode A).

#### User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

#### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No (only if mode C not supported)

Automatic attach procedure when UE identity cannot be derived by the network Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

#### Test procedure

The SS rejects a normal routing area updating with the cause value 'UE identity cannot be derived by the network'. The UE detach locally. A new PS attach may be performed.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
2	UE			The UE is set in UE operation mode C (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS			The SS starts integrity protection.
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6	->		ATTACH COMPLETE	
7		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the " Suitable neighbour cell ". Set the cell type of cell B to the "Serving cell". (see note)
8	UE			Cell B is preferred by the UE.
9	->		ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
10	<-		ROUTING AREA UPDATE REJECT	GMM cause = 'UE identity cannot be derived by the network'
11	UE			If an automatic attach procedure by the UE is not possible when the UE identity cannot be derived by the network (see ICS) goto step 19.
12	UE			An Automatic PS attach procedure is initiated (see ICS).
13	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
13a	<-		AUTHENTICATION AND CIPHERING REQUEST	
13b	->		AUTHENTICATION AND CIPHERING RESPONSE	
13c	SS			The SS starts integrity protection.
14	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4
15	->		ATTACH COMPLETE	
16	UE			The UE is switched off or power is removed (see ICS).
17	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach' Stop the sequence
18				
19	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 PAGING TYPE1 (used for NW-mode II). Paging order is for PS services.

Step	Direction		Message	Comments
	UE	SS		
20	UE			No response from the UE to the request, as the UE has detached locally. This is checked for 10 seconds.
NOTE: The definitions for "Non-Suitable cell", Suitable neighbour cell and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

### Specific message contents

None.

#### 12.4.1.3.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step9, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

UE shall perform the following actions depending on the implementation of the UE.

Case 1) UE supports an Automatic PS attach procedure.

At step13, UE shall;

- initiate the PS attach procedure.

Case 2) UE does not support an Automatic PS attach procedure.

At step20, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

#### 12.4.1.4a Routing area updating / rejected / location area not allowed

##### 12.4.1.4a.1 Definition

##### 12.4.1.4a.2 Conformance requirement

- 1) If the network rejects a routing area updating procedure from the User Equipment with the cause 'location area not allowed' the User Equipment shall:
  - 1.1 not perform PS attach when in the same location area.
  - 1.2 delete the stored RAI, PS-CKSN, P-TMSI, P-TMSI signature and TMSI, LAI and ciphering key sequence number.
  - 1.3 store the LA in the 'forbidden location areas for regional provision of service'.
  - 1.4 not delete the list of "equivalent PLMNs".
  - 1.5 perform a cell selection.
- 2) If the network rejects a routing area updating procedure from the User Equipment with the cause 'location area not allowed' the User Equipment shall:
  - 2.1 perform PS attach when a new location area is entered.
  - 2.2 delete the list of forbidden LAs after switch off (power off).

## Reference

3GPP TS 24.008 clauses 4.7.5.1.

### 12.4.1.4a.3 Test purpose

To test the behaviour of the UE if the network rejects the routing area updating procedure of the UE with the cause 'Location Area not allowed'.

To test that the UE deletes the list of forbidden LAs when power is switched off.

### 12.4.1.4a.4 Method of test

## Initial condition

### System Simulator:

Four cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) , cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell D in MCC2/MNC1/LAC2/RAC1(RAI-6).

All four cells are operating in network operation mode II.

The PLMN contains Cell D is equivalent to the PLMN that contains Cell C.

### User Equipment:

The UE has a valid IMSI.

## Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

UE operation mode C Yes/No

USIM removal possible without powering down Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

## Test procedure

The SS rejects a routing area updating with the cause value 'Location Area not allowed'. The SS checks that the UE does not perform PS attach while in the location area, performs PS attach when a new location area is entered and deletes the list of forbidden LAs when switched off.

Different types of UE may use different methods to periodically clear the list of forbidden location areas (e.g. every day at 12am). If the list is cleared while the test is being run, it may be necessary to re-run the test.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell C. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell". Set the cell type of cell D to the "Non-Suitable cell".
2	UE			(see note) The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 33.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell C is preferred by the UE.
3a	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS			The SS starts integrity protection.
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3 Equivalent PLMNs = MCC2,MNC1
6	->		ATTACH COMPLETE	
7		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell B to the "Serving cell". Set the cell type of cell C to the "Non-Suitable cell".
8		SS		(see note) Cell B is preferred by the UE.
8a				The following step is only performed for UE Operation Mode A.
8b	UE		Registration on CS	See TS34.108 Parameter mobile identity is IMSI
9	->		ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-3
10	<-		ROUTING AREA UPDATE REJECT	GMM cause = 'Location Area not allowed'
11	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 PAGING TYPE1 (used for NW-mode II). Paging order is for PS services.
12	UE			No response from the UE to the request. This is checked for 10 seconds.
13		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell".
13a	UE			(see note) The UE performs cell selection.
14	UE			Cell A is preferred by the UE.
15	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds)

Step	Direction		Message	Comments
	UE	SS		
16		SS		The following messages are sent and shall be received on cell C. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell D to the "Serving cell". (see note)
16a	UE			The UE performs cell selection.
17	UE			Cell C is preferred by the UE.
17a				The following step is only performed for UE Operation Mode A.
17b	UE		Registration on CS	See TS34.108 Parameter mobile identity is IMSI
	UE			The UE initiates a PS attach either automatically or manually (see ICS).
18	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
19	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-6
20	->		ATTACH COMPLETE	
21	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
22	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
23	UE			The UE gets the USIM replaced, is powered up or switched on and initiates an attach (see ICS).
24	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 Routing area identity = RAI-3
24a	<-		AUTHENTICATION AND CIPHERING REQUEST	
24b	->		AUTHENTICATION AND CIPHERING RESPONSE	
24c	SS			The SS starts integrity protection.
25	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-6
26	->		ATTACH COMPLETE	
27		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell D to the "Non-Suitable cell". (see note)
28				Cell A is preferred by the UE.
28a				The following step is only performed for UE Operation Mode A.
28b	UE		Registration on CS	See TS34.108 Parameter mobile identity is IMSI
29	->		ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-3
30	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned.P-TMSI and P-TMSI signature not included.Update result = 'RA updated'
31	UE			Routing area identity = RAI-1 The UE is switched off or power is removed (see ICS).
32	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
33		SS		The SS is set in network operation mode II.

Step	Direction		Message	Comments
	UE	SS		
34	UE			The UE is set in UE operation mode A (see ICS), cell A is switched off and the test is repeated from step 2 to step 32.
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

### Specific message contents

None.

#### 12.4.1.4a.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step9, UE shall:

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step12, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step12 and 15, when in the same location area, UE shall

- not perform PS attach procedure.

At step18, when a new location area is entered, UE shall

- perform the PS attach procedure.

At step24, when the USIM is replaced , UE shall;

- perform the PS attach procedure.

At step29, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

#### 12.4.1.4b Routing area updating / rejected / No Suitable Cells In Location Area

##### 12.4.1.4b.1 Definition

##### 12.4.1.4b.2 Conformance requirement

1) If the network rejects a routing area updating procedure from the User Equipment with the cause 'No Suitable Cells In Location Area', the User Equipment shall:

- 1.1 store the LA or the PLMN identity in the 'forbidden location areas for roaming'.
- 1.2 search for a suitable cell in a different location area on the same PLMN.
- 1.3 not delete equivalent PLMNs list.

### Reference

3GPP TS 24.008 clauses 4.7.5.1.

#### 12.4.1.4b.3 Test purpose

To test the behaviour of the UE if the network rejects the routing area updating procedure with the cause 'No Suitable Cells In Location Area'.

To test that the UE deletes the list of forbidden LAs when power is switched off'.

#### 12.4.1.4b.4 Method of test

##### Initial condition

##### System Simulator:

Four cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2), cell D in MCC1/MNC1/LAC1/RAC2 (RAI-4),

All three cells are operating in network operation mode II.

The PLMN contains Cell C is equivalent to the PLMN that contains Cell D.

##### User Equipment:

The UE has valid IMSI.

##### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

USIM removal possible without powering down Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

##### Test procedure

The SS rejects a routing area updating with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall perform PS attach procedure when the UE enters a suitable cell in a different location area on the same PLMN.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following message are sent and shall be received on cell D. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". Set the cell type of cell D to the "Serving cell". (see note)
		SS		
2		UE		The UE is powered up or switched on and initiates an attach (see ICS). Cell D is preferred by the UE.
3		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
3a		<-	AUTHENTICATION AND CIPHERING REQUEST	
3b		->	AUTHENTICATION AND CIPHERING RESPONSE	
3c		SS		The SS starts integrity protection.
4		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 Equivalent PLMNs = MCC2,MNC1
5		->	ATTACH COMPLETE	
6		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". Set the cell type of cell D to the "Suitable neighbour cell". (see note) The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C Cell A is preferred by the UE.
7		->	ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-4
8		<-	ROUTING AREA UPDATE REJECT	GMM cause = 'No Suitable Cells In Location Area'
9		->	ATTACH REQUEST	The following message are sent and shall be received on cell B. Attach type = 'PS attach' Mobile identity = P-TMSI-1
10		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-3
11		->	ATTACH COMPLETE	
12		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

## Specific message contents

None.

#### 12.4.1.4b.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step7, UE shall;

- initiate the routing area updating procedure.

At step9, when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- perform the PS attach procedure.

#### 12.4.1.4c Routing area updating / rejected / PS services not allowed in this PLMN

##### 12.4.1.4c.1 Definition

##### 12.4.1.4c.2 Conformance requirement

If the network rejects a routing area updating procedure from the User Equipment with the cause 'PS service not allowed in this PLMN', the User Equipment shall:

- delete any RAI, P-TMSI, P-TMSI signature, and PS ciphering key sequence number stored.
- shall set the PS update status to GU3 ROAMING NOT ALLOWED.
- store the PLMN identity in the "forbidden PLMNs for PS service" list.

UE shall perform the following actions depending on the update type, UE operation mode and network operation mode.

1) UE is in UE operation mode C

UE shall perform a PLMN selection instead of a cell selection.

2) UE is in UE operation mode A, update type = periodic updating and Network is in network operation mode I

UE shall set the timer T3212 to its initial value and restart it, if it is not already running.

3) UE is in UE operation mode A and Network is in network operation mode II.

UE shall be still IMSI attached for CS services in the network.

#### Reference

3GPP TS 24.008 clause 4.7.5.1.

##### 12.4.1.4c.3 Test purpose

To test the behaviour of the UE if the network rejects the routing area updating procedure of the UE with the cause 'PS services not allowed in this PLMN'.

##### 12.4.1.4c.4 Method of test

#### Initial condition

#### System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2).

All three cells are operating in network operation mode II (in case of UE operation mode A).

The PLMN contains Cell C is equivalent to the PLMN that contains Cell A.

## User Equipment:

The UE has a valid P-TMSI-1, RAI-1.

The UE is in UE operation mode C.

## Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

## Test procedure

The SS rejects a routing area updating with the cause value 'PS services not allowed in this PLMN'. The SS checks that the UE performs PLMN selection.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The following messages are sent and shall be received on cell A. The UE is set in UE operation mode C (see ICS).
2	SS			The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS			The SS starts integrity protection.
5	<-		ATTACH ACCEPT	No new mobile identity assigned.P-TMSI and P-TMSI signature not included. Attach result = 'PS only attached' Routing area identity = RAI-1 Equivalent PLMNs = MCC2,MNC1
6	SS			The following messages are sent and shall be received on cell B. Set the cell type of cell A to the " Suitable neighbour cell ". Set the cell type of cell B to the "Serving cell". (see note)
7	UE			Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATE REQUEST	Update type = 'RA updating'
9	<-		ROUTING AREA UPDATE REJECT	Routing area identity = RAI-1 GMM cause = 'PS services not allowed in this PLMN'
10	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 PAGING TYPE1 (used for NW-mode II). Paging order is for PS services.
11	UE			No response from the UE to the request. This is checked for 10 seconds.
12	SS			Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell A to the "Serving cell". (see note)
13	UE			The UE performs PLMN selection.
14	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
12	SS			Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell". (see note)
17	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
18	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
19	->		ATTACH COMPLETE	
20	UE			The UE is switched off or power is removed (see ICS).

21	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE: The definitions for "Non-Suitable cell", "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

### Specific message contents

None.

### Test procedure2

### Initial condition

### System Simulator:

One cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) operating in network operation mode I.

### User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

The UE is in UE operation mode A.

### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

### Test procedure

The UE initiates a PS attach procedure with identity P-TMSI. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312. The UE acknowledge the new P-TMSI by sending ATTACH COMPLETE message. A routing area updating procedure is performed at T3312 timeout. The SS rejects a routing area updating with the cause value 'PS services not allowed in this PLMN'. The UE sets the timer T3212 to its initial value and restart it, if it is not already running.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3312 = 6 minutes
5	->		ATTACH COMPLETE	
6	->		ROUTING AREA UPDATE REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature Routing area identity = RAI-1
7	<-		ROUTING AREA UPDATE REJECT	GMM cause = 'PS services not allowed in this PLMN'
8	SS			The SS verifies that the time between the attach and the periodic RA updating is T3312
9	->		ROUTING AREA UPDATE REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature Routing area identity = RAI-1
10	<-		ROUTING AREA UPDATE REJECT	GMM cause = 'PS services not allowed in this PLMN'
11	UE			The UE is switched off or power is removed (see ICS).
12	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE: The definitions for "Non-Suitable cell", "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

## Specific message contents

None.

## 12.4.1.4c.5 Test requirements

## Test requirement for Test procedure1

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step11, after the routing area updating procedure is rejected with GMM cause = 'PS service not allowed in this PLMN', UE shall;

- not respond to the paging message for PS domain.

At step13, UE shall,

- initiate PLMN selection.

At step17, UE shall;

- initiate the PS attach procedure.

Test requirement for Test procedure2

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step6, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step7, after the routing area updating procedure is rejected with GMM cause = 'PS service not allowed in this PLMN', UE shall;

- set the timer T3212 to its initial value and restart it.

At step8, UE shall,

- not initiate periodic routing area updating procedure.

At step9, UE shall;

- initiate the routing area updating procedure with the information elements specified in the above Expected Sequence.

At step10, after the routing area updating procedure is rejected with GMM cause = 'PS service not allowed in this PLMN', UE shall;

- set the timer T3212 to its initial value and restart it.

At step11, UE shall,

- not initiate periodic routing area updating procedure.

#### 12.4.1.4d Routing area updating / rejected / Roaming not allowed in this location area

##### 12.4.1.4d.1 Definition

##### 12.4.1.4d.2 Conformance requirement

- 1) If the network rejects a routing area updating procedure from the User Equipment with the cause 'roaming not allowed in this location area' the User Equipment:
  - 1.1 shall not perform PS attach when in the same location area.
  - 1.2 shall store the LA in the 'forbidden location areas for roaming'.
  - 1.3 may perform PS attach when a new location area is entered.
- 2) The User Equipment shall reset the list of 'Forbidden location areas for roaming' when switched off or when the USIM is removed.

#### Reference

3GPP TS 24.008 clause 4.7.5.2.

## 12.4.1.4d.3 Test purpose

## Test purpose1

To test that on receipt of a rejection using the 'Roaming not allowed in this area' cause code, the UE ceases trying a routing area updating procedure on that location area. Successful routing area updating procedure is possible in other location areas.

## Test purpose2

To test that if the UE is switched off or the USIM is removed the list of 'forbidden location areas for roaming' is cleared.

## 12.4.1.4d.4 Method of test

## 12.4.1.4d.4.1 Test procedure1

## Initial condition

## System Simulator:

Two cells, cell A in MCC2/MNC1/LAC1/RAC1 (RAI-2), cell B in MCC2/MNC1/LAC2/RAC1 (RAI-6).  
Both cells are operating in network operation mode II.

## User Equipment:

The UE has a valid IMSI.

## Related ICS/IXIT statements

Support of PS service Yes/No  
UE operation mode A Yes/No  
Switch off on button Yes/No  
Automatic PS attach procedure at switch on or power on Yes/No

## Test procedure

The SS rejects a routing area updating with the cause value 'Roaming not allowed in this area'. A new attempt for a PS attach is not possible. Successful PS attach procedure is performed in another location area. The UE is moved back to the 1<sup>st</sup> location area. A routing area updating shall not be performed, as the LA is on the forbidden list.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)
		SS		
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	UE		Registration on CS	See TS34.108
4	->		ATTACH REQUEST	Parameter mobile identity is IMSI SS allocates Mobile identity = TMSI-1. Attach type = 'PS attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS			The SS starts integrity protection.
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-2
6	->		ATTACH COMPLETE	
7		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
8	UE			Cell B is preferred by the UE.
9	->		ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-2
10	<-		ROUTING AREA UPDATE REJECT	GMM cause = 'Roaming not allowed in this area'
11	UE			The UE initiates an attach by MMI or by AT command.
12	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
14	UE			No response from the UE to the request. This is checked for 10 seconds.
15	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
16	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
17		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)
18	UE			Cell A is preferred by the UE.
19	UE		Registration on CS	See TS 34.108 Location Update Procedure initiated from the UE.
20	UE			Parameter mobile identity is TMSI-1. The UE initiates an attach automatically (see ICS), by MMI or by AT command.
21	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2

Step	Direction		Message	Comments
	UE	SS		
22		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
23		->	ATTACH COMPLETE	
24		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
25		->	RRC CONNECTION REQUEST	
26		<-	RRC CONNECTION SETUP	
27		->	RRC CONNECTION SETUP COMPLETE	
28		->	PAGING RESPONSE	Mobile identity = TMSI-1
29		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
30		->	RRC CONNECTION RELEASE COMPLETE	
31		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
32		->	RRC CONNECTION REQUEST	
33		<-	RRC CONNECTION SETUP	
34		->	RRC CONNECTION SETUP COMPLETE	
35		->	SERVICE REQUEST	service type = "paging response"
36		<-	RRC CONNECTION RELEASE	
37		->	RRC CONNECTION RELEASE COMPLETE	
38		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
39		UE		No ROUTING AREA UPDATE REQUEST sent to SS (SS waits 30 seconds).
40		<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
41		UE		No response from the UE to the request. This is checked for 10 seconds.
NOTE:	The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

## 12.4.1.4d.4.2 Test procedure2

## Initial condition

## System Simulator:

Two cells, cell A in MCC2/MNC1/LAC1/RAC1 (RAI-2), cell B in MCC2/MNC1/LAC2/RAC1 (RAI-6). Both cells are operating in network operation mode II.

## User Equipment:

The UE has a valid IMSI. UE is Idle Updated on cell A.

## Related ICS/IXIT statements

Support of PS service Yes/No  
 UE operation mode A Yes/No  
 USIM removal possible without powering down Yes/No  
 Switch off on button Yes/No  
 Automatic PS attach procedure at switch on or power on Yes/No

### Test procedure

The SS rejects a routing area updating with the cause value 'Roaming not allowed in this area'. The UE is switched off for 10 seconds and switched on again. The SS checks that a PS attach is possible on the cell on which the previous routing area updating had been rejected.

If USIM removal is possible without switching off:

The SS rejects a routing area updating with the cause value 'Roaming not allowed in this area'. The USIM is removed and inserted in the UE. The SS checks that a PS attach procedure and routing area updating procedure is possible on the cell on which the routing area updating had previously been rejected.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)
		SS		
2		UE		The UE is powered up or switched on and initiates an attach (see ICS).
3		UE	Registration on CS	See TS34.108
4		->	ATTACH REQUEST	Parameter mobile identity is IMSI SS allocates Mobile identity = TMSI-1. Attach type = ' PS attach ' Mobile identity =IMSI TMSI status = no valid TMSI available
4a		<-	AUTHENTICATION AND CIPHERING REQUEST	
4b		->	AUTHENTICATION AND CIPHERING RESPONSE	
4c		SS		The SS starts integrity protection.
5		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-2
6		->	ATTACH COMPLETE	
7		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
8		UE		Cell B is preferred by the UE.
9		->	ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-2
10		<-	ROUTING AREA UPDATE REJECT	GMM cause = 'Roaming not allowed in this area'
11		UE		The UE initiates an attach by MMI or by AT command.
12		UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13		<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
14		UE		No response from the UE to the request. This is checked for 10 seconds.
15		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
16		UE		The UE shall not initiate an RRC connection. This is checked during 3 seconds.
17		UE		If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
18		UE		The UE gets the USIM replaced, is powered up or switched on.
19		UE	Registration on CS	See TS 34.108 Location Update Procedure initiated from the UE.
20		UE		The UE initiates an attach automatically (see ICS) by MMI or AT command.
21		->	ATTACH REQUEST	Attach type = ' PS attach ' Mobile identity =IMSI TMSI status = no valid TMSI available
22a		<-	AUTHENTICATION AND CIPHERING REQUEST	

Step	Direction		Message	Comments
	UE	SS		
22b	->		AUTHENTICATION AND CIPHERING RESPONSE	
22c		SS		The SS starts integrity protection.
22	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-6 Mobile identity = TMSI-1
23	->		ATTACH COMPLETE	
24	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
25	->		RRC CONNECTION REQUEST	
26	<-		RRC CONNECTION SETUP	
27	->		RRC CONNECTION SETUP COMPLETE	
28	->		PAGING RESPONSE	Mobile identity = TMSI-1
29	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
30	->		RRC CONNECTION RELEASE COMPLETE	
31	<-		PAGING TYPE1	Mobile identity = P-TMSI-1
32	->		RRC CONNECTION REQUEST	
33	<-		RRC CONNECTION SETUP	
34	->		RRC CONNECTION SETUP COMPLETE	
35	->		SERVICE REQUEST	service type = "paging response"
36	<-		RRC CONNECTION RELEASE	
37	->		RRC CONNECTION RELEASE COMPLETE	
38	UE			The UE is switched off or power is removed (see ICS).
39	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

### Specific message contents

None.

#### 12.4.1.4d.5 Test requirements

##### Test requirements for Test procedure1

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step9, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the routing area update procedure with the information elements specified above Expected Sequence

At step12, when the SS rejects the routing area update procedure with GMM cause = 'Roaming not allowed in this area', UE shall:

- not initiate a PS attach procedure.

At step14, when the UE receives the paging message for PS domain, UE shall;

- not respond to the paging message for PS domain.

At step16, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step21, UE shall:

- initiate the PS attach procedure.

At step28, when the UE receives the paging message for CS domain, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step35, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step41, when the UE receives the paging message for PS domain, UE shall;

- not respond to the paging message for PS domain.

#### Test requirements for Test procedure2

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step9, UE shall:

- initiate the routing area update procedure with the information elements specified above Expected Sequence.

At step14, when the UE receives the paging message for PS domain, UE shall;

- not respond to the paging message for PS domain.

At step16, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step21, UE shall:

- initiate the PS attach procedure.

At step28, when the UE receives the paging message for CS domain, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step35, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

#### 12.4.1.5 Routing area updating / abnormal cases / attempt counter check / miscellaneous reject causes

##### 12.4.1.5.1 Definition

##### 12.4.1.5.2 Conformance requirement

When a routing area updating procedure is rejected with the attempt counter less than five, the UE shall repeat the routing area updating procedure after T3330 timeout.

When a T3330 timeout has occurred during a routing area updating procedure with the attempt counter five, the UE shall start timer T3302.

When the T3302 expire, a new routing area updating procedure shall be initiated.

## Reference

3GPP TS 24.008 clause 4.7.5.1.

## 12.4.1.5.3 Test purpose

To test the behaviour of the UE with respect to the attempt counter.

## 12.4.1.5.4 Method of test

## Initial condition

## System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). The ATT-flag shall indicate that the MS should use IMSI attach/detach procedures.

Both cells are operating in network operation mode II (in case of UE operation mode A).

## User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

## Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode C	Yes/No
UE operation mode A	Yes/No (only if mode C not supported)
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

## Test procedure

The UE initiates a routing area updating procedure (attempt counter zero).

The SS rejects the routing area updating procedure with a GMM cause 'congestion' code.

The UE initiates a new routing area updating procedure (attempt counter one) after T3311 expires.

The SS rejects the routing area updating procedure with a GMM cause 'congestion' code.

The UE initiates a new routing area updating procedure (attempt counter two) after T3311 expires.

The SS rejects the routing area updating procedure with a GMM cause 'congestion' code.

The UE initiates a new routing area updating procedure (attempt counter three) after T3311 expires.

The SS rejects the routing area updating procedure with a GMM cause 'congestion' code.

The UE initiates a new routing area updating procedure (attempt counter four) after T3311 expires.

The SS rejects the routing area updating procedure with a GMM cause 'congestion' code.

The UE initiates a new routing area updating procedure with attempt counter five (after T3311 expires).

The SS rejects the routing area updating procedure with a GMM cause 'congestion' code.

The UE shall not perform a new successful routing area updating procedure after T3311 seconds.

The UE initiates a routing area updating procedure with attempt counter zero after T3302 expires with the stored P-TMSI, P-TMSI signature, PS CKSN and RAI.

T3302; set to 12 minutes.

T3330; set to 15 seconds.

T3311; set to 15 seconds.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A.
2	UE			The UE is set in UE operation mode C (see ICS).
2a		SS		The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
2a	UE		Registration on CS	See TS 34.108 This step is applied only for UE in UE operation mode A.
3	UE			Parameter mobile identity is TMSI. The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS			The SS starts integrity protection.
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI not included. Attach result = 'PS only attached' P-TMSI-2 signature Routing area identity = RAI-1
6		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
7		SS		Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
9	<-		ROUTING AREA UPDATE REJECT	GMM cause = 'Congestion'
10		SS		The SS verifies that the time between the routing area updating requests is 15 seconds
11	->		ROUTING AREA UPDATE REQUEST	Update type = 'RA updating'  P-TMSI-2 signature Routing area identity = RAI-1
12	<-		ROUTING AREA UPDATE REJECT	GMM cause = 'Congestion'
13		SS		The SS verifies that the time between the routing area updating requests is 15 seconds
14	->		ROUTING AREA UPDATE REQUEST	Update type = 'RA updating'  P-TMSI-2 signature Routing area identity = RAI-1
15	<-		ROUTING AREA UPDATE REJECT	GMM cause = 'Congestion'
16		SS		The SS verifies that the time between the routing area updating requests is 15 seconds
17	->		ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
18	<-		ROUTING AREA UPDATE REJECT	GMM cause = 'Congestion'

Step	Direction		Message	Comments
	UE	SS		
19		SS		The SS verifies that the time between the routing area updating requests is 15 seconds
20	->		ROUTING AREA UPDATE REQUEST	Update type = 'RA updating'
21	<-		ROUTING AREA UPDATE REJECT	P-TMSI-2 signature Routing area identity = RAI-1 GMM cause = 'Congestion'
22		SS		The SS verifies that the UE does not attempt to attach for 10 minutes .
23		SS		The SS shall release the PS signalling connection.
23a		UE	Registration on CS	See TS 34.108 This step is applied only for UE in UE operation mode A. Parameter mobile identity is TMSI.
24	->		ROUTING AREA UPDATE REQUEST	Update type = 'RA updating'
25	<-		ROUTING AREA UPDATE ACCEPT	P-TMSI-2 signature Routing area identity = RAI-1 Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-4
26	->		ROUTING AREA UPDATE COMPLETE	
27		UE		The UE is switched off or power is removed (see ICS).
28	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach' An IMSI Detach must be performed for an UE in Operation Mode A either before or after the PS Detach
NOTE: The definitions for "Non-Suitable cell", "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

#### Specific message contents

None.

#### 12.4.1.5.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, UE shall:

- perform the routing area updating procedure.

UE shall perform the following actions depending on the conditions described below.

Case 1) At step11, 14, 17 and 20, a routing area updating procedure is rejected from SS with the attempt counter less than five,

UE shall:

- repeat the routing area updating procedure after T3330 timeout

Case2) At step22 a routing area updating procedure is rejected from SS with the attempt counter five

At step22, UE shall:

- not initiate a routing area updating procedure.

Case3) At step24, the T3302 expires

UE shall:

- initiate the new routing area updating procedure

#### 12.4.1.6 Routing area updating / abnormal cases / change of cell into new routing area

##### 12.4.1.6.1 Definition

##### 12.4.1.6.2 Conformance requirement

When a change of cell into a new routing area is performed before the routing area updating procedure is finished, the UE shall abort the routing area updating procedure and re-initiate it in the new routing area.

##### Reference

3GPP TS 24.008 clause 4.7.5.1.

##### 12.4.1.6.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

##### 12.4.1.6.4 Method of test

##### Initial condition

System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4) and cell C In MCC1/MNC1/LAC1/RAC3 (RAI-5).  
All cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

##### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode C	Yes/No
UE operation mode A	Yes/No
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

##### Test procedure

The UE initiates a routing area updating procedure. The ROUTING AREA UPDATE ACCEPT message is delayed from the SS. The UE performs a cell update into a new routing area. The UE shall re-initiate a routing area updating procedure in the new routing area.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A.
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 18.
3		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
4	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS			The SS starts integrity protection.
5	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
6	->		ATTACH COMPLETE	
7		SS		The following messages are sent and shall be received on cell B.
8		SS		Set the cell type of cell A to the "Suitable neighbour cell".
9		SS		Set the cell type of cell B to the "Serving cell". (see note)
9	->		ROUTING AREA UPDATE REQUEST	Cell B is preferred by the UE. Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
10		SS		No response to the ROUTING AREA UPDATE REQUEST message is given by the SS
11		SS		The following messages are sent and shall be received on cell C.
12		SS		Set the cell type of cell B to the "Suitable neighbour cell".
13		SS		Set the cell type of cell C to the "Serving cell". (see note)
13	->		ROUTING AREA UPDATE REQUEST	Cell C is preferred by the UE. Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
14	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-5
15	->		ROUTING AREA UPDATE COMPLETE	
16	UE			The UE is switched off or power is removed (see ICS).
17	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
18		SS		The SS is set in network operation mode II.
19	UE			The UE is set in UE operation mode A (see ICS). Set the cell type of cell C to the "Non-Suitable cell". The test is repeated from step 2 to step 17.

NOTE: The definitions for "Non-Suitable cell", "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".

### Specific message contents

None.

#### 12.4.1.6.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step9, UE shall:

- initiate the routing area update procedure.

At step13, when change of cell into a new routing area is performed before the routing area updating procedure is finished, UE shall:

- abort the routing area updating procedure.
- re-initiate new routing area updating procedure in the new routing area.

#### 12.4.1.7 Routing area updating / abnormal cases / change of cell during routing area updating procedure

##### 12.4.1.7.1 Definition

##### 12.4.1.7.2 Conformance requirement

When a change of cell within a new routing area is performed before the routing area updating procedure is finished, the UE shall perform the cell update before the routing area updating procedure is finished.

### Reference

3GPP TS 24.008 clause 4.7.5.1.

##### 12.4.1.7.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

##### 12.4.1.7.4 Method of test

### Initial condition

#### System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4) and cell C in MCC1/MNC1/LAC1/RAC2 (RAI-4).  
All three cells are operating in network operation mode II.

#### User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode C	Yes/No
UE operation mode A	Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

#### Test procedure

The UE initiates a routing area updating procedure. The ROUTING AREA UPDATE ACCEPT message is delayed from the SS. The UE performs a cell update within the routing area. The UE then waits for the ROUTING AREA UPDATE ACCEPT message.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A.
2	UE			The UE is set in UE operation mode C (see ICS).
3		SS		The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
4	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach result = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS			The SS starts integrity protection. No new mobile identity assigned. P-TMSI not included. Attach result = 'PS only attached' P-TMSI-2 signature Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	
6		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
7		SS		Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1
9		SS		No response to the ROUTING AREA UPDATE REQUEST message is given by the SS
10		SS		The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Serving cell". (see note)
11		SS		Cell C is preferred by the UE.
12a	->		CELL UPDATE	Cell update cause = 'cell reselection'
12b	<-		CELL UPDATE CONFIRM	
13	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-3 signature Routing area identity = RAI-4
14	->		ROUTING AREA UPDATE COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE:		The definitions for "Non-Suitable cell", "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".		

Specific message contents

None.

#### 12.4.1.7.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, UE shall:

- initiate routing area update procedure.

At step12a, when a change of cell within a new routing area is performed, UE shall:

- perform the cell update before the routing area updating procedure is finished.

### 12.4.1.8 Routing area updating / abnormal cases / P-TMSI reallocation procedure collision

#### 12.4.1.8.1 Definition

#### 12.4.1.8.2 Conformance requirement

When a P-TMSI REALLOCATION COMMAND message is received by the UE while waiting for a ROUTING AREA UPDATE ACCEPT message, the UE shall ignore the P-TMSI reallocation procedure and continue with the routing area updating procedure.

#### Reference

3GPP TS 24.008 clause 4.7.5.1.

#### 12.4.1.8.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

#### 12.4.1.8.4 Method of test

#### Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) and cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).  
Both cells are operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid IMSI.

#### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode C	Yes/No
UE operation mode A	Yes/No (only if mode C not supported)
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

Test procedure

The UE initiates a routing area updating procedure. The SS does not answer the routing area updating procedure, but initiates a P-TMSI reallocation procedure. The UE shall ignore the P-TMSI reallocation procedure and continue with the routing area updating procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A.
		UE		
2		SS		The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
3		UE		The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4		->	ATTACH REQUEST	Attach result = 'PS attach' Mobile identity = IMSI
4a		<-	AUTHENTICATION AND CIPHERING REQUEST	
4b		->	AUTHENTICATION AND CIPHERING RESPONSE	
4c		SS		The SS starts integrity protection.
5		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
6		->	ATTACH COMPLETE	
7		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
		SS		
8		SS		Cell B is preferred by the UE.
9		->	ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-1 signature Routing area identity = RAI-1
10		<-	P-TMSI REALLOCATION COMMAND	Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
11		UE		The UE ignores the P-TMSI reallocation command.
12		<-	ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-4
13		->	ROUTING AREA UPDATE COMPLETE	
14		UE		The UE is switched off or power is removed (see ICS).
15		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE: The definitions for "Non-Suitable cell", "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

Specific message contents

None.

#### 12.4.1.8.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step9, UE shall:

- initiate the routing area updating procedure.

At step11, when a P-TMSI REALLOCATION COMMAND message is received from SS while waiting for a ROUTING AREA UPDATE ACCEPT message, UE shall:

- ignore the P-TMSI reallocation procedure.
- continue with the routing area updating procedure.

### 12.4.2 Combined routing area updating

The combined routing area updating procedure is a GMM procedure used by PS UEs of UE operation mode A that are IMSI attached for PS and non-PS services. In order to use the combined routing area updating procedure, the network must operate in network operation mode I.

#### 12.4.2.1 Combined routing area updating / combined RA/LA accepted

##### 12.4.2.1.1 Definition

##### 12.4.2.1.2 Conformance requirement

- 1) If the network accepts the combined routing area updating procedure and reallocates a P-TMSI, the UE shall acknowledge the new P-TMSI and continue communication with the new P-TMSI.
- 2) If the network accepts the combined routing area updating procedure from the UE without reallocation of the old P-TMSI, the UE shall continue communication with the old P-TMSI.

#### Reference

3GPP TS 24.008 clause 4.7.5.2.

##### 12.4.2.1.3 Test purpose

To test the behaviour of the UE if the network accepts the combined routing area updating procedure.

The following cases are identified:

- 1) P-TMSI / P-TMSI signature is reallocated.
- 2) Old P-TMSI / P-TMSI signature is not changed.
- 3) Mobile terminating CS call is allowed with IMSI.
- 4) Mobile terminating CS call is allowed with TMSI.

##### 12.4.2.1.4 Method of test

#### Initial condition

#### System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).  
Both cells operating in network operation mode I.

#### User Equipment:

The UE has a valid IMSI.

#### Related ICS/IXIT statements

Support of PS service Yes/No  
 UE operation mode A Yes/No  
 Switch off on button Yes/No  
 Automatic PS attach procedure at switch on or power on Yes/No

#### Test procedure

- 1) A combined PS attach procedure is performed. The UE sends a ROUTING AREA UPDATE REQUEST message. The SS reallocates the P-TMSI, unassigns the TMSI and returns ROUTING AREA UPDATE ACCEPT message with a new P-TMSI and IMSI. The UE acknowledge the new P-TMSI by sending ROUTING AREA UPDATE COMPLETE message. Further communication UE - SS is performed by the new P-TMSI. For CS calls, the IMSI is used
- 2) The UE is CS paged in order to verify that the IMSI is used for CS calls.
- 3) A combined PS attach procedure is performed. The UE sends an ROUTING AREA UPDATE REQUEST message. The SS accepts the P-TMSI signature and returns ROUTING AREA UPDATE ACCEPT message without any P-TMSI and with a new TMSI. The UE acknowledge the new TMSI by sending ROUTING AREA UPDATE COMPLETE message. Further communication UE-SS is performed by the old P-TMSI. For CS calls, the new TMSI is used.
- 4) The UE is CS paged in order to verify that the TMSI is used for CS calls.

#### Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)
1a	UE			The UE is set in UE operation mode A (see ICS).
2		UE		The UE is powered up or switched on and initiates an attach (see ICS).
2a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
3a		<-	AUTHENTICATION AND CIPHERING REQUEST	
3b		->	AUTHENTICATION AND CIPHERING RESPONSE	
3c		SS		The SS starts integrity protection.
4		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5		->	ATTACH COMPLETE	
5a		SS		The SS releases the RRC connection.
6		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
6a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".

Step	Direction		Message	Comments
	UE	SS		
7	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
7a		SS		The SS starts integrity protection.
8	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4 Paging cause = "Terminating interactive call".
9	->		ROUTING AREA UPDATE COMPLETE	
9a		SS		The SS releases the RRC connection and waits 5s to allow the UE to read system information.
10	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services. Paging cause = "Terminating interactive call".
10a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating interactive call".
10b			Void	
10c			Void	
11	->		SERVICE REQUEST	service type = "paging response"
11aa		SS		The SS starts integrity protection.
11a		SS		The SS releases the RRC connection and waits 5s to allow the UE to read system information.
11b			Void	
12	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services. Paging cause = "Terminating conversational call"
13		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating conversational call".
14			Void	
15			Void	
16	->		PAGING RESPONSE	Mobile identity = IMSI
17		SS		The SS releases the RRC connection.
18			Void	
19		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)
19a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
20	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-1 signature Routing area identity = RAI-4 TMSI status = no valid TMSI available
20a		SS		The SS starts integrity protection.
21	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updated' No P-TMSI P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
22	->		ROUTING AREA UPDATE COMPLETE	
23	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services. Paging cause = "Terminating interactive call".

Step	Direction		Message	Comments
	UE	SS		
23a	SS			SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating interactive call".
23b			Void	
23c			Void	
24	->		SERVICE REQUEST	service type = "paging response"
24aa	SS			The SS starts integrity protection.
24a	SS			The SS releases the RRC connection and waits 5s to allow the UE to read system information.
24b			Void	
25	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services. Paging cause = "Terminating conversational call"
26	SS			SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating conversational call".
27			Void	
28			Void	
29	->		PAGING RESPONSE	Mobile identity = TMSI-1
30	SS			The SS releases the RRC connection.
31			Void	
32	UE			The UE is switched off or power is removed (see ICS).
32a	SS			SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach".
33	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
34	SS			If the power was not removed, the SS releases the RRC connection.
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

### Specific message contents

None.

#### 12.4.2.1.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step7, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the combined routing area update procedure(Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence.

At step9, UE shall:

- acknowledge the new P-TMSI by sending the ROUTING AREA UPDATE COMPLETE message.

At step11, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step16, when the UE receives the paging message for CS domain, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step20, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the combined routing area update procedure(Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence.

At step22, UE shall:

- acknowledge the new TMSI by sending the ROUTING AREA UPDATE COMPLETE message.

At step24, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step29, when the UE receives the paging message for CS domain, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

## 12.4.2.2 Combined routing area updating / UE in CS operation at change of RA

### 12.4.2.2.1 Definition

### 12.4.2.2.2 Conformance requirement

PS UE in UE operation mode A that is in an ongoing CS transaction at change of routing area shall initiate the normal routing area updating procedure.

### Reference

3GPP TS 24.008 clause 4.7.5.2.

### 12.4.2.2.3 Test purpose

To test the behaviour of the UE if the routing area is changed during an ongoing circuit switched transmission.

### 12.4.2.2.4 Method of test

#### Initial condition

#### System Simulator:

One cell, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) is operating in network operation mode I.

#### User Equipment:

The UE has a valid IMSI.

#### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode A	Yes/No
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

#### Test procedure

A combined PS attach procedure is performed. The UE in UE operation mode A initiates a CS call. The routing area change. The UE will perform the normal routing area updating procedure during the ongoing circuit-switched transaction.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1				Set the cell type of cell A to the "Serving cell". (see note)
1a	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2a	SS			SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
5a	SS			The SS releases the RRC connection.
6	UE			A CS call is initiated.
7			Void	
8			Void	
8a	<-		UTRAN MOBILITY INFORMATION	The SS conveys updated CN system information for the PS domain to the UE in connected mode, including a new routing area code.
8b	->		UTRAN MOBILITY INFORMATION CONFIRM	
9	->		ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
9a	SS			The SS starts integrity protection.
10	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
11	->		ROUTING AREA UPDATE COMPLETE	
11a	SS			The SS releases the PS signalling connection, but keeps the RRC connection.
12	<-		PAGING TYPE2	Mobile identity = P-TMSI-1 Paging order is for PS services.
13	->		SERVICE REQUEST	service type = "paging response"
13a	SS			The SS starts integrity protection.
13b	SS			The SS releases the CS call.
14	SS			The SS initiates the RRC connection release.
14a	->		ROUTING AREA UPDATE REQUEST	Update type = "combined RA/LA updating", P-TMSI-1 signature, Routing area identity = RAI-4, TMSI status = no valid TMSI available
14b	SS			The SS starts integrity protection.
14c	<-		ROUTING AREA UPDATE ACCEPT	Update result = "combined RA/LA updated", No P-TMSI, P-TMSI-3 signature, Routing area identity = RAI-4
15	UE			The UE is switched off or power is removed (see ICS).

15a	SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach".
16	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
17	SS		If the power was not removed, the SS releases the RRC connection.
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

### Specific message contents

#### UTRAN MOBILITY INFORMATION (step 8a)

The contents of the UTRAN MOBILITY INFORMATION message in this test case is identical to the default message in TS 34.108, with the following exceptions.

Information Element	Value/remark
New U-RNTI	Not Present
New C-RNTI	Not Present
UE Timers and constants in connected mode	Not Present
CN information info	
- PLMN identity	Not Present
- CN common GSM-MAP NAS system information	Not Present
- CN domain related information	
- CN domain identity	CS domain
- CN domain specific GSM-MAP NAS system info	
- T3212	30
- ATT	1
- CN domain specific DRX cycle length coefficient	7
- CN domain related information	
- CN domain identity	PS domain
- CN domain specific GSM-MAP NAS system info	
- RAC	RAC-2
- NMO	0 (Network Mode of Operation I)
- CN domain specific DRX cycle length coefficient	7

#### 12.4.2.2.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step9, when the UE has received the new RAI from the SS in the UTRAN MOBILITY INFORMATION message, the UE shall:

- initiate the normal routing area updating procedure.

#### 12.4.2.3 Combined routing area updating / RA only accepted

##### 12.4.2.3.1 Definition

##### 12.4.2.3.2 Conformance requirement

- 1) If the network accepts the combined PS attach procedure, but GMM cause code 'IMSI unknown in HLR' is sent to the UE the User Equipment shall delete the stored TMSI, LAI and CKSN. The User Equipment shall consider USIM invalid for non-PS services until power is switched off or USIM is removed.

- 2) If the network accepts the combined PS attach procedure, but GMM cause code 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is sent to the UE, an UE operation mode A UE may perform an MM IMSI attach procedure.

#### Reference

3GPP TS 24.008 clause 4.7.5.2.

#### 12.4.2.3.3 Test purpose

##### Test purpose1

To test the behaviour of the UE if the network accepts the routing area updating procedure with indication RA only, GMM cause 'IMSI unknown in HLR'.

##### Test purpose2

To test the behaviour of the UE if the network accepts the routing area updating procedure with indication RA only, GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion'.

#### 12.4.2.3.4 Method of test

##### Test Procedure1

##### Initial condition

##### System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).  
Both cells operating in network operation mode I.

##### User Equipment:

The UE has a valid IMSI.

##### Related ICS/IXIT statements

Support of PS service    Yes/No  
UE operation mode A    Yes/No  
Switch off on button    Yes/No  
Automatic PS attach procedure at switch on or power on    Yes/No

##### Test procedure

After attach, the UE sends an ROUTING AREA UPDATE REQUEST message. The SS allocates a P-TMSI and returns ROUTING AREA UPDATE ACCEPT message with a P-TMSI. GMM cause 'IMSI unknown in HLR' is indicated from SS. Further communication UE - SS is performed by the P-TMSI. CS services are not possible.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
1a	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
7	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
8	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'IMSI unknown in HLR'
9	->		ROUTING AREA UPDATE COMPLETE	
10	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
10a	->		RRC CONNECTION REQUEST	
10b	<-		RRC CONNECTION SETUP	
10c	->		RRC CONNECTION SETUP COMPLETE	
11	->		SERVICE REQUEST	service type = "paging response"
11a	<-		RRC CONNECTION RELEASE	
11b	->		RRC CONNECTION RELEASE COMPLETE	
12	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for CS services.
13	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE: The definitions for "Non-Suitable cell", "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

## Test Procedure2

## Initial condition

## System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).

Both cells operating in network operation mode I. T3212 is set to 6 minutes.

## User Equipment:

The UE has a valid IMSI.

## Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

Automatic MM IMSI attach procedure for UE operation mode A UE Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

## Test procedure

After attach, the UE sends an ROUTING AREA UPDATE REQUEST message. The SS allocates a new P-TMSI signature and returns ROUTING AREA UPDATE ACCEPT message. GMM cause 'MSC temporarily not reachable', 'Network failure' or 'Congestion' is indicated from SS. The cause code is arbitrarily chosen. This procedure is repeated until the routing area updating attempt counter is equal to five. An UE operation mode A UE may perform an MM IMSI attach procedure (according to the ICS statement). Further communication UE - SS is performed by the P-TMSI. The existence of a signalling channel is verified by a request for mobile identity. It is further verified that the UE after a successful IMSI attach procedure can perform CS services.

## Expected Sequence

Dependent whether the option 'Automatic MM IMSI attach procedure for UE operation mode A UE' is not supported or not, the steps 1-13 or 14-35 apply depending on manufacturer (see ICS).

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
1a	UE			The UE is set in UE operation mode A and no automatic MM IMSI attach procedure is indicated (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or 'PS attach while IMSI attached' Mobile identity =IMSI TMSI status = no valid TMSI available
3a		<-	AUTHENTICATION AND CIPHERING REQUEST	
3b		->	AUTHENTICATION AND CIPHERING RESPONSE	
3c		SS		The SS starts integrity protection.
4		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
5		->	ATTACH COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
6		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
7		->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
8		<-	ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
9		->	ROUTING AREA UPDATE COMPLETE	
10				The routing area updating attempt counter =1. The combined routing area updating procedure is reinitialised at the expiry of T3311
11		->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-4 TMSI status = no valid TMSI available
12		<-	ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
13		->	ROUTING AREA UPDATE COMPLETE	
14				The routing area updating attempt counter =2. The combined routing area updating procedure is reinitialised at the expiry of T3311
15		->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-4 TMSI status = no valid TMSI available
16		<-	ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
17		->	ROUTING AREA UPDATE COMPLETE	
18				The routing area updating attempt counter =3. The combined routing area updating procedure is reinitialised at the expiry of T3311
19		->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-4 TMSI status = no valid TMSI available

Step	Direction		Message	Comments
	UE	SS		
20	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
21	->		ROUTING AREA UPDATE COMPLETE	
22				The routing area updating attempt counter =4. The combined routing area updating procedure is reinitialised at the expiry of T3311
23	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-4 TMSI status = no valid TMSI available
24	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
25	->		ROUTING AREA UPDATE COMPLETE	
26				The routing area updating attempt counter =5. The combined routing area updating procedure is reinitialised at the expiry of T3311
27	UE			The UE is switched off or power is removed (see ICS).
28	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach' Stop the sequence.
				The following messages are sent and shall be received on cell B
29	UE			The UE is set in UE operation mode A and automatic MM IMSI attach procedure is indicated (see ICS).
30	UE			The UE is powered up or switched on and initiates an attach (see ICS).
31	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or 'PS attach while IMSI attached' Mobile identity = IMSI TMSI status = no valid TMSI available
31a	<-		AUTHENTICATION AND CIPHERING REQUEST	
31b	->		AUTHENTICATION AND CIPHERING RESPONSE	
31c	SS			The SS starts integrity protection.
32	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-4
33	->		ATTACH COMPLETE	
				The following messages are sent and shall be received on cell A.
34	SS			Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
35	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-4 TMSI status = no valid TMSI available

Step	Direction		Message	Comments
	UE	SS		
36	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
37	->		ROUTING AREA UPDATE COMPLETE	
38				The routing area updating attempt counter =1. The combined routing area updating procedure is reinitialised at the expiry of T3311
39	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
40	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
41	->		ROUTING AREA UPDATE COMPLETE	
42				The routing area updating attempt counter =2. The combined routing area updating procedure is reinitialised at the expiry of T3311
43	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
44	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
45	->		ROUTING AREA UPDATE COMPLETE	
46				The routing area updating attempt counter =3. The combined routing area updating procedure is reinitialised at the expiry of T3311
47	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
48	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
49	->		ROUTING AREA UPDATE COMPLETE	
50				The routing area updating attempt counter =4. The combined routing area updating procedure is reinitialised at the expiry of T3311

Step	Direction		Message	Comments
	UE	SS		
51	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-1 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
52	<-		ROUTING AREA UPDATE ACCEPT	
53	->		ROUTING AREA UPDATE COMPLETE	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1 GMM cause = 'MSC temporarily not reachable', 'Network failure' or 'Congestion' (arbitrarily chosen)
54				
55	UE		Registration on CS	The routing area updating attempt counter =5. Optional step. See TS 34.108 This is applied only for UE in UE operation mode A. Parameter mobile identity is TMSI-1. Steps 56 - 62 are only performed if the UE has performed the Registration Procedure in step 55.
56	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
57	->		RRC CONNECTION REQUEST	Mobile identity = TMSI-1
58	<-		RRC CONNECTION SETUP	
59	->		RRC CONNECTION SETUP COMPLETE	
60	->		PAGING RESPONSE	After sending of this message, the SS waits for disconnection of the CS signalling link.
61	<-		RRC CONNECTION RELEASE	
62	->		RRC CONNECTION RELEASE COMPLETE	The UE is switched off or power is removed (see ICS).
63	UE			
64	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE: The definitions for "Non-Suitable cell", "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

### Specific message contents

None.

#### 12.4.2.3.5 Test requirements

##### Test requirements for Test Procedure1

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step7, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the combined routing area updating procedure.

At step9, UE shall:

- acknowledge the new P-TMSI by sending the ROUTING AREA UPDATE COMPLETE message.

At step11, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step13, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

Test requirements for Test Procedure2

At step3 and 31, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step6 and 35, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the combined routing area updating procedure.

At step11, 15, 19 and 23, UE shall:

- re-initiate the combined routing area updating procedure.

At step39, 43, 47 and 51, UE shall:

- re-initiate the combined routing area updating procedure.

At step55, UE shall:

- perform MM location updating procedure.

At step60, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

#### 12.4.2.4 Combined routing area updating / rejected / PLMN not allowed

##### 12.4.2.4.1 Definition

##### 12.4.2.4.2 Conformance requirement

- 1) If the network rejects a combined routing area updating procedure from the User Equipment with the cause 'PLMN not allowed' the User Equipment shall:
  - 1.1 not perform combined GPRA attach when switched on in the same location area or PLMN.
  - 1.2 delete the stored RAI, PS-CKSN, P-TMSI, P-TMSI signature, TMSI CKSN and LAI.
  - 1.3 store the PLMN in the 'forbidden PLMN list'.
- 2) An MS that receives a ROUTING AREA UPDATE REJECT message stops timer T3330, enters state MM IDLE and for all causes except #12, #14 and #15 deletes the list of "equivalent PLMNs".

##### Reference

3GPP TS 24.008 clause 4.7.5.2.

##### 12.4.2.4.3 Test purpose

To test the behaviour of the UE if the network rejects the combined routing area updating procedure of the UE with the cause 'PLMN not allowed'.

##### 12.4.2.4.4 Method of test

Initial condition

System Simulator:

Five cells (not simultaneously activated), cell A in MCC1/MNC2/LAC1/RAC1 (RAI-8), cell B in MCC1/MNC2/LAC1/RAC2 (RAI-10), cell C in MCC1/MNC2/LAC2/RAC1 (RAI-9) and cell D in MCC2/MNC1/LAC1/RAC1 (RAI-2), cell E in MCC1/MNC3/LAC1/RAC1 (RAI-11).

The PLMN containing Cell E is equivalent to the PLMN that contains Cell A.  
All five cells are operating in network operation mode I

#### User Equipment:

The UE has a valid IMSI.

#### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode A	Yes/No
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

#### Test procedure

The SS rejects a combined routing area updating with the cause value 'PLMN not allowed'. The SS checks that the UE does not perform PS attach if activated in the same PLMN. The SS checks that the UE does not perform IMSI attach if activated in the same PLMN.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell". Set the cell type of cell D to the "Non-Suitable cell". Set the cell type of cell E to the "Non-Suitable cell". (see note)
		SS		
	2	UE		
	3	->	ATTACH REQUEST	
	3a	<-	AUTHENTICATION AND CIPHERING REQUEST	
3b	->	AUTHENTICATION AND CIPHERING RESPONSE		
3c	SS		The SS starts integrity protection.	
4	<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-8 Mobile identity = TMSI-1 Equivalent PLMN: MCC = 1, MNC=3	
5	->	ATTACH COMPLETE		
7		SS		The following messages are sent and shall be received on cell B and cell E. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". Set the cell type of cell E to the "Suitable neighbour cell". (see note)
		SS		
8	UE		Cell B is preferred by the UE.	
9	->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-8 TMSI status = valid TMSI available	
10	<-	ROUTING AREA UPDATE REJECT	GMM cause = 'PLMN not allowed'	
11	UE		The UE initiates an attach by MMI or AT command.	
12	UE		No ATTACH REQUEST sent to SS (SS waits 30 seconds).	
12a	SS		The SS deactivates cell E.	
13	<-	PAGING TYPE1	Set the cell type of cell E to the "Non-Suitable cell". Mobile identity = P-TMSI-2 Paging order is for PS services.	
14	UE		No response from the UE to the request. This is checked for 10 seconds.	
15		SS		The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Serving cell". (see note)
		SS		
16	UE		Cell C is preferred by the UE.	
17	UE		The UE initiates an attach by MMI or by AT command.	

Step	Direction		Message	Comments
	UE	SS		
18	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
19	<-		PAGING TYPE1	Mobile identity = TMSI-1
20	UE			Paging order is for CS services. The UE shall not initiate an RRC connection. This is checked during 3 seconds.
21	SS			The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
22	UE			Cell A is preferred by the UE.
23	UE			The UE initiates an attach by MMI or by AT command.
24	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
25	<-		PAGING TYPE1	Mobile identity = P-TMSI-2
26	UE			Paging order is for PS services. No response from the UE to the request. This is checked for 10 seconds.
27	SS			The following messages are sent and shall be received on cell D. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell D to the "Serving cell". (see note)
28	UE		Registration on CS	Cell D is preferred by the UE.
28a optional	UE			See TS 34.108 This step is applied only for non-auto attach UE.
29	UE			Location Update Procedure initiated from the UE. The UE initiates an attach automatically (see ICS), by MMI or by AT command.
30	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI
31	<-		ATTACH ACCEPT	TMSI status = no valid TMSI available Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2 Mobile identity = IMSI
32	->		ATTACH COMPLETE	
33	UE			The UE is switched off or power is removed (see ICS).
34	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
NOTE: The definitions for "Non-Suitable cell", "Serving cell" and "Suitable neighbour cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

### Specific message contents

None.

#### 12.4.2.4.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step9, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the combined routing area update procedure (Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence.

At step 10, the UE shall delete the equivalent PLMN list (MCC=1, MNC=3).

At step 12, the UE shall not initiate a PS attach procedure to cell E.

At step 18 and 24, UE shall:

- not initiate a PS attach procedure.

At step 14, 20 and 26, when the UE receives the paging message for PS domain, UE shall:

- not respond to the paging message for PS domain.

At step 20, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step 30, UE shall:

- perform the PS attach procedure.

#### 12.4.2.5a Combined routing area updating / rejected / roaming not allowed in this location area

##### 12.4.2.5a.1 Definition

##### 12.4.2.5a.2 Conformance requirement

- 1) If the network rejects a combined routing area updating procedure from the User Equipment with the cause 'roaming not allowed in this location area' the User Equipment:
  - 1.1 shall not perform combined PS attach when in the same location area.
  - 1.2 shall store the LA in the 'forbidden location areas for roaming'.
  - 1.3 may perform combined PS attach when a new location area is entered.
- 2) The User Equipment shall reset the list of 'Forbidden location areas for roaming' when switched off or when the USIM is removed.

##### Reference

3GPP TS 24.008 clause 4.7.5.2.

##### 12.4.2.5a.3 Test purpose

###### Test purpose1

To test that on receipt of a rejection using the 'Roaming not allowed in this area' cause code, the UE ceases trying a routing area updating procedure on that location area. Successful combined routing area updating procedure is possible in other location areas.

###### Test purpose2

To test that if the UE is switched off or the USIM is removed the list of 'forbidden location areas for roaming' is cleared.

12.4.2.5a.4 Method of test

12.4.2.5a.4.1 Test procedure1

Initial condition

System Simulator:

Two cells, cell A in MCC2/MNC1/LAC1/RAC1 (RAI-2), cell B in MCC2/MNC1/LAC2/RAC1 (RAI-6).  
Both cells are operating in network operation mode I.

User Equipment:

The UE has a valid IMSI.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS rejects a combined routing area updating with the cause value 'Roaming not allowed in this area'. A new attempt for a combined PS attach is not possible. Successful combined PS attach procedure is performed in another location area. The UE is moved back to the 1<sup>st</sup> location area. A combined routing area updating shall not be performed, as the LA is on the forbidden list.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)
		SS		
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-2 Mobile identity = TMSI-1
5	->		ATTACH COMPLETE	
7		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-suitable cell". Set the cell type of cell B to the "Serving cell". (see note)
		SS		
8	UE			Cell B is preferred by the UE.
9	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-2
10	<-		ROUTING AREA UPDATE REJECT	GMM cause = 'Roaming not allowed in this area'
11	UE			The UE initiates an attach by MMI or by AT command.
12	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
14	UE			No response from the UE to the request. This is checked for 10 seconds.
15	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
16	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
17		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)
18 18a optional	UE		Registration on CS	Cell A is preferred by the UE. See TS 34.108 This step is applied only for non-auto attach UE. Location Update Procedure initiated from the UE.
	UE			
19	UE			The UE initiates an attach automatically (see ICS), by MMI or by AT command.
20	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-2

Step	Direction		Message	Comments
	UE	SS		
21		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2 Mobile identity = TMSI-1
22		->	ATTACH COMPLETE	
23		<-	PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
24		->	RRC CONNECTION REQUEST	
25		<-	RRC CONNECTION SETUP	
26		->	RRC CONNECTION SETUP COMPLETE	
27		->	PAGING RESPONSE	Mobile identity = TMSI-1
28		<-	RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
29		->	RRC CONNECTION RELEASE COMPLETE	
30		<-	PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services.
30a		->	RRC CONNECTION REQUEST	
30b		<-	RRC CONNECTION SETUP	
30c		->	RRC CONNECTION SETUP COMPLETE	
31		->	SERVICE REQUEST	service type = "paging response"
31a		<-	RRC CONNECTION RELEASE	
31b		->	RRC CONNECTION RELEASE COMPLETE	
32		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
33		UE		No ROUTING AREA UPDATE REQUEST sent to SS (SS waits 30 seconds).
34		<-	PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
35		UE		No response from the UE to the request. This is checked for 10 seconds.
NOTE:	The definitions for "Suitable neighbour cell", "Non-suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

## 12.4.2.5a.4.2 Test procedure2

## Initial condition

## System Simulator:

Two cells, cell A in MCC2/MNC1/LAC1/RAC1 (RAI-2), cell B in MCC2/MNC1/LAC2/RAC1 (RAI-6).  
Both cells are operating in network operation mode I.

## User Equipment:

The UE has a valid IMSI. UE is Idle Updated on cell A.

## Related ICS/IXIT statements

Support of PS service Yes/No  
UE operation mode A Yes/No  
USIM removal possible without powering down Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

#### Test procedure

The SS rejects a combined routing area updating with the cause value 'Roaming not allowed in this area'. The UE is switched off for 10 seconds and switched on again. The SS checks that a combined PS attach is possible on the cell on which the previous combined routing area updating had been rejected.

If USIM removal is possible without switching off:

The SS rejects a routing area updating with the cause value 'Roaming not allowed in this area'. The USIM is removed and inserted in the UE. The SS checks that a PS attach procedure and routing area updating procedure is possible on the cell on which the routing area updating had previously been rejected.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)
		SS		
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-2 Mobile identity = TMSI-1
5	->		ATTACH COMPLETE	
7		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
8	UE			Cell B is preferred by the UE.
9	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-2
10	<-		ROUTING AREA UPDATE REJECT	GMM cause = 'Roaming not allowed in this area'
11	UE			The UE initiates an attach by MMI or by AT command.
12	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services.
14	UE			No response from the UE to the request. This is checked for 10 seconds.
15	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
16	UE			The UE shall not initiate an RRC connection. This is checked during 3 seconds.
17	UE			If possible (see ICS) USIM removal is performed. Otherwise if possible (see ICS) switch off is performed. Otherwise the power is removed.
18	UE			The UE gets the USIM replaced, is powered up or switched on.
18a	UE		Registration on CS	See TS 34.108 This step is applied only for non-auto attach UE. Location Update Procedure initiated from the UE.
19	UE			The UE initiates an attach automatically (see ICS) by MMI or AT command.
20	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
20a	<-		AUTHENTICATION AND CIPHERING REQUEST	

Step	Direction		Message	Comments
	UE	SS		
20b	->		AUTHENTICATION AND CIPHERING RESPONSE	
20c		SS		The SS starts integrity protection.
21	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-6 Mobile identity = TMSI-1
22	->		ATTACH COMPLETE	
23	<-		PAGING TYPE1	Mobile identity = TMSI-1 Paging order is for CS services.
24	->		RRC CONNECTION REQUEST	
25	<-		RRC CONNECTION SETUP	
26	->		RRC CONNECTION SETUP COMPLETE	
27	->		PAGING RESPONSE	Mobile identity = TMSI-1
28	<-		RRC CONNECTION RELEASE	After sending of this message, the SS waits for disconnection of the CS signalling link.
29	->		RRC CONNECTION RELEASE COMPLETE	
30	<-		PAGING TYPE1	Mobile identity = P-TMSI-1
30a	->		RRC CONNECTION REQUEST	
30b	<-		RRC CONNECTION SETUP	
30c	->		RRC CONNECTION SETUP COMPLETE	
31	->		SERVICE REQUEST	service type = "paging response"
31a	<-		RRC CONNECTION RELEASE	
31b	->		RRC CONNECTION RELEASE COMPLETE	
32	UE			The UE is switched off or power is removed (see ICS).
33	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

### Specific message contents

None.

#### 12.4.2.5a.5 Test requirements

##### Test requirements for Test procedure1

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step9, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the combined routing area update procedure(Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence

At step12, when the SS rejects the combined routing area update procedure with GMM cause = 'Roaming not allowed in this area', UE shall:

- not initiate a PS attach procedure.

At step14, when the UE receives the paging message for PS domain, UE shall;

- not respond to the paging message for PS domain.

At step16, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step20, UE shall:

- initiate the combined PS attach procedure.

At step27, when the UE receives the paging message for CS domain, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step31, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

At step35, when the UE receives the paging message for PS domain, UE shall;

- not respond to the paging message for PS domain.

#### Test requirements for Test procedure2

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step9, UE shall:

- initiate the combined routing area update procedure(Update type = 'Combined RA/LA updating') with the information elements specified above Expected Sequence.

At step14, when the UE receives the paging message for PS domain, UE shall;

- not respond to the paging message for PS domain.

At step16, when the UE receives the paging message for CS domain, UE shall:

- not respond to the paging message for CS domain.

At step20, UE shall:

- initiate the combined PS attach procedure.

At step27, when the UE receives the paging message for CS domain, UE shall;

- respond to the paging message for CS domain by sending the PAGING RESPONSE message.

At step31, when the UE receives the paging message for PS domain, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

#### 12.4.2.5b Combined routing area updating / rejected / No Suitable Cells In Location Area.

12.4.2.5b.1 Definition

12.4.2.5b.2 Conformance requirement

- 1) If the network rejects a combined routing area updating procedure from the User Equipment with the cause 'No Suitable Cells In Location Area', the User Equipment shall:

- 1.1 store the LA or the PLMN identity in the 'forbidden location areas for roaming'.

1.2 search for a suitable cell in a different location area on the same PLMN.

- 2) An MS that receives a ROUTING AREA UPDATE REJECT message stops timer T3330, enters state MM IDLE and for all causes except #12, #14 and #15 deletes the list of "equivalent PLMNs".

## Reference

3GPP TS 24.008 clauses 4.7.5.2.4

### 12.4.2.5b.3 Test purpose

To test the behaviour of the UE if the network rejects a combined routing area updating procedure of the UE with the cause 'No Suitable Cells In Location Area'.

To test that the UE deletes the list of forbidden LAs when power is switched off.

### 12.4.2.5b.4 Method of test

## Initial condition

### System Simulator:

Five cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2), cell D in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell E in MCC1/MNC2/LAC1/RAC1 (RAI-5).

All five cells are operating in network operation mode II.

The PLMN contains Cell A, B and D is equivalent to the PLMN that contains Cell E.

### User Equipment:

The UE has valid IMSI.

## Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

USIM removal possible without powering down Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

## Test procedure

The SS rejects a combined routing area updating with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall perform PS attach procedure when the UE enters a suitable cell in a different location area on the same PLMN.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following message are sent and shall be received on cell D. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". Set the cell type of cell D to the "Serving cell". Set the cell type of cell E to the "Non-Suitable cell". (see note)
		SS		
2	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell D is preferred by the UE.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4 Mobile identity = IMSI Equivalent PLMN: MCC = 1, MNC=2
5	->		ATTACH COMPLETE	
6	SS			Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". Set the cell type of cell D to the "Non-Suitable cell". (see note) The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C Cell A is preferred by the UE.
7	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-1 signature Routing area identity = RAI-4
8	<-		ROUTING AREA UPDATE REJECT	GMM cause = 'No Suitable Cells In Location Area'
9	->		ATTACH REQUEST	The following message are sent and shall be received on cell B. Attach type = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1
10	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-3 Equivalent PLMN: MCC = 1, MNC=2
11	->		ATTACH COMPLETE	

12	SS		Set the cell type of cell D to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell E to the "Suitable neighbour cell". (note) The SS deactivates Cell B and activates Cell D and Cell E The SS configures power level of each Cell as follows. Cell D > Cell E Cell D is preferred by the UE.
13			Cell D is preferred by the UE.
14	->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-1 signature Routing area identity = RAI-4
15	<-	ROUTING AREA UPDATE REJECT	GMM cause = 'No Suitable Cells In Location Area'
16			The following message are sent and shall be received on cell E.
17	->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attached' Mobile identity = IMSI
18	<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-3 P-TMSI-3 signature Routing area identity = RAI-5
19	->	DETACH REQUEST	Equivalent PLMN: MCC=1, MNC=2 Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE: The definitions for "Suitable neighbour cell", "Serving cell" and "Non-Suitable cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

### Specific message contents

None.

#### 12.4.2.5b.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the Combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step7, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- - initiate the combined routing area update procedure.

At step 8, the UE shall maintain the equivalent PLMN list (MCC=1, MNC=2).

At step9, when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- - perform the PS attach procedure.

At step 15, the UE shall maintain the equivalent PLMN list (MCC=1, MNC=2).

At step 17, when the UE enters a suitable cell in a different but equivalent PLMN (MCC=1, MNC=2), UE shall:

- perform the PS attach procedure.

## 12.4.2.5c Combined routing area updating / rejected / Location area not allowed

### 12.4.2.5c.1 Definition

### 12.4.2.5c.2 Conformance requirement

If the network rejects a combined routing area updating procedure from the User Equipment with the cause 'Location area not allowed', the User Equipment shall:

- delete any RAI, P-TMSI, P-TMSI signature, and PS ciphering key sequence number stored.
- set the PS update status to GU3 ROAMING NOT ALLOWED.
- delete any TMSI, LAI and ciphering key sequence number.
- store the LAI in the list of "forbidden location areas for regional provision of service"
- not delete the list of "equivalent PLMNs".
- perform a cell selection.

### Reference

3GPP TS 24.008 clauses 4.7.5.2.4

### 12.4.2.5c.3 Test purpose

To test the behaviour of the UE if the network rejects the routing area updating procedure of the UE with the cause 'PS services not allowed in this PLMN'.

### 12.4.2.5c.4 Method of test

#### Initial condition

##### System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC2/RAC1 (RAI-6).

All three cells are operating in network operation mode I (in case of UE operation mode A).

The PLMN contains Cell C is equivalent to the PLMN that contains Cell A.

##### User Equipment:

The UE has a valid IMSI.

The UE is in UE operation mode A.

#### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

#### Test procedure

The SS rejects a combined routing area updating with the cause value 'Location area not allowed'. The SS checks that the UE performs combined PS attach when the UE enters a equivalent PLMN.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The following messages are sent and shall be received on cell A. The UE is set in UE operation mode A (see ICS).
2	SS			The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS			The SS starts integrity protection.
5	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-2 Mobile identity = TMSI-1 Equivalent PLMNs = MCC2,MNC1
5	->		ATTACH COMPLETE	
6	SS			The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
7	UE			Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-2
9	<-		ROUTING AREA UPDATE REJECT	GMM cause = Location area not allowed '
10	UE			The UE initiates an attach by MMI or by AT command.
12	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13	SS			Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the " Non-Suitable cell". Set the cell type of cell C to the "Serving cell". (see note)
14	UE			The UE performs cell selection. The following messages are sent and shall be received on cell C.
15	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
16	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-2 signature Routing area identity = RAI-6 Mobile identity = TMSI-2
17	->		ATTACH COMPLETE	

18	UE		The UE is switched off or power is removed (see ICS).
19	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE: The definitions for "Non-Suitable cell", "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

### Specific message contents

None.

#### 12.4.2.5c.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the Combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, UE shall:

- initiate the combined routing area update procedure.

At step 12, the UE shall:

- not initiate combined PS attach procure.

At step 14, the UE shall:

- perform combined PS attach procedure with Mobile identity = IMSI and Attach result = 'Combined PS / IMSI attached' to the equivalent cell.

#### 12.4.2.5d Combined routing area updating / rejected / PS services not allowed in this PLMN

##### 12.4.2.5d.1 Definition

##### 12.4.2.5d.2 Conformance requirement

If the network rejects a combined routing area updating procedure from the User Equipment with the cause 'PS Services not allowed in this PLMN', the User Equipment shall:

- delete any RAI, P-TMSI, P-TMSI signature, and PS ciphering key sequence number stored.
- set the PS update status to GU3 ROAMING NOT ALLOWED.
- store the PLMN identity in the "forbidden PLMNs for GPRS service" list.
- not delete the list of "equivalent PLMNs".

### Reference

3GPP TS 24.008 clauses 4.7.5.2.4

##### 12.4.2.5d.3 Test purpose

To test the behaviour of the UE if the network rejects the routing area updating procedure of the UE with the cause 'PS services not allowed in this PLMN'.

## 12.4.2.5d.4 Method of test

## Initial condition

## System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC2/LAC1/RAC1 (RAI-8), cell C in MCC2/MNC1/LAC2/RAC1 (RAI-6).

All three cells are operating in network operation mode I (in case of UE operation mode A).

The PLMN contains Cell C is equivalent to the PLMN that contains Cell A.

## User Equipment:

The UE has a valid IMSI.

The UE is in UE operation mode A.

## Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

## Test procedure

The SS rejects a combined routing area updating with the cause value 'PS service not allowed in this PLMN'. The SS checks that the UE performs combined PS attach when the UE enters a equivalent PLMN.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The following messages are sent and shall be received on cell A. The UE is set in UE operation mode A (see ICS).
2		SS		The SS is set in network operation mode II. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS			The SS starts integrity protection.
5	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = TMSI-1 Equivalent PLMNs = MCC2,MNC1
5	->		ATTACH COMPLETE	
6		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
7	UE			Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-8
9	<-		ROUTING AREA UPDATE REJECT	GMM cause ='PS service not allowed in this PLMN'
10	UE			The UE initiates an attach by MMI or by AT command.
12	UE			No ATTACH REQUEST sent to SS (SS waits 30 seconds).
13		SS		Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the " Non-Suitable cell". Set the cell type of cell C to the "Serving cell". (see note)
14	->		ATTACH REQUEST	The following messages are sent and shall be received on cell C. Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
15	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-2 signature Routing area identity = RAI-6 Mobile identity = TMSI-2
16	->		ATTACH COMPLETE	
17	UE			The UE is switched off or power is removed (see ICS).

18	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
NOTE: The definitions for "Non-Suitable cell", "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

### Specific message contents

None.

#### 12.4.2.5d.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the Combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, UE shall:

- initiate the combined routing area update procedure.

At step 12, the UE shall:

- not initiate combined PS attach procure.

At step 14, the UE shall:

- perform combined PS attach procedure with Mobile identity = IMSI and Attach result = 'Combined PS / IMSI attached' to the equivalent cell.

#### 12.4.2.6 Combined routing area updating / abnormal cases / access barred due to access class control

##### 12.4.2.6.1 Definition

##### 12.4.2.6.2 Conformance requirement

- 1) The UE shall not perform combined routing area updating procedure, but stays in the current serving cell and applies normal cell reselection process.
- 2) The User Equipment shall perform the combined routing area updating procedure when:
  - 2.1 Access is granted.
  - 2.2 Cell is changed.

### Reference

3GPP TS 24.008 clause 4.7.5.2.

##### 12.4.2.6.3 Test purpose

###### Test purpose1

To test the behaviour of the UE in case of access class control (access is granted).

###### Test purpose2

To test the behaviour of the UE in case of access class control (cell is changed).

12.4.2.6.4 Method of test

12.4.2.6.4.1 Test procedure1

#### Initial condition

An access class x (0-15) is arbitrarily chosen. The USIM is programmed with this access class x. Communication with User Equipments using access class x is initially indicated to be barred on Cell B.

#### System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) has Access Class x not barred, cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4) has Access Class x barred.  
Both cells are operating in network operation mode I.

#### User Equipment:

The UE has valid IMSI. UE is Idle Updated on cell A.

#### Related ICS/IXIT statements

Support of PS service Yes/No  
UE operation mode A Yes/No  
Switch off on button Yes/No  
Automatic PS attach procedure at switch on or power on Yes/No

#### Test procedure

A PS attach procedure is performed. The routing area is changed. The SS indicates access class x barred. A routing area updating procedure is not performed.

The SS indicates that access class x is not barred. A routing area updating procedure is performed.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
		SS		
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
6	SS			The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
7	UE			Cell B is preferred by the UE.
8	UE			No ROUTING AREA UPDATE REQUEST sent to SS, as access class x is barred (SS waits 30 seconds).
9	SS			The access class x is not barred anymore.
10	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
11	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-4
12	->		ROUTING AREA UPDATE COMPLETE	
13	UE			The UE is switched off or power is removed (see ICS).
14	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

## Specific message contents

None.

## 12.4.2.6.4.2 Test procedure2

## Initial condition

An access class x (0-15) is arbitrarily chosen. The USIM is programmed with this access class x. Communication with User Equipments using access class x is indicated to be barred on cell B.

## System Simulator:

Three cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1) has access class x not barred, cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4) has access class x barred, cell C in MCC1/MNC1/LAC1/RAC2 (RAI-4) has access class x not barred.  
All three cells are operating in network operation mode I.

## User Equipment:

The UE has a valid IMSI.

## Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode A	Yes/No
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

## Test procedure

A PS attach procedure is performed. The routing area is changed. The SS indicates access class x barred. A routing area updating procedure is not performed.

A cell change is performed into a cell where access class x is not barred. A routing area updating procedure is performed.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
6		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the " Suitable neighbour cell ". Set the cell type of cell B to the "Serving cell". (see note)
7	UE			Cell B is preferred by the UE.
8	UE			No ROUTING AREA UPDATE REQUEST sent to SS, as access class x is barred (SS waits 30 seconds).
9		SS		The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Suitable neighbour cell ". Set the cell type of cell C to the "Serving cell". (see note)
10	UE			Cell C is preferred by the UE.
11	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
12	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-4
13	->		ROUTING AREA UPDATE COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

Specific message contents

None.

#### 12.4.2.6.5 Test requirements

##### Test requirements for Test procedure1

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step8, when the access class x is barred , UE shall:

- not perform the combined routing area updating procedure.

At step10, when the access class x is not barred, UE shall:

- perform the combined routing area updating procedure.

##### Test requirements for Test procedure2

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step8, when the access class x is barred UE shall:

- not perform the combined routing area updating procedure.

At step11, when the serving cell is changed, UE shall:

- perform the combined routing area updating procedure.

#### 12.4.2.7 Combined routing area updating / abnormal cases / attempt counter check / procedure timeout

##### 12.4.2.7.1 Definition

##### 12.4.2.7.2 Conformance requirement

- 1) When a T3330 timeout has occurred during a routing area updating procedure, the UE shall repeat the routing area updating procedure after T3330 timeout until the procedure is repeated five times.
- 2) When a routing area updating procedure is repeated five times, the routing area updating attempt counter is incremented and five more routing area updating procedures are performed. This procedure is repeated until the routing area updating attempt counter is five, the UE shall then start timer T3302.
- 3) When the T3302 expire, a new routing area updating procedure shall be initiated.

##### Reference

3GPP TS 24.008 clause 4.7.5.2.

##### 12.4.2.7.3 Test purpose

To test the behaviour of the UE with respect to the attempt counter.

## 12.4.2.7.4 Method of test

## Initial condition

## System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).  
Both cells are operating in network operation mode I.

## User Equipment:

The UE has a valid IMSI. UE is Idle Updated on cell A.

## Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode A	Yes/No
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

## Test procedure

The UE initiates a routing area updating procedure (routing area updating attempt counter zero). The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. The UE restarts the routing area updating procedure four times. The SS never answers with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. After five consecutive routing area update procedures, the routing area updating attempt counter is incremented and T3311 is started.

The UE initiates a new routing area updating procedure (routing area updating attempt counter one) after T3311 expires. The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. The UE restarts the routing area updating procedure four times. The SS never answers with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. After five consecutive routing area update procedures, the routing area updating attempt counter is incremented and T3311 is started.

The UE initiates a new routing area updating procedure (routing area updating attempt counter two) after T3311 expires. The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. The UE restarts the routing area updating procedure four times. The SS never answers with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. After five consecutive routing area update procedures, the routing area updating attempt counter is incremented and T3311 is started.

The UE initiates a new routing area updating procedure (routing area updating attempt counter three) after T3311 expires. The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. The UE restarts the routing area updating procedure four times. The SS never answers with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. After five consecutive routing area update procedures, the routing area updating attempt counter is incremented and T3311 is started.

The UE initiates a new routing area updating procedure (routing area updating attempt counter four) after T3311 expires. The SS does not answer with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. The UE restarts the routing area updating procedure four times. The SS never answers with ROUTING AREA UPDATE ACCEPT message before T3330 timeout. After five consecutive routing area update procedures, the routing area updating attempt counter is incremented and as the routing area updating attempt counter is five. T3302 is started.

The UE may perform a Location Update procedure.

The UE initiates a routing area updating procedure with routing area updating attempt counter zero after T3302 expires with the stored P-TMSI, P-TMSI signature, PS CKSN and RAI.

T3302; set to 12 minutes.

T3311; 15 seconds.

T3330; 15 seconds.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
		SS		
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
6		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell". (see note)
		SS		
7	UE			Cell B is preferred by the UE. K = 1.
8	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Routing area updating attempt counter = k (k is not visible. It is only used for clarifying the sequence.) Retransmission counter = 0
9	SS			No response is given from the SS.
10	SS			The SS verifies that the time between the RA update requests is T3330seconds
11	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Routing area updating attempt counter = k Retransmission counter = 1
12	SS			No response is given from the SS.
13	SS			The SS verifies that the time between the RA update requests is T3330seconds
14	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Routing area updating attempt counter = k Retransmission counter = 2
15	SS			No response is given from the SS.
16	SS			The SS verifies that the time between the RA update requests is T3330seconds

Step	Direction		Message	Comments
	UE	SS		
17	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Routing area updating attempt counter = k Retransmission counter = 3
18		SS		No response is given from the SS.
19		SS		The SS verifies that the time between the RA update requests is T3330seconds
20	->		ROUTING AREA UPDATING REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available Routing area updating attempt counter = k Retransmission counter = 4
21		SS		No response is given from the SS.
22		SS		The SS verifies that the time between the RA update requests is T3311 + T3330 seconds.
23		SS		Step 8 – 22 is repeated four times with k = 2, k = 3, k = 4 and k = 5
23a optional		UE	Registration on CS	The UE may perform a normal location updating procedure. See TS 34.108
24		SS		The SS verifies that the time between the RA update requests is T3302 + T3330 seconds
25	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
26	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
27	->		ROUTING AREA UPDATE COMPLETE	
28		UE		The UE is switched off or power is removed (see ICS).
29	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

### Specific message contents

None.

#### 12.4.2.7.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step8, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the combined routing area updating procedure with information elements specified in the above Expected Sequence.

UE shall perform the following actions depending on the conditions described below.

Case 1) A timer T3330 timeout has occurred during a combined routing area updating procedure with the Routing area attempt counter less than five and the Retransmission counter less than five

At step11, 14, 17 and 20, UE shall:

- repeat the combined routing area updating procedure after the timer T3330 timeout

Case2) A timer T3330 timeout has occurred during a combined routing area updating procedure with the Routing area attempt counter less than five and the Retransmission counter five

At step 22, UE shall:

- not repeat the combined routing area updating procedure.

Case 3) A timer T3311 timeout has occurred and the Routing area attempt counter is less than five,

At step23, UE shall:

- repeat the combined routing area updating procedure

Case 4) A timer T3330 timeout has occurred during a combined routing area updating procedure with the Routing area attempt counter five and the Retransmission counter five.

At step24, UE shall:

- not initiate a routing area updating procedure.

Case5) The timer T3302 expires

At step25, UE shall:

- initiate the new routing area updating procedure

## 12.4.2.8 Combined routing area updating / abnormal cases / change of cell into new routing area

### 12.4.2.8.1 Definition

### 12.4.2.8.2 Conformance requirement

When a change of cell into a new routing area is performed before the routing area updating procedure is finished, the UE shall abort the routing area updating procedure and re-initiate it in the new routing area.

### Reference

3GPP TS 24.008 clause 4.7.5.2.

### 12.4.2.8.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

### 12.4.2.8.4 Method of test

### Initial condition

#### System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC1/MNC1/LAC1/RAC3 (RAI-5).

All three cells are operating in network operation mode I.

#### User Equipment:

The UE has a valid IMSI.

## Related ICS/IXIT statements

Support of PS service Yes/No  
UE operation mode A Yes/No  
Switch off on button Yes/No  
Automatic PS attach procedure at switch on or power on Yes/No

## Test procedure

The UE initiates a routing area updating procedure. The ROUTING AREA UPDATE ACCEPT message is delayed from the SS. The UE performs a cell update into a new routing area. The UE shall re-initiate a routing area updating procedure in the new routing area. The UE shall not increment the attempt counter.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". (see note)
2		UE		The UE is powered up or switched on and initiates an attach (see ICS).
3		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
3a		<-	AUTHENTICATION AND CIPHERING REQUEST	
3b		->	AUTHENTICATION AND CIPHERING RESPONSE	
3c		SS		The SS starts integrity protection.
4		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5		->	ATTACH COMPLETE	
6		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
7		UE		Cell B is preferred by the UE.
8		->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
9		SS		No response id given from the SS.
10		SS		The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Serving cell". (see note)
11		UE		The RF level of cell B is lowered, and the RF level of cell C is increased, until cell C is preferred by the UE.
12		->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
13		<-	ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-5
14		->	ROUTING AREA UPDATE COMPLETE	
15		UE		The UE is switched off or power is removed (see ICS).
16		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

Specific message contents

None.

#### 12.4.2.8.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate the routing area update procedure.

At step12, when change of cell into new routing area is performed before the routing area updating procedure is finished, UE shall:

- abort the routing area updating procedure.
- re-initiate new routing area updating procedure in the new routing area.

#### 12.4.2.9 Combined routing area updating / abnormal cases / change of cell during routing area updating procedure

##### 12.4.2.9.1 Definition

##### 12.4.2.9.2 Conformance requirement

When a change of cell within new routing area is performed before the routing area updating procedure is finished, the UE shall perform the cell update before the routing area updating procedure is finished.

##### Reference

3GPP TS 24.008 clause 4.7.5.2.

##### 12.4.2.9.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

##### 12.4.2.9.4 Method of test

##### Initial condition

##### System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC1/MNC1/LAC1/RAC2 (RAI-4).

All three cells are operating in network operation mode I.

##### User Equipment:

The UE has a valid IMSI. UE is Idle Updated on cell A.

##### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode A	Yes/No
Switch off on button	Yes/No
Automatic PS attach procedure at switch on or power on	Yes/No

### Test procedure

The UE initiates a routing area updating procedure. The ROUTING AREA UPDATE ACCEPT message is delayed from the SS. The UE performs a cell update within the routing area. The UE then waits for the ROUTING AREA UPDATE ACCEPT message.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". (see note)
2		UE		The UE is powered up or switched on and initiates an attach (see ICS).
3		->	ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
3a		<-	AUTHENTICATION AND CIPHERING REQUEST	
3b		->	AUTHENTICATION AND CIPHERING RESPONSE	
3c		SS		The SS starts integrity protection.
4		<-	ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5		->	ATTACH COMPLETE	
6		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
7		UE		Cell B is preferred by the UE.
8		->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
9		SS		No response id given from the SS.
10		SS		The following messages are sent and shall be received on cell C. Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Serving cell". (see note)
11		UE		The RF level of cell B is lowered until cell C is preferred by the UE.
12a		->	CELL UPDATE	Cell update cause = 'cell reselection'
12b		<-	CELL UPDATE CONFIRM	
13		<-	ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
14		->	ROUTING AREA UPDATE COMPLETE	
15		UE		The UE is switched off or power is removed (see ICS).
16		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

Specific message contents

None.

#### 12.4.2.9.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate routing area update procedure.

At step12a, when a change of cell within a new routing area is performed before the routing area updating procedure is finished, UE shall:

- perform the cell update.

#### 12.4.2.10 Combined routing area updating / abnormal cases / PS detach procedure collision

##### 12.4.2.10.1 Definition

##### 12.4.2.10.2 Conformance requirement

- 1) When a detach request is received with cause 'PS detach' or 'combined PS/IMSI detach' by the UE while waiting for a ROUTING AREA UPDATE ACCEPT message, the UE shall terminate the routing area updating procedure and continue with the PS detach procedure.
- 2) When a detach request is received with cause 'IMSI detach' by the UE while waiting for a ROUTING AREA UPDATE ACCEPT message, the UE shall ignore the detach request and continue with the routing area updating procedure.

#### Reference

3GPP TS 24.008 clause 4.7.5.2.

##### 12.4.2.10.3 Test purpose

To test the behaviour of the UE in case of procedure collision.

##### 12.4.2.10.4 Method of test

##### 12.4.2.10.4.1 Test procedure1

#### Initial condition

##### System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4). Both cells are operating in network operation mode I.

##### User Equipment:

The UE has a valid IMSI.

#### Related ICS/IXIT statements

Support of PS service Yes/No  
UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a routing area updating procedure. The SS does not answer the routing area updating procedure, but initiates a PS detach procedure with cause 'PS detach' or 'combined PS/IMSI detach'. The UE shall terminate the routing area updating procedure and continue with the PS detach procedure.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)
		SS		
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity =IMSI TMSI status = no valid TMSI available
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
6		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
		SS		
7	UE			Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
9	SS			The SS ignores the ROUTING AREA UPDATE REQUEST message and initiates a detach procedure.
10	<-		DETACH REQUEST	Detach type = 're-attach not required'
11	->		DETACH ACCEPT	
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

Specific message contents

None.

12.4.2.10.4.2 Test procedure2

Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).  
Both cells are operating in network operation mode I.

#### User Equipment:

The UE has a valid P-TMSI and RAI.

#### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

#### Test procedure

The UE initiates a routing area updating procedure. The SS does not answer the routing area updating procedure, but initiates a PS detach procedure with cause 'IMSI detach'. The UE shall ignore the detach procedure and continue with the routing area updating procedure.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)
		SS		
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 Mobile identity = IMSI
5	->		ATTACH COMPLETE	
6		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
		SS		
7	UE			Cell B is preferred by the UE.
8	->		ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = no valid TMSI available
9	SS			The SS ignores the ROUTING AREA UPDATE REQUEST message and initiates a detach procedure.
10	<-		DETACH REQUEST	Detach type = 'IMSI detach'
11	UE			The UE ignores the DETACH REQUEST message and continue the routing area updating procedure.
12	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = IMSI Routing area identity = RAI-4
13	->		ROUTING AREA UPDATE COMPLETE	
14	UE			The UE is switched off or power is removed (see ICS).
15	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

## Specific message contents

None.

#### 12.4.2.10.5 Test requirements

##### Test requirements for Test procedure1

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate routing area update procedure.

At step11, when the UE receives a DETACH REQUEST message with cause 'PS detach' or 'combined PS/IMSI detach' from SS while waiting for a ROUTING AREA UPDATE ACCEPT message, UE shall:

- terminate the routing area updating procedure
- continue with the PS detach procedure.

##### Test requirements for Test procedure2

At step3, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step8, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- initiate routing area update procedure.

At step11, the UE receives a DETACH REQUEST message with cause 'IMSI detach' from SS while waiting for a ROUTING AREA UPDATE ACCEPT message, UE shall:

- ignore the detach request procedure.
- continue with the routing area updating procedure.

### 12.4.3 Periodic routing area updating

#### 12.4.3.1 Periodic routing area updating / accepted

##### 12.4.3.1.1 Definition

##### 12.4.3.1.2 Conformance requirement

The User Equipment shall perform a periodic routing area update procedure after a T3312 timeout.

##### Reference

3GPP TS 24.008 clauses 4.7.2.2 and 4.7.5.1.

##### 12.4.3.1.3 Test purpose

To test the behaviour of the UE with respect to the periodic routing area updating procedure.

##### 12.4.3.1.4 Method of test

##### Initial condition

System Simulator:

One cell operating in network operation mode II (in case of UE operation mode A).

User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No

USIM removal possible without powering down Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The UE initiates a PS attach procedure with identity P-TMSI. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312. The UE acknowledge the new P-TMSI by sending ATTACH COMPLETE message. A routing area updating procedure is performed at T3312 timeout.

T3312; set to 6 minutes.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 11.
2		UE		The UE is powered up or switched on and initiates an attach (see ICS).
2a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
3a		<-	AUTHENTICATION AND CIPHERING REQUEST	
3b		->	AUTHENTICATION AND CIPHERING RESPONSE	
3c		SS		The SS starts integrity protection.
4		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3312 = 6 minutes
5		->	ATTACH COMPLETE	
5a		SS		The SS releases the RRC connection.
5b		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
6		->	ROUTING AREA UPDATE REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature Routing area identity = RAI-1
7		SS		The SS verifies that the time between the attach and the periodic RA updating is T3312
7a		SS		The SS starts integrity protection.
8		<-	ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RA updated' P-TMSI-3 signature Routing area identity = RAI-1
8a		SS		The SS releases the RRC connection.
9		UE		The UE is switched off or power is removed (see ICS).
9a		SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach".
10		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
10a		SS		If the power was not removed, the SS releases the RRC connection.
11				The SS is set in network operation mode II.
12		UE		The UE is set in UE operation mode A(see ICS) and the test is repeated from step 3 to step 10.

## Specific message contents

None.

## 12.4.3.1.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step6, when the timer T3312 is expired, UE shall:

- initiate the routing area updating procedure with Update type = 'Periodic updating'.

### 12.4.3.2 Periodic routing area updating / accepted / T3312 default value

#### 12.4.3.2.1 Definition

#### 12.4.3.2.2 Conformance requirement

The User Equipment shall perform a periodic routing area update procedure after a T3312 timeout.

#### Reference

3GPP TS 24.008 clauses 4.7.2.2 and 4.7.5.2.

#### 12.4.3.2.3 Test purpose

To test the behaviour of the UE with respect to the periodic routing area updating procedure.

#### 12.4.3.2.4 Method of test

#### Initial condition

##### System Simulator:

One cell operating in network operation mode I.

##### User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

#### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

#### Test procedure

The UE initiates a combined PS attach procedure. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312 is omitted. The UE acknowledge the new P-TMSI by sending ATTACH COMPLETE message. After 54 minutes, a periodic routing area updating procedure is initiated by the UE.

T3312; default value 54 minutes.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
2a	<-		AUTHENTICATION AND CIPHERING REQUEST	
2b	->		AUTHENTICATION AND CIPHERING RESPONSE	
2c	SS			The SS starts integrity protection.
3	<-		ATTACH ACCEPT	Attach result = 'Combined PS /IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-1 Routing area identity = RAI-1 T3312 = 54 min
4	->		ATTACH COMPLETE	
5	->		ROUTING AREA UPDATE REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = valid TMSI available or IE not present.
6	SS			The SS verifies that the time between the attach request and the periodic RA updating is T3312
7	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI and TMSI not included. Update result = 'RAUpdated' P-TMSI-3 signature Routing area identity = RAI-1
8	UE			The UE is switched off or power is removed (see ICS).
9	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS/IMSI detach'

## Specific message contents

None.

## 12.4.3.2.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step5, when the timer T3312 is expired, UE shall:

- initiate the routing area updating procedure with Update type = 'Periodic updating'.

## 12.4.3.3 Periodic routing area updating / no cell available / network mode I

## 12.4.3.3.1 Definition

## 12.4.3.3.2 Conformance requirement

If the UE is both IMSI attached for PS and non-PS services, and if the UE lost coverage of the registered PLMN and timer T3312 expires; if the UE returns to coverage in a cell that supports PS and the network is in network operation

mode I, then the UE shall perform a combined routing area update procedure indicating 'combined RA/LA updating with IMSI attach'.

#### Reference

3GPP TS 24.008 clauses 4.7.2.2 and 4.7.5.1.

#### 12.4.3.3.3 Test purpose

To test the behaviour of the UE with respect to the periodic routing area updating procedure.

#### 12.4.3.3.4 Method of test

#### Initial condition

##### System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).  
Cell A is operating in network operation mode II and cell B is in network operation mode I.

##### User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

Idle updated on Cell A

#### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

#### Test procedure

The UE initiates a PS attach procedure. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312. The UE acknowledge the new P-TMSI by sending ATTACH COMPLETE message. PS radio contact is distorted before T3312 timeout. PS radio contact is established again (after T3312 timeout), and a routing area updating procedure is performed immediately.

T3312; set to 6 minutes.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
		SS		
2		SS		The UE is set in UE operation mode A (see ICS).
3		UE		The UE is powered up or switched on and initiates an attach (see ICS).
4		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a		<-	AUTHENTICATION AND CIPHERING REQUEST	
4b		->	AUTHENTICATION AND CIPHERING RESPONSE	
4c		SS		The SS starts integrity protection.
5		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3312 = 6 minutes
6		->	ATTACH COMPLETE	
7		SS		After 5 minutes, the signal strength is lowered until the UE has lost contact with the SS. Set the cell type of cell A to the "non-suitable cell".(see note)
8		SS		Wait 2 minutes.
9		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell B to the "Serving cell". (see note)
10		UE		Cell B is preferred by the UE.
11		UE		The UE immediately starts a combined RA updating procedure
12		->	ROUTING AREA UPDATE REQUEST	Update type = 'Combined RA/LA updating with IMSI attach' P-TMSI-2 signature Routing area identity = RAI-1 TMSI status = valid TMSI available or IE is omitted.
13		<-	ROUTING AREA UPDATE ACCEPT	Update result = 'Combined RA/LA updated' Mobile identity = P-TMSI-3 P-TMSI-3 signature Mobile identity = TMSI-2 Routing area identity = RAI-4
14		->	ROUTING AREA UPDATE COMPLETE	
15		UE		The UE is switched off or power is removed (see ICS).
16		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

## Specific message contents

None.

#### 12.4.3.3.5 Test requirements

At step4, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step12, when the UE is both IMSI attached for PS and non-PS service , and if the UE lost coverage of the reiterated PLMN and the timer T3312 expires, if the UE returns to coverage in a cell that supports PS and the network is in network oration mode I, UE shall:

- perform the combined routing area update procedure indicating "combined RA/LA updating with IMSI attach".

#### 12.4.3.4 Periodic routing area updating / no cell available

##### 12.4.3.4.1 Definition

##### 12.4.3.4.2 Conformance requirement

If the UE is both IMSI attached for PS and non-PS services, and if the UE lost coverage of the registered PLMN and timer T3312 expires; if the UE returns to coverage in a cell that supports PS and the network is in network operation mode II, then the UE shall perform a periodic routing area update procedure and a periodic location update procedure.

##### Reference

3GPP TS 24.008 clauses 4.7.2.2 and 4.7.5.2.

##### 12.4.3.4.3 Test purpose

To test the behaviour of the UE with respect to the periodic routing area updating procedure.

##### 12.4.3.4.4 Method of test

##### Initial condition

##### System Simulator:

One cell operating in network operation mode II.

##### User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

Idle updated on Cell A

##### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

##### Test procedure

The UE initiates a PS attach procedure. The SS reallocates the P-TMSI and returns ATTACH ACCEPT message with a new P-TMSI and timer T3312. The UE acknowledge the new P-TMSI by sending ATTACH COMPLETE message. PS radio contact is distorted before T3312 timeout. PS radio contact is established again (after T3312 timeout), and a periodic routing area updating procedure is performed immediately (no periodic location update procedure is performed as T3212=infinity).

T3312; set to 6 minutes.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
2a	<-		AUTHENTICATION AND CIPHERING REQUEST	
2b	->		AUTHENTICATION AND CIPHERING RESPONSE	
2c	SS			The SS starts integrity protection.
3	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3312 = 6 minutes
4	->		ATTACH COMPLETE	
5-12			(void)	
13	SS			After 5 minutes, the signal strength is lowered until the UE have lost contact with the SS.
14	SS			After 2 minutes, the signal strength is increased until the UE have got contact with the SS.
15	UE			The UE immediately start the periodic RA updating procedure
16	->		ROUTING AREA UPDATE REQUEST	Update type = 'Periodic updating' P-TMSI-2 signature Routing area identity = RAI-1
17	<-		ROUTING AREA UPDATE ACCEPT	No new mobile identity assigned. P-TMSI not included. Update result = 'RAupdated' P-TMSI-3 signature Routing area identity = RAI-1
18	UE			The UE is switched off or power is removed (see ICS).
19	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

## Specific message contents

## RRC System information block type 1

Information element	Comment Value
T3212 (Periodical Location updating)	Infinity

## 12.4.3.4.5 Test requirements

At step2, when the UE is powered up or switched on, UE shall:

- initiate the combined PS attach procedure with the information elements specified in the above Expected Sequence.

At step16, when the UE is both IMSI attached for PS and non-PS service, and if the UE lost coverage of the reiterated PLMN and the timer T3312 expires, if the UE returns to coverage in a cell in the same RA that supports PS and that indicates that the network is in network operation mode II, UE shall:

- perform the periodic routing area updating procedure indicating "Periodic updating".

## 12.5 P-TMSI reallocation

### 12.5.1 Definition

### 12.5.2 Conformance requirement

- 1) A User Equipment shall acknowledge a new P-TMSI when explicitly allocated.
- 2) The P-TMSI shall be updated on the USIM when the User Equipment is correctly deactivated in accordance with the manufacturer's instructions.
- 3) A User Equipment shall use the given P-TMSI in further communication with the network.

### Reference

3GPP TS 24.008 clause 4.7.6.

### 12.5.3 Test purpose

To verify that the UE is able to receive and acknowledge a new P-TMSI by means of an explicit P-TMSI reallocation procedure.

To verify that the UE has stored the P-TMSI in a non-volatile memory.

The implicit reallocation procedure is tested in the attach procedure.

### 12.5.4 Method of test

#### Initial condition

##### System Simulator:

One cell operating in network operation mode II.

##### User Equipment:

The UE has a valid IMSI.

#### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

UE operation mode C Yes/No (only if mode A not supported)

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

#### Test procedure

An explicit P-TMSI reallocation procedure is performed (P-TMSI reallocation command sent from the SS and acknowledged from the UE by P-TMSI reallocation complete). The UE is PS detached and switched off. Its power supply is interrupted for 10 seconds. The power supply is resumed and then the UE is switched on. A PS attach procedure is performed with the given P-TMSI as identity.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set in UE operation mode A (see ICS). If UE operation mode A not supported set the UE in operation mode C.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2a	SS			SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	<-		P-TMSI REALLOCATION COMMAND	Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
7	->		P-TMSI REALLOCATION COMPLETE	
8	UE			The UE is switched off or power is removed (see ICS).
8a	SS			SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach".
9	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
9a	SS			If the power was not removed, the SS releases the RRC connection.
10	UE			Ensure the power is removed from the UE for at least 10 seconds
11	UE			The UE is powered up or switched on and initiates an attach (see ICS).
11a	SS			SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
12	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 Routing area identity = RAI-1
12a	<-		AUTHENTICATION AND CIPHERING REQUEST	
12b	->		AUTHENTICATION AND CIPHERING RESPONSE	
12c	SS			The SS starts integrity protection.
13	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI not included. Attach result = 'PS only attached' P-TMSI-3 signature Routing area identity = RAI-1
13a	SS			The SS releases the RRC connection and waits 5s to allow the UE to read system information.
14	<-		PAGING TYPE1	Mobile identity = P-TMSI-2 Paging order is for PS services. Paging cause = "Terminating interactive call".
15	SS			SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating interactive call".
16			Void	
17			Void	

18	->	SERVICE REQUEST	service type = "paging response"
18a	SS		The SS starts integrity protection.
19	SS		The SS releases the RRC connection.
20		Void	
21	UE		The UE is switched off or power is removed (see ICS).
21a	SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach".
22	->	DETACH REQUEST	Message not sent if power is removed.
23	SS		Detach type = 'power switched off, PS detach' If the power was not removed, the SS releases the RRC connection.

### Specific message contents

None.

### 12.5.5 Test requirements

At step3, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step7, when the UE receives P-TMSI REALLOCATION COMMAND message from SS, UE shall:

- acknowledge the new P-TMSI by sending P-TMSI REALLOCATION COMPLETE message.

At step12, when the UE is powered up or switched on, UE shall:

- initiate the PS attach procedure with the information elements specified in the above Expected Sequence.

At step18, when the UE receives the paging message for PS domain with Mobile identity = P-TMSI-2, UE shall:

- respond to the paging message for PS domain by sending the SERVICE REQUEST message.

## 12.6 PS authentication

### 12.6.1 Test of authentication

The purpose of this procedure is to verify the user identity. A correct response is essential to guarantee the establishment of the connection. If not, the connection will drop.

#### 12.6.1.1 Authentication accepted

##### 12.6.1.1.1 Definition

##### 12.6.1.1.2 Conformance requirement

A User Equipment shall correctly respond in an authentication and ciphering procedure by sending a response with the RES information field set to the same value as the one produced by the authentication and ciphering algorithm in the network.

#### Reference

3GPP TS 24.008 clause 4.7.7.

##### 12.6.1.1.3 Test purpose

To test the behaviour of the UE if the network accepts the authentication and ciphering procedure.

## 12.6.1.1.4 Method of test

## Initial condition

## System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).  
Both cells are operating in network operation mode II.

## User Equipment:

The UE has a valid IMSI.

## Related ICS/IXIT statements

Support of PS service Yes/No  
UE operation mode A Yes/No  
UE operation mode C Yes/No  
Switch off on button Yes/No  
Automatic PS attach procedure at switch on or power on Yes/No

## Test procedure

A PS attach is performed, and the SS initiates an authentication and ciphering procedure.

The SS checks the value RES sent by the UE in the AUTHENTICATION AND CIPHERING RESPONSE message.

The UE initiates a routing area updating procedure and the SS checks the value of the PS Ciphering Key Sequence Number sent by the UE in the ROUTING AREA REQUEST message.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C not supported, goto step 17.
3	UE			The UE is powered up or switched on and initiates an attach (see ICS).
3a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
4		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
5		<-	AUTHENTICATION AND CIPHERING REQUEST	Request authentication.
6		->	AUTHENTICATION AND CIPHERING RESPONSE	Set PS-CKSN-1 RES
7		SS		The SS checks the RES value and starts integrity protection.
8		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
9		->	ATTACH COMPLETE	
9a		SS		The SS releases the RRC connection.
10		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell". (see note)
10a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
11		->	ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 PS-CKSN-1
12		SS		The value of PS-CKSN is checked. Integrity protection is started.
13		<-	ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4
14		->	ROUTING AREA UPDATE COMPLETE	
15	UE			The UE is switched off or power is removed (see ICS).
16		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
16a		SS		The SS releases the RRC connection.
17		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
18	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 3 to step 16.
NOTE:	The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

## Specific message contents

None.

### 12.6.1.1.5 Test requirements

At steps 3a and 10a the UE shall transmit an RRC CONNECTION REQUEST message with the IE "Establishment cause" set to "Registration".

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step6, when the UE receives the AUTHENTICATION AND CIPHERING REQUEST message form SS, UE shall:

- send the AUTHENTICATION AND CIPHERING RESPONSE message with the RES information field set to the same value as the one produced by the authentication and ciphering algorithm in the network.

At step11, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- perform routing area updating procedure.

## 12.6.1.2 Authentication rejected by the network

### 12.6.1.2.1 Definition

### 12.6.1.2.2 Conformance requirement

Upon receipt of an AUTHENTICATION AND CIPHERING REJECT message, the UE shall set the PS update status to GU3 ROAMING NOT ALLOWED and shall delete the P-TMSI, P-TMSI signature, RAI and PS ciphering key sequence number stored.

The USIM shall be considered as invalid until switching off or the USIM is removed.

If the AUTHENTICATION AND CIPHERING REJECT message is received, the UE shall abort any GMM procedure, shall stop the timers T3310 and T3330 (if running) and shall enter state GMM-DEREGISTERED.

### Reference

3GPP TS 24.008 clauses 4.7.7.5.

### 12.6.1.2.3 Test purpose

To test the behaviour of the UE if the network rejects the authentication and ciphering procedure.

### 12.6.1.2.4 Method of test

#### Initial condition

##### System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).  
Both cells are operating in network operation mode II.

##### User Equipment:

The UE has a valid IMSI.

#### Related ICS/IXIT statements

Support of PS service Yes/No  
UE operation mode A Yes/No

UE operation mode C Yes/No  
Switch off on button Yes/No  
Automatic PS attach procedure at switch on or power on Yes/No

#### Test procedure

The test sequence is repeated for  $K = 1, 2$ .

A complete PS attach procedure is performed. The SS rejects the following authentication and ciphering procedure. The UE is paged with its former P-TMSI and shall not respond.  
The Cell is changed into a new Routing Area.

The SS checks that the UE does not perform normal routing area updating.

The SS then checks that the UE does not perform a PS detach.

The SS checks that the UE does not perform a PS Attach procedure.

#### Expected Sequence

The test sequence is repeated for  $k = 1, 2$

For  $k = 1$ , the UE is set in UE operation mode C. If MS operation mode C not supported then  $k = 2$ .

For  $k = 2$  the UE is set in UE operation mode A.

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2a	UE		Registration on CS	See TS 34.108 This is applied only for UE in UE operation mode A.
2b		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4			Void	
5			Void	
6	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Set PS-CKSN-1
7		->	AUTHENTICATION AND CIPHERING RESPONSE	RES
8	<-		AUTHENTICATION AND CIPHERING REJECT	
8a		SS		The SS releases the RRC connection and waits 5s to allow the UE to read system information.
9	<-		PAGING TYPE1	Mobile identity = IMSI Paging order is for PS services.
10	UE			No response from the UE to the request. This is checked for 10 seconds.
11		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell". (see note)
12	UE			Cell B is preferred by the MS.
13	UE			No ROUTING AREA UPDATE REQUEST sent to the SS (SS waits 30 seconds).
14	UE			If possible (see ICS) the UE initiates an attach by MMI or by AT command.
15	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
16	UE			The UE is switched off (see ICS).
17	SS			No DETACH REQUEST sent to the SS (SS waits 30 seconds).
18				The UE is powered up or switched on and initiates an attach (see ICS). Step 19 is only performed for k =2
19	UE		Registration on CS	Parameter mobile identity is IMSI. See TS 34.108
19a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
20		->	ATTACH REQUEST	Attach type = 'PS only attached' Mobile identity = IMSI
20a	<-		AUTHENTICATION AND CIPHERING REQUEST	
20b		->	AUTHENTICATION AND CIPHERING RESPONSE	
20c		SS		The SS starts integrity protection.

21	<-	ATTACH ACCEPT	Attach result = 'PS attach' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4
22	->	ATTACH COMPLETE	
22a	SS		The SS releases the RRC connection.
23	UE		The UE is switched off or power is removed. (see ICS)
23a	SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach".
24	->	DETACH REQUEST	Message not sent if power is removed.
24a	SS		If the power was not removed, the SS releases the RRC connection.
25	UE		If k=1 then the test is repeated for k=2.
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

### Specific message contents

None.

#### 12.6.1.2.5 Test requirements

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step9, when the UE receives the AUTHENTICATION AND CIPHERING REJECT message, UE shall:

- not respond paging message for PS domain.

At step13, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- not perform normal routing area updating.

At step17, when the UE is switched off, UE shall:

- not perform PS detach procedure.

### 12.6.1.3 Authentication rejected by the UE

#### 12.6.1.3.1 GMM cause 'MAC failure'

##### 12.6.1.3.1.1 Definition

##### 12.6.1.3.1.2 Conformance requirement

If the UE considers the MAC code (supplied by the core network in the AUTN parameter) to be invalid, the UE shall send AUTHENTICATION AND CIPHERING FAILURE message with the reject cause 'MAC failure' to the System Simulator.

#### Reference

3GPP TS 24.008 clause 4.7.7.

##### 12.6.1.3.1.3 Test purpose

To test the behaviors of the UE, when the UE considers the MAC code (supplied by the core network in the AUTN parameter) to be invalid.

## 12.6.1.3.1.4 Method of test

## Initial condition

## System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).

Both cells are operating in network operation mode II.

The MAC (Message Authentication Code) code, which is included in AUTHENTICATION AND CIPHERING REQUEST, is invalid value.

## User Equipment:

The UE has a valid IMSI.

## Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

UE operation mode C Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

## Test procedure

A PS attach is performed, and the SS initiates an authentication and ciphering procedure.

The UE sends AUTHENTICATION AND CIPHERING FAILURE message with reject cause 'MAC failure' to the SS and starts timer T3214.

The SS initiates an identification procedure, upon receipt of a failure message with reject cause 'MAC failure'.

After the identification procedure is complete, the SS re-initiates an authentication and ciphering procedure.

T3360; set to 6 seconds.

T3318; set to 5 seconds.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C is not supported, goto step 25.
3	UE			
4				The following messages are sent and shall be received on cell A.
5	UE			The UE is powered up or switched on and initiates an attach (see ICS).
6	->		ATTACH REQUEST	Attach type = 'PS attach' Mobility identity = IMSI
7	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication. Invalid Message Authentication Code (MAC).
9	->		AUTHENTICATION AND CIPHERING FAILURE	GMM cause='MAC failure'
10	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication.
11	->		AUTHENTICATION AND CIPHERING RESPONSE	Including PS-CSKN-1 RES
12	SS			The SS checks the RES value.
13	<-		IDENTITY REQUEST	Identity type = IMSI
14	->		IDENTITY RESPONSE	Mobile identity = IMSI
15			Void	
16	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
17	->		ATTACH COMPLETE	
18		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell". (see note)
19	->		ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 PS-CKSN-1
20	SS			The value of PS-CKSN is checked
21	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
22	->		ROUTING AREA UPDATE COMPLETE	
23	UE			The UE is switched off or power is removed (see ICS).
24	->		DETACH REQUEST	Message is not sent if power is removed. Detach type = 'power switched off, PS detach'
25	UE			The UE is set in UE operation mode A (see ICS) and the test is repeated from step 1 to step 24.
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

Specific message contents

None.

#### 12.6.1.3.1.5 Test requirements

At step6, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information element specified in the above Expected Sequence.

At step9, when the UE receives the AUTHENTICATION AND CIPHERING REQUEST with Invalid Message Authentication Code, UE shall:

- send the AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS

At step10, when the UE receives the second AUTHENTICATION AND CIPHERING REQUEST message (containing a valid MAC) from SS, UE shall:

- send the AUTHENTICATION AND CIPHERING RESPONSE message to SS.

At step13, when the UE receives the IDENTITY REQUEST message with Identity type = IMSI from SS, UE shall:

- send the IDENTITY RESPONSE message with Mobile identity = IMSI to SS.

#### 12.6.1.3.2 GMM cause 'Synch failure'

##### 12.6.1.3.2.1 Definition

##### 12.6.1.3.2.2 Conformance requirement

If the UE considers the SQN (supplied by the core network in the AUTN parameter) to be out of range, the UE shall send AUTHENTICATION AND CIPHERING FAILURE message with the reject cause 'Synch failure' to the System Simulator.

#### Reference

3GPP TS 24.008 clause 4.7.7.

##### 12.6.1.3.2.3 Test purpose

To test the behaviors of the UE, when the UE considers the SQN (supplied by the core network in the AUTN parameter) to be out of range.

##### 12.6.1.3.2.4 Method of test

#### Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).  
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

#### Related ICS/IXIT statements

Support of PS service	Yes/No
UE operation mode A	Yes/No
UE operation mode C	Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

A PS attach is performed, and the SS initiates an authentication and ciphering procedure.

UE sends AUTHENTICATION AND CIPHERING FAILURE message with reject cause 'synch failure' to the SS and starts timer T3214.

SS re-initiates an authentication and ciphering procedure.

T3360; set to 6 seconds.

T3320; set to 15 seconds.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
2	UE			The UE is set in UE operation mode C (see ICS). If UE operation mode C is not supported, goto step 21.
3	UE			The following messages are sent and shall be received on cell A. The UE is powered up or switched on and initiates an attach (see ICS).
4	->		ATTACH REQUEST	Attach type = 'PS attach' Mobility identity = IMSI
5	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication.
6	SS			SQN is out of range.
7	->		AUTHENTICATION AND CIPHERING FAILURE	The SS starts the timer T3360 GMM cause = 'Synch failure' AUTS parameter
8	SS			set new authentication vectors. (re-synchronisation)
9	<-		AUTHENTICATION AND CIPHERING REQUEST	Request authentication.
10	->		AUTHENTICATION AND CIPHERING RESPONSE	Including PS-CKSN-1 RES
11	SS			The SS checks the RES value.
12	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1
13	->		ATTACH COMPLETE	
14		SS		The following messages are sent and shall be received on cell B. Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell". (see note)
15	->		ROUTING AREA UPDATE REQUEST	Update type = 'RA updating' P-TMSI-2 signature Routing area identity = RAI-1 PS-CKSN-1
16	SS			The value of PS-CKSN is checked
17	<-		ROUTING AREA UPDATE ACCEPT	Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2

Step	Direction		Message	Comments
	UE	SS		
18	->		ROUTING AREA UPDATE COMPLETE	The UE is switched off or power is removed (see ICS). Message is not sent if power is removed. Detach type = 'power switched off, PS detach'
19		UE		
20	->		DETACH REQUEST	
21		UE		The UE is set in UE operation mode A (see ICS) and the test is repeated from step 1 to step 20.
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause6.1 "Reference Radio Conditions for signalling test cases only".				

### Specific message contents

None.

#### 12.6.1.3.2.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information element specified in the above Expected Sequence.

At step7, when the UE receives the AUTHENTICATION AND CIPHERING REQUEST message(SQN is out of range.), UE shall:

- send the AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'synch failure' to the SS

At step10, when the UE receives the second AUTHENTICATION AND CIPHERING REQUEST message from SS, UE shall:

- send the AUTHENTICATION AND CIPHERING RESPONSE message to SS.

At step15, when the RF level of the attached cell is lower than the RF level of the new cell, UE shall:

- perform routing area updating procedure.

#### 12.6.1.3.3 Authentication rejected by the UE / fraudulent network

##### 12.6.1.3.3.1 Definition

##### 12.6.1.3.3.2 Conformance requirement

It can be assumed that the source of the authentication challenge is not genuine (authentication not accepted by the UE) if any of the following occur:

- After sending the AUTHENTICATION & CIPHERING FAILURE message with GMM cause 'MAC failure' the timer T3318 expires;
- Upon receipt of the second AUTHENTICATION & CIPHERING REQUEST message from the network while the T3318 is running and the MAC value cannot be resolved.

The UE may deem that the network has failed the authentication check after any combination of three consecutive authentication failures, regardless whether 'MAC failure', 'invalid SQN', or 'GSM authentication unacceptable' was diagnosed. The authentication failures shall be considered as consecutive only, if the authentication challenges causing the second and third authentication failure are received by the UE, while the timer T3318 or T3320 started after the previous authentication failure is running.

## Reference

3GPP TS 24.008 clause 4.7.7.6.1.

### 12.6.1.3.3.3 Test purpose

To test UE treating a cell as barred:

1. when the network sends the second AUTHENTICATION & CIPHERING REQUEST message with invalid MAC code during the timer T3318 is running.
2. when the timer T3318 has expired.

### 12.6.1.3.3.4 Method of test

#### Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1(RAI-1), cell B in MCC1/MNC1/LAC1/RAC2(RAI-2).  
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid IMSI.

#### Related ICS/IXIT statements

Support of PS service    Yes/No  
UE operation mode A    Yes/No  
UE operation mode C    Yes/No  
Automatic PS attach procedure at switch on or power on    Yes/No

#### Test procedure

Two cells are configured. Cell A transmits with higher power so that the UE attempts an attach procedure to cell A.

During the attach procedure, the SS initiates an authentication and ciphering procedure but it sends an incorrect Message Authentication Code (MAC) value in its AUTHENTICATION AND CIPHERING REQUEST message.

The UE sends AUTHENTICATION AND CIPHERING FAILURE message to the SS indicating authentication failure.

The SS repeats a second time the authentication procedure, which fails again. Next, the UE shall attempt to attach to cell B, which again fails. In this case T3318 expires after the second attempt.

The UE sends AUTHENTICATION AND CIPHERING FAILURE message to the SS indicating authentication failure.

The SS repeats a third time the authentication procedure, which fails again. Next, the UE shall attempt to attach to cell B, which again fails. In this case T3318 expires after the second attempt.

The UE shall treat now both cells as barred and shall not attempt to access the network, even if the user triggers the UE to perform an attach procedure.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
2	UE			The following messages are sent and shall be received on cell A. The UE is powered up or switched on and initiates an attach procedure.
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobility identity = IMSI
4	<-		AUTHENTICATION AND CIPHERING REQUEST	Request for authentication.
5	->		AUTHENTICATION AND CIPHERING FAILURE	Invalid Message Authentication Code (MAC). GMM cause='MAC failure'
6	<-		AUTHENTICATION AND CIPHERING REQUEST	Request for authentication.
7	->		AUTHENTICATION AND CIPHERING FAILURE	Invalid Message Authentication Code (MAC). GMM cause='MAC failure'
7a	<-		AUTHENTICATION AND CIPHERING REQUEST	Request for authentication.
7b	->		AUTHENTICATION AND CIPHERING FAILURE	Invalid Message Authentication Code (MAC). GMM cause='MAC failure'
8		SS		SS verifies that the UE does not attempt to access the network for 30s.
9		SS		Set the cell type of cell A to the "Non-Suitable cell". Set the cell type of cell B to the "Serving cell". (see note)
10	UE			UE shall attempt an attach on cell B. The following messages are sent and shall be received on cell B. The UE initiates an attach by MMI or AT command.
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobility identity = IMSI
12	<-		AUTHENTICATION AND CIPHERING REQUEST	Request for authentication.
13	->		AUTHENTICATION AND CIPHERING FAILURE	Invalid Message Authentication Code (MAC). GMM cause='MAC failure'
14		SS		SS waits T3318 (20s)
15		SS		SS verifies that the UE does not attempt to access the network for 30s.
16	UE			The UE initiates an attach by MMI or AT command.
17		SS		SS verifies that the UE does not attempt to access the network for 30s.
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

## Specific message contents

None.

## 12.6.1.3.3.5 Test requirements

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step5, when the UE receives the AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC), UE shall:

- send the AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS.

At step7, when the UE receives the second AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC) from the network during a timer T3318 is running, UE shall:

- send an AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS.

At step7b, when the UE receives the third AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC) from the network during a timer T3318 is running, UE shall:

- send an AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS.

At step8, after the UE sends third AUTHENTICATION AND CIPHERING FAILURE message to the SS, the UE shall:

- not attempt to access the network , until the system information data is refreshed.

At step11, when the activated cell is changed from cell A to cell B, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step13, when the UE receives the AUTHENTICATION AND CIPHERING REQUEST message with invalid Message Authentication Code (MAC), UE shall:

- send an AUTHENTICATION AND CIPHERING FAILURE message with GMM cause 'MAC failure' to the SS.

At step17, when the timer T3318 is expired, UE shall:

- not attempt to access the network.

## 12.6.2 Void

## 12.7 Identification procedure

The purpose of this procedure is to check that the UE gives its identity as requested by the network. If this procedure does not work, it will not be possible for the network to rely on the identity claimed by the UE.

### 12.7.1 General Identification

#### 12.7.1.1 Definition

#### 12.7.1.2 Conformance requirement

- 1) When requested by the network the User Equipment shall send its IMSI.
- 2) When requested by the network the User Equipment shall send its IMEI as stored in the Mobile Equipment.
- 3) When requested by the network the User Equipment shall send its IMEISV as stored in the Mobile Equipment.

#### Reference

3GPP TS 24.008 clauses 4.7.8

#### 12.7.1.3 Test purpose

To verify that the UE sends identity information as requested by the system. The following identities can be requested: IMSI, IMEI and IMEISV.

## 12.7.1.4 Method of test

## Initial condition

## System Simulator:

One cell operating in network mode II.

## User Equipment:

The UE has a valid IMSI.

## Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

UE operation mode C Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

## Test procedure

The SS requests identity information from the UE:

- IMSI
- IMEI
- IMEISV

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The UE is set to attach to PS services only (see ICS). If that is not supported by the UE, goto step 14.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
4			Void	
5	<-		AUTHENTICATION AND CIPHERING REQUEST	
5a	->		AUTHENTICATION AND CIPHERING RESPONSE	
5b		SS		The SS starts ciphering and integrity protection.
6	<-		IDENTITY REQUEST	Identity type = IMSI
7	->		IDENTITY RESPONSE	Mobile identity = IMSI
8	<-		IDENTITY REQUEST	Identity type = IMEI
9	->		IDENTITY RESPONSE	Mobile identity = IMEI
10	<-		IDENTITY REQUEST	Identity type = IMEISV
11	->		IDENTITY RESPONSE	Mobile identity = IMEISV
11a	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
11b	->		ATTACH COMPLETE	
11c		SS		The SS releases the RRC connection.
12	UE			The UE is switched off or power is removed (see ICS).
12a		SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach" (message not received if power is removed).
13	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
13a		SS		The SS releases the RRC connection.
14	UE			The UE is set to attach to both PS and non-PS services (see ICS) and the test is repeated from step 2 to step 13b.

## Specific message contents

None.

## 12.7.1.5 Test requirements

At step 2a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 12a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step7, when the SS requests an IMSI with the IDENTITY REQUEST message, UE shall:

- send the IDENTITY RESPONSE message with the Mobile identity = IMSI.

At step9, when the SS requests an IMEI with the IDENTITY REQUEST message, UE shall:

- send the IDENTITY RESPONSE message with the Mobile identity = IMEI.

At step11, when the SS requests an IMEISV with the IDENTITY REQUEST message, UE shall:

- send the IDENTITY RESPONSE message with the Mobile identity = IMEISV.

## 12.8 GMM READY timer handling

The READY timer is not applicable for UMTS.

### 12.8.1 Definition

### 12.8.2 Conformance requirement

If a READY timer value is received by an UE capable of both UMTS and GSM in the ATTACH ACCEPT or the ROUTING AREA UPDATE ACCEPT messages, then the received value shall be stored by the UE in order to be used at an intersystem change from UMTS to GSM.

### Reference

3GPP TS 24.008 clause 4.7.2.1

### 12.8.3 Test purpose

To verify the functionality of the READY timer.

### 12.8.4 Method of test

#### 12.8.4.1 Test procedure1

### Initial condition

#### System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC1 (RAI-1).  
Both cells are operating in network operation mode II.

#### User Equipment:

The UE has a valid IMSI.

### Related ICS/IXIT statements

Support of PS service Yes/No  
UE operation mode A Yes/No  
Switch off on button Yes/No  
Automatic PS attach procedure at switch on or power on Yes/No

### Test procedure

An attach is performed.

T3314; set to 60 seconds

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		The following messages are sent and shall be received on cell A. Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
2	UE			The UE is set in UE operation mode A (see ICS). If UE operation mode A not supported set the UE in operation mode C. The UE is powered up or switched on and initiates an attach (see ICS).
2a		SS		SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3		->	ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
3a		<-	AUTHENTICATION AND CIPHERING REQUEST	
3b		->	AUTHENTICATION AND CIPHERING RESPONSE	
3c		SS		The SS starts integrity protection.
4		<-	ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-1 T3314 = 60 seconds
5		->	ATTACH COMPLETE	
5a		SS		The SS releases the RRC connection.
6	UE			The UE is switched off or power is removed (see ICS).
6a		SS		SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach".
7		->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
7a		SS		If the power was not removed, the SS releases the RRC connection.
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

## Specific message contents

None.

## 12.8.5 Test requirements

At step4, when the UE receives the ATTACH ACCEPT or the ROUTING AREA UPDATE ACCEPT messages, UE shall:

- store the received READY timer value.

## 12.9 Service Request procedure (UMTS Only)

### 12.9.1 Service Request Initiated by UE Procedure

12.9.1.1 Definition

12.9.1.2 Conformance requirement

UE shall send the Service Request message to the network in order to establish the PS signalling connection for the upper layer signalling or for the resource reservation for active PDP context(s).

#### Reference

TS 24.008 clauses 4.7.13

TS 23.060 clauses 6.12.1

12.9.1.3 Test purpose

To test the behaviour of the UE if the UE initiates the CM layer service (e.g. SM or SMS) procedure.

12.9.1.4 Method of test

#### Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid IMSI

#### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

UE operation mode C Yes/No

Switch off on button Yes/No

#### Test procedure

- a) The UE in PMM-IDLE state sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.
- b) After the SS receives the SERVICE REQUEST message, the SS performs authentication procedure.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set to attach to PS services only (see ICS). If that is not supported by the UE, goto step 12.
2	UE			The UE is powered up or switched on and initiates an attach (see ICS).
2a	SS			SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts ciphering and integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
5a	SS			The SS releases the RRC connection.
6	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
6a	SS			The IE "Establishment cause" in the received RRC CONNECTION REQUEST message is not checked.
7	->		SERVICE REQUEST	Service type = "signalling",
8	<-		AUTHENTICATION AND CIPHERING REQUEST	
9	->		AUTHENTICATION AND CIPHERING RESPONSE	
9a	SS			The SS starts integrity protection and releases the RRC connection.
10	UE			The UE is switched off or power is removed (see ICS).
10a	SS			The SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST is set to "Detach" (not received if power is removed).
11	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
11a	SS			The SS releases the RRC connection.
12	UE			The UE is set to attach to both PS and non-PS services (see ICS) and the test is repeated from step 2 to step 11b.

## Specific message contents

None.

## 12.9.1.5 Test requirements

At step 2a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 10a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step7, when the UE has any signalling message (e.g. for SM or SMS) that requires security protection, the UE shall:

- send the SERVICE REQUEST message with service type indicated "signalling".

## 12.9.2 Service Request Initiated by Network Procedure

### 12.9.2.1 Definition

### 12.9.2.2 Conformance requirement

When the UE receives a paging request for PS domain from the network in PMM-IDLE mode, the UE shall send the SERVICE REQUEST message to the network.

### Reference

TS 24.008 clauses 4.7.13

TS 23.060 clauses 6.12.2

### 12.9.2.3 Test purpose

To test the behavior of the UE if the UE receives the paging request for PS domain service from the network.

### 12.9.2.4 Method of test

#### Initial condition

#### System Simulator:

One cell operating in network operation mode II.

#### User Equipment:

The UE has a valid IMSI

#### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

UE operation mode C Yes/No

Switch off on button Yes/No

#### Test procedure

- The UE is in PMM-IDLE state. The SS pages the UE by sending a Paging message to the UE.
- The UE sends a SERVICE REQUEST message to the SS. Service Type specifies Paging Response. The Service Request is carried over the radio in an RRC Direct Transfer message.
- After the SS receives the SERVICE REQUEST message from the UE, SS initiates an authentication procedure.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The UE is set to attach to PS services only (see ICS). If that is not supported by the UE, goto step 12.
2	UE			The UE is powered up or switched in and initiates an attach (see ICS).
2a	SS			SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Registration".
3	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts ciphering and integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
5a	SS			The SS releases the RRC connection.
6	<-		PAGING TYPE1	Mobile identity = P-TMSI-1 Paging order is for PS services. Paging cause = "Terminating interactive call"
6a	SS			SS checks that the IE "Establishment cause" in the received RRC CONNECTION REQUEST message is set to "Terminating interactive call".
7	->		SERVICE REQUEST	Service type = "Paging response"
8	<-		AUTHENTICATION AND CIPHERING REQUEST	
9	->		AUTHENTICATION AND CIPHERING RESPONSE	
9a	SS			SS starts integrity protection and releases the RRC connection.
10	UE			The UE is switched off or power is removed (see ICS).
10a	SS			SS checks that the IE "Establishment cause" in any received RRC CONNECTION REQUEST message is set to "Detach" (message not sent if power is removed).
11	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'
11a	SS			The SS releases the RRC connection.
12	UE			The UE is set to attach to both PS and non-PS services (see ICS) and the test is repeated from step 2 to step 11b.

## Specific message contents

None.

## 12.9.2.5 Test requirements

At step 2a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Registration".

At step 6a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Terminating interactive Call".

At step 10a the UE shall send an RRC CONNECTION REQUEST message with the IE Establishment cause set to "Detach".

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step6, when the UE receives a paging request for PS domain from the network in PMM-IDLE mode, the UE shall:

- send the SERVICE REQUEST message with service type indicated "paging response".

## 12.9.3 Service Request / rejected / Illegal MS

### 12.9.3.1 Definition

### 12.9.3.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "Illegal MS", the UE shall:

- 1) set the GPRS update status to GU3 ROAMING NOT ALLOWED and enter state GMM DEREGISTERED.
- 2) delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.
- 3) consider the USIM as invalid for PS service until switched off or the USIM is removed.

### Reference

TS 24.008 clauses 4.7.13.4

### 12.9.3.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "Illegal MS".

### 12.9.3.4 Method of test

#### Initial condition

#### System Simulator:

One cell operating in network operation mode II.

#### User Equipment:

The UE has a valid P-TMSI-1, RAI-1 and IMSI.

#### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

UE operation mode C Yes/No

Switch off on button Yes/No

#### Test procedure

- a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.
- b) After the SS receiving the SERVICE REQUEST message, the SS sends a SERVICE REJECT message with the cause value #3(Illegal MS).
- c) After the UE receives the SERVICE REJECT message with the cause value #3(Illegal MS), the UE deletes any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.
- d) The SS checks that the UE does not initiate an upper-layer signalling until the power of the UE is switched off.

- e) The SS checks that the UE does not initiate an upper-layer signalling until the USIM is removed from the UE.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The following message are sent and shall be received on cell A.
2	SS			The UE is set in UE operation mode C (see ICS).
3	UE			The SS is set in network operation mode II and activates cell A.
4	->		ATTACH REQUEST	The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE. Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS			The SS starts ciphering and integrity protection.
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6			Void	
7	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "Illegal MS"
10	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
11	SS			The SS verifies that the UE does not attempt to access the network. (SS waits 30 seconds)
12	UE			The UE is switched off.
13			Void	
14	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
15	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
15a	<-		AUTHENTICATION AND CIPHERING REQUEST	
15b	->		AUTHENTICATION AND CIPHERING RESPONSE	
15c	SS			The SS starts ciphering and integrity protection.
16	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
17	->		ATTACH COMPLETE	
18	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
19	->		SERVICE REQUEST	Service type = "signalling"
20	<-		SERVICE REJECT	Reject cause = "Illegal MS"
21	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
22	SS			The SS verifies that the UE does not attempt to access the network. (SS waits 30 seconds)
23	UE			USIM is removed.
24	UE			USIM is inserted.

Step	Direction		Message	Comments
	UE	SS		
25	UE			The UE initiates a PS attach, by MMI or by AT command. Attach type = 'PS attach' Mobile identity = IMSI
26	->		ATTACH REQUEST	
26a	<-		AUTHENTICATION AND CIPHERING REQUEST	
26b	->		AUTHENTICATION AND CIPHERING RESPONSE	
26c	SS			
27	<-		ATTACH ACCEPT	
28	->		ATTACH COMPLETE	The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command. Service type = "signalling"
29	UE			
30	->		SERVICE REQUEST	
31	<-		AUTHENTICATION AND CIPHERING REQUEST	The SS initiate a security mode control procedure. After the security mode control procedure is completed, the SS releases RRC connection.
32	->		AUTHENTICATION AND CIPHERING RESPONSE	
33	SS			
34	SS			
35	UE			The UE is switched off or power is removed (see ICS). Message not sent if power is removed. Detach type = 'power switched off, PS detach'
36	->		DETACH REQUEST	

### Specific message contents

None.

#### 12.9.3.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step11, when the UE receives the SERVICE REJECT message with cause "Illegal MS" UE shall:

- not attempt to access the network.

At step15, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step22, when the UE receives the SERVICE REJECT message with cause "Illegal MS" UE shall:

- not attempt to access the network.

At step26, when the USIM is replaced, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step30, UE shall:

- initiate the service request procedure.

## 12.9.4 Service Request / rejected / PS services not allowed

### 12.9.41 Definition

#### 12.9.4.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "PS services not allowed", the UE shall:

- 1) set the GPRS update state to GU3 ROAMING NOT ALLOWED.
- 2) delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.
- 3) consider the USIM as invalid for PS service until the UE is switched off or until the USIM is removed.

### Reference

TS 24.008 clauses 4.7.13.4

### 12.9.4.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "PS service not allowed".

### 12.9.4.4 Method of test

#### Initial condition

##### System Simulator:

One cell operating in network operation mode II.

##### User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

#### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

UE operation mode C Yes/No

Switch off on button Yes/No

#### Test procedure

- a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.
- b) After the SS receiving the SERVICE REQUEST message, the SS sends a SERVICE REJECT message with the cause value #7(PS services not allowed).
- c) After the UE receives the SERVICE REJECT message with the cause value #7(PS services not allowed), the UE deletes any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.
- d) The SS checks that the UE does not initiate an upper-layer signalling until the UE is switched off.
- e) The SS checks that the UE does not initiate an upper-layer signalling until the USIM is removed from the UE.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The following message are sent and shall be received on cell A.
2	SS			The UE is set in UE operation mode C (see ICS).
3	UE			The SS is set in network operation mode II and activates cell A.
4	->		ATTACH REQUEST	The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE. Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS			The SS starts ciphering and integrity protection.
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6			Void	
7	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "PS services not allowed"
10	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
11	SS			The SS verifies that the UE does not attempt to access the network. (SS wait 30seconds)
12	UE			The UE is switched off.
13			Void	
14	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
15	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
15a	<-		AUTHENTICATION AND CIPHERING REQUEST	
15b	->		AUTHENTICATION AND CIPHERING RESPONSE	
15c	SS			The SS starts ciphering and integrity protection.
16	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-2
17	->		ATTACH COMPLETE	
18	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
19	->		SERVICE REQUEST	Service type = "signalling"
20	<-		SERVICE REJECT	Reject cause = "PS services not allowed"
21	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
22	SS			The SS verifies that the UE does not attempt to access the network. (SS wait 30seconds)
23	UE			USIM is removed.
24	UE			USIM is inserted.

Step	Direction		Message	Comments
	UE	SS		
25	UE			The UE initiates a PS attach, by MMI or by AT command. Attach type = 'PS attach' Mobile identity = IMSI  The SS starts ciphering and integrity protection. Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-3
26	->		ATTACH REQUEST	
26a	<-		AUTHENTICATION AND CIPHERING REQUEST	
26b	->		AUTHENTICATION AND CIPHERING RESPONSE	
26c	SS			
27	<-		ATTACH ACCEPT	
28	->		ATTACH COMPLETE	
29	UE			
30	->		SERVICE REQUEST	The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command. Service type = "signalling"
31	<-		AUTHENTICATION AND CIPHERING REQUEST	The SS initiate a security mode control procedure. After the security mode control procedure is completed, the SS releases RRC connection.
32	->		AUTHENTICATION AND CIPHERING RESPONSE	
33	SS			
34	SS			
35	UE			The UE is switched off or power is removed (see ICS).
36	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

### Specific message contents

#### 12.9.4.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step11, when the UE receives the SERVICE REJECT message with cause "PS services not allowed" UE shall:

- not attempt to access the network.

At step15, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step22, when the UE receives the SERVICE REJECT message with cause "PS services not allowed" UE shall:

- not attempt to access the network.

At step26, when the USIM is replaced, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step30, UE shall:

- initiate the service request procedure.

## 12.9.5 Service Request / rejected / MS identity cannot be derived by the network

12.9.5.1 Definition

12.9.5.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "MS identity cannot be derived by the network", the UE shall:

- 1) set the GPRS update states to GU2 NOT UPDATED.
- 2) delete any P-TMSI, P-TMSI signature, RAI and GPRS ciphering key sequence number.
- 3) initiate the PS attach procedure automatically.

### Reference

TS 24.008 clauses 4.7.13.4

12.9.5.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "MS identity cannot be derived by the network".

12.9.5.4 Method of test

### Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

UE operation mode C Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

### Test procedure

- a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.
- b) After the SS receiving the SERVICE REQUEST message, the SS sends a SERVICE REJECT message with the cause value #9 (MS identity cannot be derived by the network).

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The following message are sent and shall be received on cell A.
2	SS			The UE is set in UE operation mode C (see ICS).
3	UE			The SS is set in network operation mode II and activates cell A.
4	->		ATTACH REQUEST	The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE. Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS			The SS starts ciphering and integrity protection.
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6			Void	
7	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "MS identity cannot be derived by the network"
10	UE			The UE automatically initiates the PS attach procedure.
11	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = IMSI
11a	<-		AUTHENTICATION AND CIPHERING REQUEST	
11b	->		AUTHENTICATION AND CIPHERING RESPONSE	
11c	SS			The SS starts ciphering and integrity protection.
12	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature
13	->		ATTACH COMPLETE	
14	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command. Service type = "signalling"
15	->		SERVICE REQUEST	
16	<-		AUTHENTICATION AND CIPHERING REQUEST	
17	->		AUTHENTICATION AND CIPHERING RESPONSE	
18	SS			The SS initiate a security mode control procedure.
19	SS			After the security mode control procedure is completed, the SS releases RRC connection.
20	UE			The UE is switched off or power is removed (see ICS).
21	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

## Specific message contents

None.

### 12.9.5.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step11, when the UE receives the SERVICE REJECT message with cause "MS identity cannot be derived by the network" UE shall:

- initiate PS attach procedure automatically.

## 12.9.6 Service Request / rejected / PLMN not allowed

### 12.9.6.1 Definition

### 12.9.6.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "PLMN not allowed", the UE shall:

- 1) delete any RAI, P-TMSI, P-TMSI signature and GPRS ciphering key sequence number.
- 2) set the GPRS update status to GU3 ROAMING NOT ALLOWED.
- 3) store the LAI or the PLMN identity in the appropriate forbidden list.

### Reference

TS 24.008 clauses 4.7.13.4

### 12.9.6.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "PLMN not allowed".

### 12.9.6.4 Method of test

#### Initial condition

System Simulator:

Two cells (not simultaneously activated), cell A in MCC1/MNC1/LAC1/RAC1 cell B in MCC2/MNC1/LAC1/RAC1.

All two cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

#### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

UE operation mode C Yes/No

Switch off on button Yes/No

#### Test procedure

- a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.

- b) After the SS receiving the SERVICE REQUEST message, the SS sends a SERVICE REJECT message with the cause value #11 (PLMN not allowed).
- c) The SS checks that the UE does not initiate an upper-layer signalling until the UE is switched off.
- d) The SS checks that the UE does not answer a Page from the SS until the power of the UE is switched off.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The following message are sent and shall be received on cell A.
2	SS			The UE is set in UE operation mode C (see ICS).
3	UE			The SS is set in network operation mode II.
4	->		ATTACH REQUEST	Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". (see note)
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4c	SS			
5	<-		ATTACH ACCEPT	The SS starts ciphering and integrity protection. No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6			Void	
7	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "PLMN not allowed"
10	UE			The UE stores the LAI or the PLMN identity in the "forbidden PLMN list".
11	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
12	SS			The SS verifies that the UE does not attempt to access the network. (SS wait 30second)
13	<-		PAGING TYPE1	Paging order is for PS service
14	UE			No response from the UE to the request. This is checked for 10 seconds.
15	SS			The following messages shall be sent and shall be received on cell B.
16	UE			Set the cell type of cell A to the "Non-Suitable cell".
17	UE			Set the cell type of cell B to the "Serving cell". (see note)
18	->		ATTACH REQUEST	Cell B is preferred by the UE.
18a	<-		AUTHENTICATION AND CIPHERING REQUEST	The UE initiates an attach automatically, by MMI or by AT command.
18b	->		AUTHENTICATION AND CIPHERING RESPONSE	Attach type = 'PS attach' Mobile identity = IMSI
18c	SS			
19	<-		ATTACH ACCEPT	The SS starts ciphering and integrity protection. Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-2 Attach result = 'PS only attached'
20	->		ATTACH COMPLETE	
21	UE			The UE is switched off or power is removed (see ICS).

22	->	DETACH REQUEST
NOTE: The definitions for "Non-Suitable cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".		

### Specific message contents

None.

#### 12.9.6.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step12, when the UE receives the SERVICE REJECT message with cause "PLMN not allowed", UE shall:

- not perform a PS attach procedure in the same PLMN.

At step13, when the UE receives the paging message for PS domain UE shall:

- not respond to the paging message for PS domain.

At step18, UE shall:

- perform PS attach procedure.

### 12.9.7a Service Request / rejected / No PDP context activated

#### 12.9.7a.1 Definition

#### 12.9.7a.2 Conformance requirement

If the network rejects a service request procedure with the cause "No PDP context activated", the UE shall:

- deactivate all active PDP contexts.

After the UE deactivates all active PDP contexts, UE shall:

- perform PDP context(s) activation.

#### Reference

TS 24.008 clauses 4.7.13.4

#### 12.9.7a.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "No PDP context activated".

#### 12.9.7a.4 Method of test

#### Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

## Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

UE operation mode C Yes/No

Switch off on button Yes/No

## Test procedure

- a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.
- b) After the SS receiving the SERVICE REQUEST message, the SS sends a SERVICE REJECT message with the cause value #40 (No PDP context activated).
- c) After the UE receives the SERVICE REJECT message, the UE shall send the ACTIVATE PDP CONTEXT REQUEST message.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1				The following message are sent and shall be received on cell A.
2				The UE is set in UE operation mode C (see ICS).
3				The SS is set in network operation mode II and activates cell A.
4	->		ATTACH REQUEST	
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	
4c		SS		
5	<-		ATTACH ACCEPT	The SS starts ciphering and integrity protection.
6	->		ATTACH COMPLETE	
7		UE		The UE initiates a PS call, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		AUTHENTICATION AND CIPHERING REQUEST	
10	->		AUTHENTICATION AND CIPHERING RESPONSE	The SS initiates a security mode control procedure.
11		SS		
12		UE		
13		SS		The SS initiates a Radio Bearer release procedure.
14		UE		The UE resumes the transmission of the user data.
15	->		SERVICE REQUEST	Service type = "data"
16	<-		SERVICE REJECT	
17		UE		Reject cause = "No PDP context activated"
18		UE		The UE shall deactivate locally all active PDP contexts.
19	->		SERVICE REQUEST	The UE initiates a PS call, by MMI or by AT command.
20	<-		AUTHENTICATION AND CIPHERING REQUEST	
21	->		AUTHENTICATION AND CIPHERING RESPONSE	Service type = "signalling"
21		SS		
22		UE		SS initiates a security procedure by sending SECURITY MODE COMMAND message.
23		UE		The UE is switched off or power is removed (see ICS).
24	->		DETACH REQUEST	The UE initiates Detach request, by MMI or by AT command.
				Message not sent if power is removed. Detach type = 'power switched off, PS detach'

## Specific message contents

None.

## 12.9.7a.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure.

When the UE receives a SERVICE REJECT message with the cause "No PDP context activated", UE shall:

- deactivate all active PDP context.

At step15, UE shall:

- initiates a Service request procedure by sending a SERVICE REJECT message with Service type = "data".

## 12.9.7b Service Request / rejected / No Suitable Cells In Location Area

### 12.9.7b.1 Definition

### 12.9.7b.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "No Suitable Cells In Location Area", the UE shall:

- 1) set the GPRS update status to GU3 ROAMING NOT ALLOWED.
- 2) store the LAI or the PLMN identity in the list of 'forbidden location areas for roaming'.
- 3) search for a suitable cell in a different location area on the same PLMN.

### Reference

TS 24.008 clauses 4.7.13.4

### 12.9.7b.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "No Suitable Cells In Location Area".

### 12.9.7b.4 Method of test

#### Initial condition

#### System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC2/RAC1 (RAI-3), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2)

All three cells are operating in network operation mode II.

#### User Equipment:

The UE has valid IMSI.

#### Related ICS/IXIT statements

Support of PS service Yes/No  
UE operation mode A Yes/No  
Switch off on button Yes/No  
Automatic PS attach procedure at switch on or power on Yes/No

#### Test procedure

The SS rejects a Service request with the cause value 'No Suitable Cells In Location Area'. The SS checks that the UE shall perform PS attach procedure when the UE enters a suitable cell in a different location area on the same PLMN.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". Set the cell type of cell C to the "Suitable neighbour cell". (see note) The SS configures power level of each Cell as follows. Cell A > Cell B = Cell C
1	UE			The UE is set in UE operation mode A (see ICS).
2	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
3	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' Mobile identity = IMSI TMSI status = no valid TMSI available
3a	<-		AUTHENTICATION AND CIPHERING REQUEST	
3b	->		AUTHENTICATION AND CIPHERING RESPONSE	
3c	SS			The SS starts ciphering and integrity protection.
4	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Mobile identity = TMSI-1 Routing area identity = RAI-1
5	->		ATTACH COMPLETE	
6	SS			The SS initiates the RRC connection release.
7	UE			The UE initiates a PS call, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "No Suitable Cells In Location Area"
10	->		ATTACH REQUEST	The following message are sent and shall be received on cell B. Attach type = 'PS attach' Mobile identity = P-TMSI-1
10a	<-		AUTHENTICATION AND CIPHERING REQUEST	
10b	->		AUTHENTICATION AND CIPHERING RESPONSE	
10c	SS			The SS starts ciphering and integrity protection.
11	<-		ATTACH ACCEPT	Mobile identity = P-TMSI-2 P-TMSI-2 signature Routing area identity = RAI-2 Attach result = 'PS only attached'
12	->		ATTACH COMPLETE	
13	UE			The UE is switched off or power is removed (see ICS).
14	->		DETACH REQUEST	
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".				

## Specific message contents

None.

## 12.9.7b.5 Test requirements

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step10, when the UE enters a suitable cell in a different location area on the same PLMN, UE shall:

- perform the PS attach procedure.

### 12.9.7c Service Request / rejected / Roaming not allowed in this location area

12.9.7c.1 Definition

12.9.7c.2 Conformance requirement

If the network rejects a service request procedure from the UE with the cause "Roaming not allowed in this location area", the UE shall:

- 1) set the PS update status to GU3 ROAMING NOT ALLOWED
- 2) store the LAI in the list of "forbidden location areas for roaming".
- 3) perform a PLMN selection.

#### Reference

TS 24.008 clauses 4.7.13.4

12.9.7c.3 Test purpose

To test the behaviour of the UE if the network rejects the service request procedure with the cause "Roaming area not allowed in this location area".

12.9.7c.4 Method of test

#### Initial condition

##### System Simulator:

Three cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4), cell C in MCC2/MNC1/LAC1/RAC1 (RAI-2)

All three cells are operating in network operation mode I.

##### User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

#### Related ICS/IXIT statements

Support of PS service Yes/No  
UE operation mode A Yes/No  
Switch off on button Yes/No  
Automatic PS attach procedure at switch on or power on Yes/No

#### Test procedure

The SS rejects a Service request with the cause value 'Roaming not allowed in this location area'. The SS checks that the UE shall not perform PS attach procedure when the UE enters a different location area.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
		SS		The following messages are sent and shall be received on cell A.
1		SS		Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Non-Suitable cell". Set the cell type of cell C to the "Non-Suitable cell". (see note)
2	UE			The UE is set in UE operation mode A (see ICS).
3	UE			The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4	->		ATTACH REQUEST	Attach type = 'Combined PS / IMSI attach' or "PS Attach while IMSI attached" Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS			The SS starts ciphering and integrity protection.
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Attach result = 'PS only attached' Routing area identity = RAI-1
6	SS			The SS initiates the RRC connection release.
7	UE			The UE initiates a PS call, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	<-		SERVICE REJECT	Reject cause = "roaming not allowed in this location area"
10	UE			The UE performs PLMN selection.
11	SS			Set the cell type of cell A to the " Non-Suitable cell". Set the cell type of cell B to the " Serving cell". (see note)
12	UE			No ATTACH REQUEST sent to the SS (SS waits 30 seconds).
13	SS			Set the cell type of cell B to the " Non-Suitable cell". Set the cell type of cell C to the " Serving cell". (see note)
14	->		ATTACH REQUEST	The following messages are sent and shall be received on cell C. Attach type = 'Combined PS / IMSI attach' or "PS Attach while IMSI attached" Mobile identity = P-TMSI-1 Routing area identity = RAI-1
14a	<-		AUTHENTICATION AND CIPHERING REQUEST	
14b	->		AUTHENTICATION AND CIPHERING RESPONSE	
14c	SS			The SS starts integrity protection.
15	<-		ATTACH ACCEPT	Attach result = 'Combined PS / IMSI attached' Mobile identity = P-TMSI-2 P-TMSI-2 signature Mobile identity = TMSI-2 Routing area identity = RAI-2
16	->		ATTACH COMPLETE	
17	UE			The UE is switched off or power is removed (see ICS).

18	->	DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, combined PS / IMSI detach'
NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".			

### Specific message contents

None.

#### 12.9.7c.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

At step12, when the UE enters a same location area, UE shall:

- not initiate the combined PS attach procedure.

At step12, when the UE enters a different location area, UE shall:

- initiate the combined PS attach procedure with information elements specified in the above Expected Sequence.

## 12.9.8 Service Request / Abnormal cases / Access barred due to access class control

### 12.9.8.1 Definition

### 12.9.8.2 Conformance requirement

If the UE access class X is barred, the UE shall:

- 1) not start Service Request procedure.
- 2) stay in the current serving cell.
- 3) apply normal cell reselection process.

If the UE access class X is granted or serving cell is changed, the UE shall:

- 1) start Service Request procedure.

### Reference

TS 24.008 clauses 4.7.13.5.

### 12.9.8.3 Test purpose

To test the behavior of the UE in case of access class control (access is granted).

### 12.9.8.4 Method of test

#### Initial condition

A random access class X (0-15) is selected. The USIM is programmed with this access class X.

Initially, an access class X is barred.

#### System Simulator:

One cell operating in network operation mode II.

Access class x barred.

User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode C Yes/No

UE operation mode A Yes/No

Switch off on button Yes/No

Automatic PS attach procedure at switch on or power on Yes/No

Test procedure

The SS initiates access class X barred. A service request procedure is not performed.

The SS initiates that access class X is not barred. A service request procedure is performed.

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The USIM is set up Access class x. The access class x is barred in cell A. The UE is powered up or switched on and attempt to initiate an ATTACH.
2	UE			No SERVICE REQUEST sent to SS, as access class X is barred. (SS waits 30 seconds)
3	SS			The access class x is not barred anymore.
4	UE			The UE automatically initiates an attach.
5	->		ATTACH REQUEST	Attach type = 'PS attach' Mobile identity = P-TMSI-2 Routing area identity = RAI-1
5a	<-		AUTHENTICATION AND CIPHERING REQUEST	
5b	->		AUTHENTICATION AND CIPHERING RESPONSE	
5c	SS			The SS starts ciphering and integrity protection.
6	<-		ATTACH ACCEPT	Attach result = 'PS only attached' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-1
7	->		ATTACH COMPLETE	
8	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
9	->		SERVICE REQUEST	Service Type = "signalling".
10	<-		AUTHENTICATION AND CIPHERING REQUEST	
11	->		AUTHENTICATION AND CIPHERING RESPONSE	
11a	SS			The SS initiates a security mode control procedure.
12	UE			The UE is switched off or power is removed (see ICS).
13	->		DETACH REQUEST	Message not sent if power is removed. Detach type = 'power switched off, PS detach'

Specific message contents

None.

#### 12.9.8.5 Test requirements

At step2, when the UE access class x is barred, UE shall:

- not perform Service Request procedure.

At step5, when the UE access class x is barred, UE shall:

- initiate the PS attach procedure.

At step9, UE shall:

- perform Service Request procedure.

### 12.9.9 Service Request / Abnormal cases / Routing area update procedure is triggered

#### 12.9.9.1 Definition

#### 12.9.9.2 Conformance requirement

If a cell change into a new routing area occurs and the necessity of routing area update procedure is determined before the security mode control procedure is completed, the UE shall:

- abort Service request procedure.
- start routing area update procedure immediately.

#### Reference

TS 24.008 clause 4.7.13.5

#### 12.9.9.3 Test purpose

To test the behavior of the UE in case of collision between Routing area update procedure and Service request procedure.

#### 12.9.9.4 Method of test

#### Initial condition

System Simulator:

Two cells, cell A in MCC1/MNC1/LAC1/RAC1 (RAI-1), cell B in MCC1/MNC1/LAC1/RAC2 (RAI-4).  
Both cells are operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

#### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

UE operation mode C Yes/No

Switch off on button Yes/No

## Test procedure

- a) The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.
- b) The UE initiates the routing area update procedure.
- c) The UE aborts Service request procedure and performs Routing area updating procedure.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The following message are sent and shall be received on cell A.
2	SS			The UE is set in UE operation mode C (see ICS).
3	UE			The SS is set in network operation mode II.
4	->		ATTACH REQUEST	Set the cell type of cell A to the "Serving cell". Set the cell type of cell B to the "Suitable neighbour cell". (see note)
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4c	SS			
5	<-		ATTACH ACCEPT	The SS starts ciphering and integrity protection. No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	UE		Void	
7	->		SERVICE REQUEST	The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	SS			Service type = "signalling" Activate cell B with a lower signal strength than cell A The RF level of cell A is lowered until cell B is preferred by the UE.
9	UE			The UE aborts Service request procedure.
10	->		ROUTING AREA UPDATE REQUEST	Set the cell type of cell A to the "Suitable neighbour cell". Set the cell type of cell B to the "Serving cell". (see note)
11	<-		ROUTING AREA UPDATE ACCEPT	The following message are sent and shall be received on cell B.
12	->		ROUTING AREA UPDATE COMPLETE	Update type = 'RA updating' P-TMSI-2 signature
13	UE			Update result = 'RA updated' Mobile identity = P-TMSI-1 P-TMSI-1 signature Routing area identity = RAI-4
14	->		SERVICE REQUEST	
15	<-		AUTHENTICATION AND CIPHERING REQUEST	The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
16	->		AUTHENTICATION AND CIPHERING RESPONSE	Service type = "signalling"
17	SS			
18	SS			The SS initiate a security mode control procedure.
19	UE			After the security mode control procedure is completed, the SS releases RRC connection.
20	->		DETACH REQUEST	The UE is switched off or power is removed (see ICS). Message not sent if power is removed. Detach type = 'power switched off, PS detach'

NOTE: The definitions for "Suitable neighbour cell" and "Serving cell" are specified in TS34.108 clause 6.1 "Reference Radio Conditions for signalling test cases only".
--

### Specific message contents

None.

#### 12.9.9.5 Test requirements

At step3, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence .

At step7, UE shall:

- perform the service request procedure.

At step10, when the routing area update procedure is initiated before the security mode control procedure is completed, UE shall;

- abort a Service request procedure
- perform the routing area updating procedure.

At step14, after the UE completes the routing area updating procedure, UE shall;

- restart the Service Request procedure.

### 12.9.10 Service Request / Abnormal cases / Power off

#### 12.9.10.1 Definition

#### 12.9.10.2 Conformance requirement

When the UE in GMM-SERVICE-REQUEST-INITIATED state is switched off, UE shall:

- perform PS detach procedure.

#### Reference

TS 24.008 clauses 4.7.13.5

#### 12.9.10.3 Test purpose

To test the behavior of the UE in case of collision between Service request procedure and "powered off".

#### 12.9.10.4 Method of test

#### Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

#### Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

UE operation mode C Yes/No

Switch off on button Yes/No

### Test procedure

The UE is switched off after initiating a Service request procedure. A PS detach is automatically performed by the UE before power is switched off.

### Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The following message are sent and shall be received on cell A.
2	SS			The UE is set in UE operation mode C (see ICS).
3	UE			The SS is set in network operation mode II and activates cell A.
4	->		ATTACH REQUEST	The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE. Attach type = 'PS attach' Mobile identity = P-TMSI-1 Routing area identity = RAI-1
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	
4c	SS			The SS starts ciphering and integrity protection.
5	<-		ATTACH ACCEPT	No new mobile identity assigned. P-TMSI and P-TMSI signature not included. Routing area identity = RAI-1 Attach result = 'PS only attached'
6	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
7	->		SERVICE REQUEST	Service type = "signalling"
8	UE			The UE is powered off and initiates a PS detach (with power off) by MMI or by AT command.
9	->		DETACH REQUEST	Detach type = 'power switched off, PS detach'

### Specific message contents

None.

#### 12.9.10.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step7, UE shall:

- perform the service request procedure

At step9, when the UE is switched off during the Service Request procedure, UE shall;

- abort the Service request procedure.
- perform the PS detach procedure.

## 12.9.11 Service Request / Abnormal cases / Service request procedure collision

12.9.11.1 Definition

12.9.11.2 Conformance requirement

Abnormal cases in the MS

The following abnormal cases can be identified:

- Procedure collision

If the MS receives a DETACH REQUEST message from the network in state GMM-SERVICE-REQUEST-INITIATED, the GPRS detach procedure shall be progressed and the Service request procedure shall be aborted. If the cause IE, in the DETACH REQUEST message, indicated a "reattach request", the GPRS attach procedure shall be performed.

Reference

TS 24.008 clauses 4.7.13.5

12.9.11.3 Test purpose

To test the behaviour of the UE in case of collision between Service request procedure and PS detach procedure.

12.9.11.4 Method of test

Initial condition

System Simulator:

One cell operating in network operation mode II.

User Equipment:

The UE has a valid P-TMSI-1 and RAI-1.

Related ICS/IXIT statements

Support of PS service Yes/No

UE operation mode A Yes/No

UE operation mode C Yes/No

Switch off on button Yes/No

Test procedure

- The UE sends a SERVICE REQUEST message to the SS in order to establish the PS signalling connection for the upper layer signalling.
- The SS does not respond to the SERVICE REQUEST for data. Instead it sends a DETACH REQUEST message to the UE, with the Detach type IE set to value "re-attach required".
- After the UE receives the DETACH REQUEST message, the repeats the attach procedure.
- The UE is switched off or power is removed. If the UE is switched off it sends a DETACH REQUEST.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The following message are sent and shall be received on cell A.
2	SS			The UE is set in UE operation mode C (see ICS).
3	UE			The SS is set in network operation mode II and activates cell A.
4	->		ATTACH REQUEST	The UE is powered up or switched on and initiates an attach (see ICS). Cell A is preferred by the UE.
4a	<-		AUTHENTICATION AND CIPHERING REQUEST	Attach type = 'PS attach'
4b	->		AUTHENTICATION AND CIPHERING RESPONSE	Mobile identity = P-TMSI-1
4c	SS			Routing area identity = RAI-1
5	<-		ATTACH ACCEPT	The SS starts ciphering and integrity protection.
6			Void	No new mobile identity assigned.
7a	UE			P-TMSI and P-TMSI signature not included.
7b	->		SERVICE REQUEST	Routing area identity = RAI-1
7c	SS			Attach result = 'PS only attached'
7d	SS			
7e	UE			The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
8	->		SERVICE REQUEST	Service type = "signalling"
9	SS			The SS starts ciphering and integrity protection.
10	<-		DETACH REQUEST	The SS initiates a Radio Bearer release procedure.
10a	->		DETACH ACCEPT	The UE initiates an upper-layer signalling, e.g., Active PDP Context request, by MMI or by AT command.
11	->		ATTACH REQUEST	Service type = "data"
11a	<-		AUTHENTICATION AND CIPHERING REQUEST	The SS does not respond to SERVICE REQUEST message.
11b	->		AUTHENTICATION AND CIPHERING RESPONSE	Detach type = "re-attach required"
11c	SS			
12	<-		ATTACH ACCEPT	Attach type = 'PS attach'
13	->		ATTACH COMPLETE	Mobile identity = P-TMSI-1
14	UE			Routing area identity = RAI-1
15	->		DETACH REQUEST	Attach result = 'PS only attached'

## Specific message contents

None.

## 12.9.11.5 Test requirements

At step4, when the UE is powered on or switched on, UE shall:

- initiate the PS attach procedure with information elements specified in the above Expected Sequence.

At step11, when the UE receives a DETACH REQUEST message from the network before the Service request procedure completes, UE shall;

- repeat the attach procedure.
- retry the Service request procedure

At step 19 if the UE is switched off, UE shall:

- perform the PS detach procedure.

---

## 13 General Tests

### 13.1 Emergency call / general

In this clause, the emergency call service is tested for user equipment that support Emergency speech call in the following cases:

- emergency call initiated in the MM idle state with authentication and security;
- emergency call initiated in the MM idle, no IMSI state (hence without authentication and without security), the network accepting the call;
- emergency call initiated in the MM idle, no IMSI state (hence without authentication and without security), the network rejecting the call.

These tests on emergency calls are only applicable to an UE supporting Emergency speech call.

### 13.2 Emergency call

Emergency call establishment can be initiated by an UE whether location updating has been successful or not and whether a USIM is inserted into the UE or not; but only if the UE is equipped for speech.

If the procedures tested in this clause are not correctly implemented in the UE, establishment, maintenance and clearing of connections might fail in the essential case of emergency calls.

The tests of this clause are only applicable to an UE supporting Emergency speech call.

#### 13.2.1 Emergency call / with USIM

##### 13.2.1.1 Emergency call / with USIM / accept case

###### 13.2.1.1.1 Definition

When a USIM is present, subscriber specific emergency call set-up MMI shall be provided. The operator shall specify preferred emergency call MMI(s) (e.g. 911 for US citizens or 110, 118 and 119 for Japanese citizens) for use in any (i.e. home or visited) PLMN. This shall be stored in the USIM and the UE shall read this and use any entry of these digits to set up an emergency call. It shall be possible to store more than one instance of this field.

When a USIM containing stored emergency numbers is present, only those numbers are identified as emergency numbers, i.e. default emergency numbers stored in the UE are ignored.

###### 13.2.1.1.2 Conformance requirement

- 1) The UE in the "MM idle" state, as after a successful location update, after the emergency call number has been entered by user, shall send a RRC CONNECTION REQUEST message with correct establishment cause ("emergency call").
- 2) After assignment of a dedicated channel the first layer message sent by the UE on the assigned dedicated channel shall be a CM SERVICE REQUEST message specifying the correct CKSN and TMSI, with CM Service Type "emergency call establishment".
- 3) Authentication and security mode setting shall be performed successfully.
- 4) After security mode setting acceptance by the network, the UE shall send an EMERGENCY SETUP message.
- 5), 6) The emergency call shall be correctly established. The assignment procedure shall be correctly performed.
- 7) After receipt of a CONNECT ACKNOWLEDGE message during correct establishment of the emergency call the DTCH shall be through connected in both directions if an appropriate DTCH is available.

- 8) The call shall be cleared correctly.

**Reference(s):**

- For conformance requirement 1 and 2: TS 25.331 clause 8.1.3, TS 24.008 clause 5.2.1, TS 24.008 clause 4.5.1.5, TS 22.010 clause 8.
- For conformance requirement 3: TS 25.331, clause 8.1.12, TS 24.008 clause 4.3.2.
- For conformance requirement 4: TS 24.008, clause 5.2.1.
- For conformance requirement 5 and 6: TS 25.331, clause 8.2.2.
- For conformance requirement 7: TS 24.008, clause 5.2.1.6.
- For conformance requirement 8: TS 24.008, clause 5.4.

**13.2.1.1.3 Test purpose**

- 1) To verify that an UE supporting speech in the state "MM idle", when made to call the emergency call number, sends a RRC CONNECTION REQUEST message with establishment cause "emergency call".
- 2) To verify that after assignment of a dedicated channel the first layer message sent by the UE on the assigned dedicated channel is a CM SERVICE REQUEST message specifying the correct CKSN and TMSI, with CM Service Type "emergency call establishment".
- 3) To verify that authentication and security mode setting are performed successfully.
- 4) To verify that after security mode setting acceptance by the SS, the UE sends an EMERGENCY SETUP message.
- 5) To verify that subsequently, the SS having sent a CALL PROCEEDING message and then an ALERT message and having initiated the assignment procedure of an appropriate speech traffic channel, the UE performs correctly that assignment procedure.
- 6) To verify subsequent correct performance of a connect procedure.
- 7) To verify that subsequently the UE has through connected the DTCH in both directions.
- 8) To verify that the call is cleared correctly.

**13.2.1.1.4 Method of test****Related ICS Statements**

- Emergency speech call.

**Initial Conditions**

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE is in state "MM idle" with valid TMSI and CKSN.

**Test procedure**

The UE is made to initiate an emergency call. The call is established with late assignment. Having reached the active state, the call is cleared by the SS.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The "called emergency call number" is entered.
2	-->		RRC CONNECTION REQUEST	Establishment cause is emergency call establishment.
3	<--		RRC CONNECTION SETUP	SS accepts the establishment of a RRC connection
4	-->		RRC CONNECTION SETUP COMPLETE	
5	-->		CM SERVICE REQUEST	The CM service type IE indicates "emergency call establishment".
6	<--		AUTHENTICATION REQUEST	IE Authentication Parameter AUTN shall be present in the message.
7	-->		AUTHENTICATION RESPONSE	SRES specifies correct value.
8	<--		SECURITY MODE COMMAND	SS starts deciphering after sending the message.
9	-->		SECURITY MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
10	SS			SS starts ciphering.
11	-->		EMERGENCY SETUP	
12	<--		CALL PROCEEDING	
13	<--		ALERTING	
14	<--		RADIO BEARER SETUP	The rate of the channel is that one indicated by the EMERGENCY SETUP message, if that message did not offer a choice, and the rate is the preferred one else.
15	-->		RADIO BEARER SETUP COMPLETE	
16	<--		CONNECT	
17	-->		CONNECT ACKNOWLEDGE	
18	UE			The DTCH is through connected in both directions.
19	<--		DISCONNECT	
20	-->		RELEASE	
21	<--		RELEASE COMPLETE	
22	<--		RRC CONNECTION RELEASE	
23	-->		RRC CONNECTION RELEASE COMPLETE	The main signalling link is released.

## Specific Message Contents

None.

## 13.2.2 Emergency call / without USIM

### 13.2.2.1 Emergency call / without USIM / accept case

#### 13.2.2.1.1 Definition

The following emergency numbers shall be stored in the UE for use without USIM: 000, 08, 112, 110, 118, 119, 911 and 999.

#### 13.2.2.1.2 Conformance requirement

- 1) The UE in the "MM idle, no IMSI" state, as after a successful location update, after the emergency call number has been entered by user, shall send a RRC CONNECTION REQUEST message with correct establishment cause ("emergency call").
- 2) After assignment of a dedicated channel the first layer message sent by the UE on the assigned dedicated channel shall be a CM SERVICE REQUEST message specifying the correct IMEI and a non-available CKSN, with CM Service Type "emergency call establishment".
- 3) After security mode setting acceptance by the network, the UE shall send an EMERGENCY SETUP message.
- 4), 5) The emergency call shall be correctly established. The assignment procedure shall be correctly performed.

- 6) After receipt of a CONNECT ACKNOWLEDGE message during correct establishment of the emergency call the DTCH shall be through connected in both directions if an appropriate DTCH is available.
- 7) The call shall be cleared correctly.

#### Reference(s):

- For conformance requirement 1 and 2: TS 25.331 clause 8.1.3, TS 24.008 clause 5.2.1, TS 24.008 clause 4.5.1.5, TS 22.010 clause 8.
- For conformance requirement 3: TS 24.008, clause 5.2.1.
- For conformance requirements 4 and 5: TS 25.331, clause 8.2.2.
- For conformance requirement 6: TS 24.008, clause 5.2.1.6.
- For conformance requirement 7: TS 24.008, clause 5.4.

#### 13.2.2.1.3 Test purpose

- 1) To verify that the UE in the "MM idle, no IMSI" state (no USIM inserted) when made to call the emergency call number, sends a RRC CONNECTION REQUEST message with establishment cause "emergency call".
- 2) To verify that after assignment of a dedicated channel the first layer message sent by the UE on the assigned dedicated channel is a CM SERVICE REQUEST message in which the security key sequence number IE indicates "no key is available", the CM service type IE indicates "emergency number establishment", and the mobile identity IE specifies the IMEI of the UE.
- 3) To verify that after receipt of a CM SERVICE ACCEPT message from the SS, the UE sends an EMERGENCY SETUP message.
- 4) To verify that subsequently, the SS having sent a CALL PROCEEDING message and then an ALERT message and having initiated the assignment procedure of an appropriate speech traffic channel, the UE performs correctly that assignment procedure.
- 5) To verify subsequent correct performance of a connect procedure.
- 6) To verify that subsequently the UE has through connected the DTCH in both directions.
- 7) To verify that the call is cleared correctly.

#### 13.2.2.1.4 Method of test

##### Related ICS Statements

- Emergency speech call

##### Initial Conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE is in MM-state "MM idle, no IMSI", no USIM inserted.

##### Test procedure

The UE is made to initiate an emergency call. The call is established without authentication, without security, with late assignment. Having reached the active state, the call is cleared by the SS.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1		UE		The "called emergency call number" is entered.
2	-->		RRC CONNECTION REQUEST	Establishment cause is "emergency call".
3	<--		RRC CONNECTION SETUP	SS accepts the establishment of a RRC connection
4	-->		RRC CONNECTION SETUP COMPLETE	
5	-->		CM SERVICE REQUEST	The CM service type IE indicates "emergency call establishment". The mobile identity IE specifies the IMEI of the UE. The cipher key sequence number IE indicates "no key is available".
6	<--		CM SERVICE ACCEPT	
7	-->		EMERGENCY SETUP	
8	<--		CALL PROCEEDING	
9	<--		ALERTING	
10	<--		RADIO BEARER SETUP	The rate of the channel is one indicated by the EMERGENCY SETUP message.
11	-->		RADIO BEARER SETUP COMPLETE	
12	<--		CONNECT	
13	-->		CONNECT ACKNOWLEDGE	
14	UE			The DTCH is through connected in both directions.
15	<--		DISCONNECT	
16	-->		RELEASE	
17	<--		RELEASE COMPLETE	
18	<--		RRC CONNECTION RELEASE	
19	-->		RRC CONNECTION RELEASE COMPLETE	The main signalling link is released

## Specific Message Contents

None.

## 13.2.2.2 Emergency call / without USIM / reject case

## 13.2.2.2.1 Definition

The following emergency numbers shall be stored in the UE for use without USIM: 000, 08, 112, 110, 118, 119, 911 and 999.

## 13.2.2.2.2 Conformance requirement

- 1) The UE in the "MM idle, no IMSI" state (no USIM inserted), after the emergency call number has been entered, shall send a RRC CONNECTION REQUEST message with correct establishment cause ("emergency call").
- 2) After assignment of a dedicated channel the first layer message sent by the UE on the assigned dedicated channel shall be a CM SERVICE REQUEST message specifying the correct IMEI and a non-available CKSN, with CM Service Type "emergency call establishment".
- 3) In the situation at the end of test purpose 2, when the UE receives a CM SERVICE REJECT message, it shall abandon the emergency call.

## Reference(s):

- For conformance requirement 1 and 2: TS 25.331 clause 8.1.3, TS 24.008 clause 5.2.1, TS 24.008 clause 4.5.1.5, TS 22.010 clause 8.
- For conformance requirement 3: TS 24.008 clause 4.5.1.5.

## 13.2.2.2.3 Test purpose

- 1) To verify that the UE in the "MM idle, no IMSI" state (no USIM inserted) when made to call the emergency call number, sends a RRC CONNECTION REQUEST message with establishment cause "emergency call".
- 2) To verify that after assignment of a dedicated channel the first layer message sent by the UE on the assigned dedicated channel is a CM SERVICE REQUEST message in which the security key sequence number IE indicates "no key is available", the CM service type IE indicates "emergency call establishment", and the mobile identity IE specifies the IMEI of the UE.
- 3) To verify that after receipt of a CM SERVICE REJECT message from the SS, the UE abandons the emergency call establishment.

## 13.2.2.2.4 Method of test

## Related ICS statements

- Emergency speech call.

## Initial Conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE is in state "MM idle, no IMSI", no USIM inserted.

## Test procedure

The UE is made to initiate an emergency call. The call is established without authentication, without security, with early assignment. The SS responds to the CM SERVICE REQUEST from the UE with a CM SERVICE REJECT message specifying in the reject cause IE the reject cause value "IMEI not accepted". The SS then verifies for during 5 seconds that the UE does not send a layer 3 message. Then the call is cleared by the SS. The SS verifies during 20 seconds after disconnection of the main signalling link that the UE does not initiate a RRC connection establishment.

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1	UE			The "called emergency call number" is entered.
2	-->		RRC CONNECTION REQUEST	Establishment cause is "emergency call".
3	<--		RRC CONNECTION SETUP	SS accepts the establishment of a RRC connection
4	-->		RRC CONNECTION SETUP COMPLETE CM SERVICE REQUEST	The CM service type IE indicates "emergency call establishment". The mobile identity IE specifies the IMEI of the UE. The cipher key sequence number IE indicates "no key is available".
6	<--		CM SERVICE REJECT	the reject cause IE specifies reject cause value #5, "IMEI not accepted".
7		SS		During 5 seconds, the SS verifies that the UE does not send L3 messages.
8	<--		RRC CONNECTION RELEASE	
9	-->		RRC CONNECTION RELEASE COMPLETE	The main signalling link is released.
10		SS		During 20 seconds, the SS verifies that the UE does not initiate a RRC connection establishment

## Specific Message Contents:

None.

## 14 Interoperability Radio Bearer Tests

### 14.1 General information for interoperability radio bearer tests

The purpose of the interoperability radio bearer test cases are to ensure interoperability of UE's in different regions and networks. For this purpose representative radio bearer configurations that will be used in real network implementations have been defined in TS 34.108 [9], clause 6.10.

The applicability of radio bearer tests is dependent on the UE uplink and downlink radio access capabilities and UE support tele- and bearer-services. See TS 34.123-2, annex B for applicability of the specific test cases.

#### 14.1.1 Generic radio bearer test procedure for single RB configurations

This procedure is used to test single radio bearer configurations and speech only radio bearers. For testing of multiple radio bearer combinations as well as for testing simultaneous transmission and reception of user data and signalling data then the procedure as specified in 14.1.2 should be used.

##### Initial conditions

UE in idle mode

##### Test procedure

- a) The SS establish setup the reference radio bearer configuration as specified in TS 34.108, clause 6.10 for the actual radio bearer test.
- b) The SS limits the UE allowed uplink transport format combinations according to the "Restricted UL TFCIs", as specified for the sub-test of the actual radio bearer test, using the RRC transport format combination control procedure. See note 1.
- c) The SS closes the test loop using UE test loop mode 1 and setting the UL RLC SDU size parameter, for all radio bearers under test, according to the "UL RLC SDU size" value as specified for the sub-test of the actual radio bearer test. See note 2.
- d) The SS transmits, for all radio bearers under test, one or more RLC SDUs having the size equal to the "Test data size" as specified for the sub-test of the actual radio bearer test. See note 3.
- e) The SS checks that, for all radio bearers under test, the content of the received RLC SDU has the correct content and is received having the correct transport format. See TS 34.109 [10] clause 5.3.2.6.2 for details regarding the UE loopback of RLC SDUs.
- f) The SS opens the UE test loop.
- g) Steps b) to f) are repeated for all sub-tests
- h) The SS may optionally release the radio bearer.
- i) The SS may optionally deactivate the radio bearer test mode.

NOTE 1: The restricted set of TFCIs shall contain all possible TFCI that could happen in a sub-test. The actual TTI of the different radio bearers and signaling radio bearers as well as the possible UE processing delays shall be taken into consideration.

NOTE 2: Selection of UL RLC SDU size parameter:

For the case when the reference radio bearer configuration under test uses RLC transparent mode in downlink and is not configured for segmented operation then the radio bearer test case shall set the UL RLC SDU size equal to the UL RLC PDU size. See [7] TS 25.322 for details regarding UE operation in RLC transparent mode. In case the reference radio bearer configuration under test does not use RLC transparent mode then the UL RLC SDU size parameter shall be selected to achieve loop back of all test data received in the DL RLC SDU, i.e. the UL RLC SDU size is set to the nearest multiple of the payload size of the UL TF under test minus the size of the length indicator and expansion bit which is equal or bigger than the test data size. For some reference radio bearer configurations this may cause the UE to return the UL RLC SDU in more than one TTI, i.e. in case no UL TF is available to cover the UL RLC SDU size. However, as the test procedure only send downlink test data once there is no risk for the UE transmission buffer to become full even if the returned RLC SDUs need to be transmitted in more than one TTI.

NOTE 3: Selection of test data size:

For the case when the reference radio bearer configuration under test uses RLC transparent mode in downlink and is not configured for segmented operation then the radio bearer test case shall use a DL RLC SDU size (defined by the "Test data size" parameter) equal to the DL RLC PDU size. See [7] TS 25.322 for details regarding UE operation in RLC transparent mode. In case the reference radio bearer configuration under test does not use RLC transparent mode in downlink, the DL RLC SDU size/ test data size shall be set equal to the payload size of the DL TF under test minus the size of the length indicator and the expansion bit.

Expected sequence

#### CS paging procedure

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION (BCCH)	Broadcast
2	<--		PAGING TYPE 1 (PCCH)	Paging (CS domain, TMSI)
3	-->		RRC CONNECTION REQUEST (CCCH)	RRC
4	<--		RRC CONNECTION SETUP (CCCH)	RRC
5	-->		RRC CONNECTION SETUP COMPLETE (DCCH)	RRC
6	-->		PAGING RESPONSE (DCCH)	RR

#### PS paging procedure

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION (BCCH)	Broadcast
2	<--		PAGING TYPE 1 (PCCH)	Paging (PS domain, P-TMSI)
3	-->		RRC CONNECTION REQUEST (CCCH)	RRC
4	<--		RRC CONNECTION SETUP (CCCH)	RRC
5	-->		RRC CONNECTION SETUP COMPLETE (DCCH)	RRC
6a	-->		SERVICE REQUEST (DCCH)	GMM
6b	<--		SECURITY MODE COMMAND	RRC see note 1
6c	-->		SECURITY MODE COMPLETE	RRC see note 1

Note 1 Step 6b and Step 6c are inserted in order to stop T3317 timer in the UE, which starts after transmitting SERVICE REQUEST message.

Step	Direction		Message	Comments
	UE	SS		
1..6	<--	-->	Paging	Use the CS paging procedure for testing of CS and combined CS/PS reference radio bearer configurations.  Use the PS paging procedure for testing of PS reference radio bearer configurations.
7	<--		ACTIVATE RB TEST MODE (DCCH)	TC
8	-->		ACTIVATE RB TEST MODE COMPLETE (DCCH)	TC
9	<--		RADIO BEARER SETUP (DCCH)	RRC
10	-->		RADIO BEARER SETUP COMPLETE (DCCH)	RRC
11	<--		TRANSPORT FORMAT COMBINATION CONTROL (DCCH)	RRC Transport format combinations is limited to "Restricted UL TFCIs", as specified for the sub-test
12	<--		CLOSE UE TEST LOOP (DCCH)	TC UE test mode 1 RLC SDU size is for every active radio bearer set to "UL RLC SDU size", as specified for the sub-test.
13	-->		CLOSE UE TEST LOOP COMPLETE (DCCH)	TC
14	<--		DOWNLINK RLC SDU	Send test data using the downlink transport format combination under test
15	-->		UPLINK RLC SDU	
16	<--		OPEN UE TEST LOOP (DCCH)	TC
17	-->		OPEN UE TEST LOOP COMPLETE (DCCH)	TC
18			Repeat steps 11 to 17 for every sub-test.	
19			RB RELEASE	RRC Optional step
20	<--		DEACTIVATE RB TEST MODE	TC Optional step
21	-->		DEACTIVATE RB TEST MODE COMPLETE	TC Optional step

## 14.1.2 Generic test procedure for testing multi-RB combinations and simultaneous signalling

This procedure is used to test multiple radio bearer combinations. This procedure is also used to verify simultaneous transmission and reception of user data and signalling data.

Initial conditions

UE in idle mode

Test procedure

- a) The SS establish the reference radio bearer configuration as specified in TS 34.108, clause 6.10 for the actual radio bearer test. For the case when the reference radio bearer configuration includes radio bearers for both CS and PS domain then the radio bearer setup procedure has to be performed once per domain. The first radio bearer setup procedure shall perform configuration of the physical channel for the radio bearer combination under test as well as the transport channels for the PS radio bearer(s). If only one physical channel is used then the second radio bearer setup procedure shall not perform any physical channel configuration, but only perform the transport channel configuration of the additional CS radio bearer(s) as well as map these transport channels to the existing physical channel.
- b) The SS limits the UE allowed uplink transport format combinations according to the "Restricted UL TFCIs", as specified for the sub-test of the actual radio bearer test, using the RRC transport format combination control procedure. See note 1.

- c) The SS closes the test loop using UE test loop mode 1 and setting the UL RLC SDU size parameter, for all radio bearers under test, according to the "UL RLC SDU size" value as specified for the sub-test of the actual radio bearer test. See note 2.
- d) The SS starts transmitting continuous test data for all radio bearers under test. The number of RLC SDUs to transmit every TTI and the size "Test data size" is specified for each sub-test of the actual radio bearer test. See note 3.
- e) The SS waits the time T1 equal to 12 times the largest TTI. See note 4
- f) SS transmit a MEASUREMENT CONTROL message requesting periodic reporting with a period of T2.
- g) SS waits the time equal to 2 times T2
- h) During step e) to g) the SS checks that, for all radio bearers under test, the content of the received RLC SDUs have the correct content and is received having the correct transport format. See TS 34.109 [10] clause 5.3.2.6.2 for details regarding the UE loopback of RLC SDUs.
- i) The SS opens the UE test loop.
- j) Steps b) to i) are repeated for all sub-tests
- h) The SS may optionally release the radio bearer.
- i) The SS may optionally deactivate the radio bearer test mode.

NOTE 1: The restricted set of TFCIs shall contain all possible TFCI that could happen in a sub-test. The actual TTI of the different radio bearers and signaling radio bearers as well as the possible UE processing delays shall be taken into consideration.

NOTE 2: Selection of UL RLC SDU size parameter:

For the case when the reference radio bearer configuration under test uses RLC transparent mode in downlink and is not configured for segmented operation then the radio bearer test case shall set the UL RLC SDU size equal to the UL RLC PDU size. See [7] TS 25.322 for details regarding UE operation in RLC transparent mode. In case the reference radio bearer configuration under test does not use RLC transparent mode then, as the test procedure is based on continuous downlink transmission of test data in sub-subsequent TTIs, the UL RLC SDU size parameter shall be selected to adapt to the uplink data rate and to the uplink/downlink TTI ratio. Selection of UL RLC SDU size for the different radio bearers under test should be such that the UE returns data in sub-subsequent TTIs without causing the UE transmission buffer to become full. To achieve this the UL RLC SDU size shall be set to UL TF payload size under test, minus the size of length indicator and expansion bit, and divided by the ratio between downlink and uplink TTI. E.g. for a AM radio bearer having the the uplink RLC payload size equal to 320, the downlink TTI equal to 10 ms, and the uplink TTI equal to 20 ms, then for the transport format 4x336 (TF payload size =  $4 \times 320 = 1280$  bits) the UL RLC SDU size parameter should be set to 632 bits ( $= 1280 \text{ bits} / (20 \text{ ms} / 10 \text{ ms}) - 8 \text{ bits}$ ).

NOTE 3: Selection of test data size:

For the case when the reference radio bearer configuration under test uses RLC transparent mode in downlink and is not configured for segmented operation then the radio bearer test case shall use a DL RLC SDU size (defined by the "Test data size" parameter) equal to the DL RLC PDU size. See [7] TS 25.322 for details regarding UE operation in RLC transparent mode. In case the reference radio bearer configuration under test does not use RLC transparent mode in downlink, the DL RLC SDU size/ test data size shall be set equal to the payload size of the DL TF under test minus the size of the length indicator and the expansion bit.

NOTE 4: [10] TS 34.109 clause 5.3.2.9 defines the loopback delay requirement for UE test loop mode 1 to be max 10 times actual TTI of a radio bearer when RLC and MAC is operated in transparent mode. As RLC/MAC may be operated in non-transparent modes depending on the actual reference radio bearer configuration to be tested an additional 2 TTI have been added to secure that UE starts transmitting data in uplink before SS transmit the MEASUREMENT CONTROL message.

Expected sequence

### CS paging procedure

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION (BCCH)	Broadcast
2	<--		PAGING TYPE 1 (PCCH)	Paging (CS domain, TMSI)
3	-->		RRC CONNECTION REQUEST (CCCH)	RRC
4	<--		RRC CONNECTION SETUP (CCCH)	RRC
5	-->		RRC CONNECTION SETUP COMPLETE (DCCH)	RRC
6	-->		PAGING RESPONSE (DCCH)	RR

### PS paging procedure

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION (BCCH)	Broadcast
2	<--		PAGING TYPE 1 (PCCH)	Paging (PS domain, P-TMSI)
3	-->		RRC CONNECTION REQUEST (CCCH)	RRC
4	<--		RRC CONNECTION SETUP (CCCH)	RRC
5	-->		RRC CONNECTION SETUP COMPLETE (DCCH)	RRC
6a	-->		SERVICE REQUEST (DCCH)	GMM
6b	<--		SECURITY MODE COMMAND	RRC see note 1
6c	-->		SECURITY MODE COMPLETE	RRC see note 1

Note 1 Step 6b and Step 6c are inserted in order to stop T3317 timer in the UE, which starts after transmitting SERVICE REQUEST message.

Step	Direction		Message	Comments
	UE	SS		
1..6	<-- -->		Paging	Use the CS paging procedure for testing of CS and combined CS/PS reference radio bearer configurations.  Use the PS paging procedure for testing of PS reference radio bearer configurations.
7	<--		ACTIVATE RB TEST MODE (DCCH)	TC
8	-->		ACTIVATE RB TEST MODE COMPLETE (DCCH)	TC
9	<--		RADIO BEARER SETUP (DCCH)	RRC In case the reference radio bearer configuration includes radio bearers for both PS and CS domain then the physical channel and PS radio bearer(s) are configured in the first RADIO BEARER SETUP message. CS radio bearer(s) are configured in a second RADIO BEARER SETUP message, see step 10a.
10	-->		RADIO BEARER SETUP COMPLETE (DCCH)	RRC
10a				In case the reference radio bearer configuration includes radio bearers for both PS and CS domain then repeat steps 9 and 10 to configure the CS radio bearer(s)
11	<--		TRANSPORT FORMAT COMBINATION CONTROL (DCCH)	RRC Transport format combinations is limited to "Restricted UL TFCIs", as specified for the sub-test
12	<--		CLOSE UE TEST LOOP (DCCH)	TC UE test mode 1 RLC SDU size is for every active radio bearer set to "UL RLC SDU size", as specified for the sub-test.
13	-->		CLOSE UE TEST LOOP COMPLETE (DCCH)	TC
14a	<-- -->		Test data	SS sends continues test data in every TTI using the downlink transport format combination under test. The number of RLC SDUs and their sizes are specified in the actual test case.  SS checks returned data
14b			Wait T1	SS continue to send data every TTI and check the returned data for time T1 T1 = 12 times the max TTI in the actual radio bearer combination under test
15a	<-- -->  <--		Test data (DTCH) +  MEASUREMENT CONTROL (DCCH)	SS continues sending test data in every TTI. SS sends a MEASUREMENT CONTROL message simultaneously to the test data requesting periodic reporting at interval T2
15b	<-- -->  -->		Test data (DTCH) +  MEASUREMENT REPORT (DCCH)	SS continue to send data in every TTI and check the returned data for time 2xT2  SS checks that at least one MEASUREMENT REPORT message is received
16	<--		OPEN UE TEST LOOP (DCCH)	TC
17	-->		OPEN UE TEST LOOP COMPLETE (DCCH)	TC
18			Repeat steps 11 to 17 for every sub-test.	
19			RB RELEASE (DCCH)	RRC Optional step
20	<--		DEACTIVATE RB TEST MODE (DCCH)	TC Optional step
21	-->		DEACTIVATE RB TEST MODE COMPLETE (DCCH)	TC Optional step

## 14.2 Combinations on DPCH

### 14.2.1 Stand-alone UL:1.7 DL:1.7 kbps SRBs for DCCH

Test to verify establishment and signalling of stand-alone signalling reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.1.

The test case is performed by running test case 9.4.1 (Location updating / accepted) using the stand-alone signalling reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.1.

### 14.2.2 Stand-alone UL:3.4 DL:3.4 kbps SRBs for DCCH

Test to verify establishment and signalling of stand-alone signalling reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.2.

The test case is performed by running test case 9.4.1 (Location updating / accepted) using the stand-alone signalling reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.2.

### 14.2.3 Stand-alone UL:13.6 DL:13.6 kbps SRBs for DCCH

Implicitly tested.

NOTE The stand-alone UL:13.6 DL:13.6 kbps SRBs for DCCH in TS 34.108, clause 6.10.2.4.1.3 is the default signalling radio bearer used in the generic setup procedure as specified in TS 34.108 clause 7.

### 14.2.4 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

#### 14.2.4.1 Conformance requirement

The UE shall be able to establish the UTRAN requested radio bearers within the UE's signaled radio access capabilities.

The UE shall correctly transfer user data from peer to peer RLC entities according to the requested radio bearer configuration.

#### Reference(s)

3GPP TS 25.331, clause 8.2.1

3GPP TS 25.2xx series (Physical Layer)

3GPP TS 25.321 (MAC)

3GPP TS 25.322 (RLC)

#### 14.2.4.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.4.

#### 14.2.4.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x148
	TF1, bits	1x39	1x103	1x60	1x148
	TF2, bits	1x81	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x148
	TF1, bits	1x39	1x103	1x60	1x148
	TF2, bits	1x81	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 103 bits RB7: 60 bits	RB5: 39 bits RB6: No data RB7: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 81 bits RB6: 103 bits RB7: 60 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

#### 14.2.4.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x39).
  - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 or RB7.

- for sub-test 2: an RLC SDU on each of RB5, RB6 and RB7 having the same content as sent by SS

### 14.2.4a Conversational / speech / UL:(12.2 7.95 5.9 4.75) DL:(12.2 7.95 5.9 4.75) kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.

#### 14.2.4a.1 Conformance requirement

See clause 14.2.4.1.

#### 14.2.4a.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.4a.

#### 14.2.4a.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x148
	TF1, bits	1x39	1x53	1x60	1x148
	TF2, bits	1x42	1x63	N/A	N/A
	TF3, bits	1x55	1x84	N/A	N/A
	TF4, bits	1x75	1x103	N/A	N/A
	TF5, bits	1x81	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7,DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0, TF0)
UL_TFC3	(TF3, TF2, TF0, TF0)
UL_TFC4	(TF4, TF3, TF0, TF0)
UL_TFC5	(TF5, TF4, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF0, TF1)
UL_TFC9	(TF3, TF2, TF0, TF1)
UL_TFC10	(TF4, TF3, TF0, TF1)
UL_TFC11	(TF5, TF4, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x148
	TF1, bits	1x39	1x53	1x60	1x148
	TF2, bits	1x42	1x63	N/A	N/A
	TF3, bits	1x55	1x84	N/A	N/A
	TF4, bits	1x75	1x103	N/A	N/A
	TF5, bits	1x81	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0, TF0)
DL_TFC3	(TF3, TF2, TF0, TF0)
DL_TFC4	(TF4, TF3, TF0, TF0)
DL_TFC5	(TF5, TF4, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF1)
DL_TFC7	(TF1, TF0, TF0, TF1)
DL_TFC8	(TF2, TF1, TF0, TF1)
DL_TFC9	(TF3, TF2, TF0, TF1)
DL_TFC10	(TF4, TF3, TF0, TF1)
DL_TFC11	(TF5, TF4, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 39 bits RB6: 103 bits RB7: 60 bits	RB5: 39 bits RB6: No data RB7: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 42 bits RB6: 53 bits RB7: 60 bits	RB5: 42 bits RB6: 53 bits RB7: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 55 bits RB6: 63 bits RB7: 60 bits	RB5: 55 bits RB6: 63 bits RB7: No data
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 75 bits RB6: 84 bits RB7: 60 bits	RB5: 75 bits RB6: 84 bits RB7: No data
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 bits RB6: 103 bits RB7: 60 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 14.1.1 for test procedure.

#### 14.2.4a.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x39).
  - for sub-test 2: RB5/TF2 (1x42) and RB6/TF1 (1x53)
  - for sub-test 3: RB5/TF3 (1x55) and RB6/TF2 (1x63)
  - for sub-test 4: RB5/TF4 (1x75) and RB6/TF3 (1x84)
  - for sub-test 5: RB5/TF5 (1x81), RB6/TF4 (1x103) and RB7/TF1 (1x60)

3. At step 15 the UE shall return

- for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 or RB7.
- for sub-test 2,3 and 4: an RLC SDU on RB5 and RB6 having the same content as sent by SS; and no data shall be received on RB7.
- for sub-test 5: an RLC SDU on each of RB5, RB6 and RB7 having the same content as sent by SS.

## 14.2.5 Conversational / speech / UL:10.2 DL:10.2 kbps / CS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

### 14.2.5.1 Conformance requirement

See clause 14.2.4.1.

### 14.2.5.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.5.

### 14.2.5.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	0x65(alt. 1x0)	0x99	0x40	0x148
	TF1, bits	1x39	1x99	1x40	1x148
	TF2, bits	1x65	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1, TF1)

Downlink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	1x0	0x99	0x40	0x148
	TF1, bits	1x39	1x99	1x40	1x148
	TF2, bits	1x65	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 99 bits RB7: 40 bits	RB5: 39 bits RB6: No data RB7: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 65 bits RB6: 99 bits RB7: 40 bits	RB5: 65 bits RB6: 99 bits RB7: 40 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 14.1.1 for test procedure.

#### 14.2.5.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x39).
  - for sub-test 2: RB5/TF2 (1x65); RB6/TF1 (1x99); and RB7/TF1 (1x40).
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 or RB7.
  - for sub-test 2: an RLC SDU on each of RB5, RB6 and RB7 having the same content as sent by SS.

#### 14.2.5a Conversational / speech / UL:(10.2, 6.7, 5.9, 4.75) DL:(10.2, 6.7, 5.9, 4.75) kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.

##### 14.2.5a.1 Conformance requirement

See clause 14.2.4.1.

##### 14.2.5a.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.5a.

##### 14.2.5a.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	0x65(alt. 1x0)	0x99	0x40	0x148
	TF1, bits	1x39	1x53	1x40	1x148
	TF2, bits	1x42	1x63	N/A	N/A
	TF3, bits	1x55	1x76	N/A	N/A
	TF4, bits	1x58	1x99	N/A	N/A
	TF5, bits	1x65	N/A	N/A	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7,DCCH)</b>
UL_TFC0	(TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0, TF0)
UL_TFC3	(TF3, TF2, TF0, TF0)
UL_TFC4	(TF4, TF3, TF0, TF0)
UL_TFC5	(TF5, TF4, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF0, TF1)
UL_TFC9	(TF3, TF2, TF0, TF1)
UL_TFC10	(TF4, TF3, TF0, TF1)
UL_TFC11	(TF5, TF4, TF1, TF1)

Downlink TFS:

		<b>RB5 (RAB subflow #1)</b>	<b>RB6 (RAB subflow #2)</b>	<b>RB7 (RAB subflow #3)</b>	<b>DCCH</b>
TFS	TF0, bits	1x0	0x99	0x40	0x148
	TF1, bits	1x39	1x53	1x40	1x148
	TF2, bits	1x42	1x63	N/A	N/A
	TF3, bits	1x55	1x76	N/A	N/A
	TF4, bits	1x58	1x99	N/A	N/A
	TF5, bits	1x65	N/A	N/A	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0, TF0)
DL_TFC3	(TF3, TF2, TF0, TF0)
DL_TFC4	(TF4, TF3, TF0, TF0)
DL_TFC5	(TF5, TF4, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF1)
DL_TFC7	(TF1, TF0, TF0, TF1)
DL_TFC8	(TF2, TF1, TF0, TF1)
DL_TFC9	(TF3, TF2, TF0, TF1)
DL_TFC10	(TF4, TF3, TF0, TF1)
DL_TFC11	(TF5, TF4, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 39 bits RB6: 99 bits RB7: 40 bits	RB5: 39 bits RB6: No data RB7: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 42 bits RB6: 53 bits RB7: 40 bits	RB5: 42 bits RB6: 53 bits RB7: No data
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 55 bits RB6: 63 bits RB7: 40 bits	RB5: 55 bits RB6: 63 bits RB7: No data
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 58 bits RB6: 76 bits RB7: 40 bits	RB5: 58 bits RB6: 76 bits RB7: No data
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 65 bits RB6: 99 bits RB7: 40 bits	RB5: 65 bits RB6: 99 bits RB7: 40 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 14.1.1 for test procedure.

#### 14.2.5a.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x39).
  - for sub-test 2: RB5/TF2 (1x42) and RB6/TF1 (1x53)
  - for sub-test 3: RB5/TF3 (1x55) and RB6/TF2 (1x63)
  - for sub-test 4: RB5/TF4 (1x58) and RB6/TF3 (1x76)
  - for sub-test 5: RB5/TF5 (1x65), RB6/TF4 (1x99) and RB7/TF1 (1x40)
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by the SS; and no data shall be received on RB6 or RB7.
  - for sub-test 2, 3 and 4: an RLC SDU on RB5 and RB6 having the same content as sent by the SS; and no data shall be received on RB7.
  - for sub-test 5: an RLC SDU on each of RB5, RB6 and RB7 having the same content as sent by the SS.

#### 14.2.6 Conversational / speech / UL:7.95 DL:7.95 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

##### 14.2.6.1 Conformance requirement

See clause 14.2.4.1.

## 14.2.6.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.6.

## 14.2.6.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x75 (alt. 1x0)	0x84	0x148
	TF1, bits	1x39	1x84	1x148
	TF2, bits	1x75	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x84	0x148
	TF1, bits	1x39	1x84	1x148
	TF2, bits	1x75	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitly tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 84 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 75 bits RB6: 84 bits	RB5: 75 bits RB6: 84 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 14.1.1 for test procedure.

## 14.2.6.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x39).
  - for sub-test 2: RB5/TF2 (1x75) and RB6/TF1 (1x84).
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
  - for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS.

## 14.2.7 Conversational / speech / UL:7.4 DL:7.4 kbps / CS RAB+ UL:3.4 DL:3.4 kbps SRBs for DCCH

## 14.2.7.1 Conformance requirement

See clause 14.2.4.1.

## 14.2.7.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.7.

## 14.2.7.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x61 (alt. 1x0)	0x87	0x148
	TF1, bits	1x39	1x87	1x148
	TF2, bits	1x61	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x87	0x148
	TF1, bits	1x39	1x87	1x148
	TF2, bits	1x61	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 87 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 61 bits RB6: 87 bits	RB5: 61 bits RB6: 87 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 14.1.1 for test procedure.

#### 14.2.7.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x39).
  - for sub-test 2: RB5/TF2 (1x61) and RB6/TF1 (1x87).
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
  - for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS

#### 14.2.7a Conversational / speech / UL:(7.4, 6.7, 5.9, 4.75) DL:(7.4, 6.7, 5.9, 4.75) kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.

##### 14.2.7a.1 Conformance requirement

See clause 14.2.4.1.

##### 14.2.7a.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.7a.

##### 14.2.7a.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x61(alt. 1x0)	0x87	0x148
	TF1, bits	1x39	1x53	1x148
	TF2, bits	1x42	1x63	N/A
	TF3, bits	1x55	1x76	N/A
	TF4, bits	1x58	1x87	N/A
	TF5, bits	1x61	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7,DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF3, TF2, TF0)
UL_TFC4	(TF4, TF3, TF0)
UL_TFC5	(TF5, TF4, TF0)
UL_TFC6	(TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF1)
UL_TFC8	(TF2, TF1, TF1)
UL_TFC9	(TF3, TF2, TF1)
UL_TFC10	(TF4, TF3, TF1)
UL_TFC11	(TF5, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x87	0x148
	TF1, bits	1x39	1x53	1x148
	TF2, bits	1x42	1x63	N/A
	TF3, bits	1x55	1x76	N/A
	TF4, bits	1x58	1x87	N/A
	TF5, bits	1x61	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF3, TF2, TF0)
DL_TFC4	(TF4, TF3, TF0)
DL_TFC5	(TF5, TF4, TF0)
DL_TFC6	(TF0, TF0, TF1)
DL_TFC7	(TF1, TF0, TF1)
DL_TFC8	(TF2, TF1, TF1)
DL_TFC9	(TF3, TF2, TF1)
DL_TFC10	(TF4, TF3, TF1)
DL_TFC11	(TF5, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 39 bits RB6: 87 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 42 bits RB6: 53 bits	RB5: 42 bits RB6: 53 bits
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 55 bits RB6: 63 bits	RB5: 55 bits RB6: 63 bits
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 58 bits RB6: 76 bits	RB5: 58 bits RB6: 76 bits
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 61 bits RB6: 87 bits	RB5: 61 bits RB6: 87 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 14.1.1 for test procedure.

#### 14.2.7a.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x39).
  - for sub-test 2: RB5/TF2 (1x42) and RB6/TF1 (1x53)
  - for sub-test 3: RB5/TF3 (1x55) and RB6/TF2 (1x63)
  - for sub-test 4: RB5/TF4 (1x58) and RB6/TF3 (1x76)
  - for sub-test 5: RB5/TF5 (1x61) and RB6/TF4 (1x87)
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by the SS; and no data shall be received on RB6.
  - for sub-test 2 to 5: an RLC SDU on RB5 and RB6 having the same content as sent by the SS.

### 14.2.8 Conversational / speech / UL:6.7 DL:6.7 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

#### 14.2.8.1 Conformance requirement

See clause 14.2.4.1.

#### 14.2.8.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.8.

## 14.2.8.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x58 (alt. 1x0)	0x76	0x148
	TF1, bits	1x39	1x76	1x148
	TF2, bits	1x58	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x76	0x148
	TF1, bits	1x39	1x76	1x148
	TF2, bits	1x58	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 76 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 58 bits RB6: 76 bits	RB5: 58 bits RB6: 76 bits

NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See clause 14.1.1 for test procedure.

## 14.2.8.4 Test requirements

See clause 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.

2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x39).
  - for sub-test 2: RB5/TF2 (1x58) and RB6/TF1 (1x76).
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
  - for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS

## 14.2.9 Conversational / speech / UL:5.9 DL:5.9 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

### 14.2.9.1 Conformance requirement

See clause 14.2.4.1.

### 14.2.9.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.9.

### 14.2.9.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x55 (alt. 1x0)	0x63	0x148
	TF1, bits	1x39	1x63	1x148
	TF2, bits	1x55	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x63	0x148
	TF1, bits	1x39	1x63	1x148
	TF2, bits	1x55	N/A	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

<b>Sub-test</b>	<b>Downlink TFCs under test</b>	<b>Uplink TFCs Under test</b>	<b>Implicitely tested</b>	<b>Restricted UL TFCIs</b>	<b>UL RLC SDU size</b> (note)	<b>Test data size</b> (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 63 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 55 bits RB6: 63 bits	RB5: 55 bits RB6: 63 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 14.1.1 for test procedure.

#### 14.2.9.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x39).
  - for sub-test 2: RB5/TF2 (1x55) and RB6/TF1 (1x63).
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
  - for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS

### 14.2.10 Conversational / speech / UL:5.15 DL:5.15 kbps / CS RAB + UL:1.7 DL:1.7 kbps SRBs for DCCH

#### 14.2.10.1 Conformance requirement

See clause 14.2.4.1.

#### 14.2.10.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.10.

#### 14.2.10.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x49 (alt. 1x0)	0x54	0x148
	TF1, bits	1x39	1x54	1x148
	TF2, bits	1x49	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x54	0x148
	TF1, bits	1x39	1x54	1x148
	TF2, bits	1x49	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 54 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 49 bits RB6: 54 bits	RB5: 49 bits RB6: 54 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 14.1.1 for test procedure.

#### 14.2.10.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x39).

- for sub-test 2: RB5/TF2 (1x49) and RB6/TF1 (1x54).

3. At step 15 the UE shall return

- for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
- for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS

## 14.2.11 Conversational / speech / UL:4.75 DL:4.75 kbps / CS RAB + UL:1.7 DL:1.7 kbps SRBs for DCCH

### 14.2.11.1 Conformance requirement

See clause 14.2.4.1.

### 14.2.11.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.11.

### 14.2.11.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x49 (alt. 1x0)	0x53	0x148
	TF1, bits	1x39	1x53	1x148
	TF2, bits	1x42	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x53	0x148
	TF1, bits	1x39	1x53	1x148
	TF2, bits	1x42	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 53 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 42 bits RB6: 53 bits	RB5: 42 bits RB6: 53 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 14.1.1 for test procedure.

#### 14.2.11.4 Test requirements

See clause 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x39).
  - for sub-test 2: RB5/TF2 (1x42) and RB6/TF1 (1x53).
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
  - for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS

#### 14.2.12 Conversational / unknown / UL:28.8 DL:28.8 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

##### 14.2.12.1 Conformance requirement

See 14.2.4.1.

##### 14.2.12.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.12.

## 14.2.12.3 Method of test

## Initial Conditions

The following RLC Info parameter values shall be set by the SS:

Uplink RLC TM RLC Transmission RLC discard CHOICE <i>SDU Discard Mode</i> Timer based no explicit Timer_discard Segmentation indication	100ms FALSE
Downlink RLC TM RLC Segmentation indication	FALSE
NOTE: 'Timer based discard without explicit signalling' is configured in uplink to secure that the UE will be able to return data in uplink for the case when the UE test loop function, due to processing delays, will not deliver the SDUs in one and the same TTI, but instead in two subsequent TTIs.	

## Uplink TFS:

	TFI	RB5 (28.8 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148
	TF2, bits	2x576	N/A

## Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF0, TF1)
UL_TFC4	(TF1, TF1)
UL_TFC5	(TF2, TF1)

## Downlink TFS:

	TFI	RB5 (28.8 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148
	TF2, bits	2x576	N/A

## Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF0, TF1)
DL_TFC4	(TF1, TF1)
DL_TFC5	(TF2, TF1)

Sub-tests:

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 576	RB5: 576
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 576	RB5: 2x576
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 14.1.1 for test procedure.

#### 14.2.12.4 Test requirements

See clause 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x576).
  - for sub-test 2: RB5/TF2 (2x576).
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS.
  - for sub-test 2: two RLC SDUs on RB5 having the same content as sent by SS.

### 14.2.13 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

#### 14.2.13.1 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI

##### 14.2.13.1.1 Conformance requirement

See clause 14.2.4.1.

##### 14.2.13.1.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.13 for the 20 ms TTI case.

## 14.2.13.1.3 Method of test

## Initial Conditions

The following RLC Info parameter values shall be set by the SS:

Uplink RLC TM RLC Transmission RLC discard CHOICE <i>SDU Discard Mode</i> Timer based no explicit Timer_discard Segmentation indication	100ms FALSE
Downlink RLC TM RLC Segmentation indication	FALSE
NOTE: Timer based discard without explicit signalling is used in uplink to secure that the UE will be able to return data for the case when the UE test loop function will not deliver all the SDUs in one and the same TTI .	

## Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	2x640	1x148

## Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

## Downlink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	2x640	1x148

## Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

## Sub-tests:

Sub-test	Downlink TFCs Under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 640	RB5: 2x640
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 14.1.1 for test procedure.

14.2.13.1.4 Test requirements

See clause 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (2x640).
3. At step 15 the UE shall return
  - for sub-test 1: two RLC SDUs on RB5 having the same content as sent by SS.

14.2.13.2 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI

14.2.13.2.1 Conformance requirement

See clause 14.2.4.1.

14.2.13.2.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.13 for the 40 ms TTI case.

14.2.13.2.3 Method of test

Initial Conditions

The following RLC Info parameter values shall be set by the SS:

Uplink RLC TM RLC Transmission RLC discard CHOICE <i>SDU Discard Mode</i> Timer based no explicit Timer_discard Segmentation indication	100ms FALSE
Downlink RLC TM RLC Segmentation indication	FALSE
NOTE: Timer based discard without explicit signalling is used in uplink to secure that the UE will be able to return data for the case when the UE test loop function will not deliver all the SDUs in one and the same TTI .	

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	4x640	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	4x640	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitly tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 640	RB5: 4x640

NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

#### 14.2.13.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (4x640).
3. At step 15 the UE shall return
  - for sub-test 1: four RLC SDUs on RB5 having the same content as sent by SS.

## 14.2.14 Conversational / unknown / UL:32 DL:32 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

### 14.2.14.1 Conversational / unknown / UL:32 DL:32 kbps / CS RAB / 20 ms TTI

#### 14.2.14.1.1 Conformance requirement

See 14.2.4.1.

#### 14.2.14.1.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.14 for the 20 ms TTI case.

#### 14.2.14.1.3 Method of test

#### Initial Conditions

The following RLC Info parameter values shall be set by the SS:

Uplink RLC TM RLC Segmentation indication	FALSE
Downlink RLC TM RLC Segmentation indication	FALSE

#### Uplink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	1x640	1x148

#### Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

#### Downlink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	1x640	1x148

#### Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

#### Sub-tests:

Sub-test	Downlink TFCs Under test	Uplink TFCs Under test	Implicitly tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 640	RB5: 640
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

14.2.14.1.4 Test requirements

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x640).
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS.

14.2.14.2 Conversational / unknown / UL:32 DL:32 kbps / CS RAB / 40 ms TTI

14.2.14.2.1 Conformance requirement

See 14.2.4.1.

14.2.14.2.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.14 for the 40 ms TTI case.

14.2.14.2.3 Method of test

Initial Conditions

The following RLC Info parameter values shall be set by the SS:

Uplink RLC TM RLC Transmission RLC discard CHOICE <i>SDU Discard Mode</i> Timer based no explicit Timer_discard Segmentation indication	100ms FALSE
Downlink RLC TM RLC Segmentation indication	FALSE
NOTE: Timer based discard without explicit signalling is used in uplink to secure that the UE will be able to return data for the case when the UE test loop function will not deliver all the SDUs in one and the same TTI .	

Uplink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	2x640	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x640	0x148
	TF1, bits	2x640	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitly tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 640	RB5: 2x640
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

#### 14.2.14.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (2x640).
3. At step 15 the UE shall return
  - for sub-test 1: two RLC SDUs on RB5 having the same content as sent by SS.

## 14.2.15 Streaming / unknown / UL:14.4/DL:14.4 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

### 14.2.15.1 Conformance requirement

See 14.2.4.1.

### 14.2.15.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.15.

### 14.2.15.3 Method of test

Uplink TFS:

	TFI	RB5 (14.4 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (14.4 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitly tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576	RB5: 576
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

## 14.2.15.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x576).
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS.

## 14.2.16 Streaming / unknown / UL:28.8/DL:28.8 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

## 14.2.16.1 Conformance requirement

See 14.2.4.1.

## 14.2.16.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.16.

## 14.2.16.3 Method of test

## Initial Conditions

The following RLC Info parameter values shall be set by the SS:

Uplink RLC TM RLC Transmission RLC discard CHOICE <i>SDU Discard Mode</i> Timer based no explicit Timer_discard Segmentation indication	100ms FALSE
Downlink RLC TM RLC Segmentation indication	FALSE
NOTE: Timer based discard without explicit signalling is used in uplink to secure that the UE will be able to return data for the case when the UE test loop function will not deliver all the SDUs in one and the same TTI .	

Uplink TFS:

	TFI	RB5 (28.8 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148
	TF2, bits	2x576	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, DCCH)</b>
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF0, TF1)
UL_TFC4	(TF1, TF1)
UL_TFC5	(TF2, TF1)

Downlink TFS:

		<b>RB5 (28.8 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148
	TF2, bits	2x576	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, DCCH)</b>
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF0, TF1)
DL_TFC4	(TF1, TF1)
DL_TFC5	(TF2, TF1)

Sub-tests:

<b>Sub-test</b>	<b>Downlink TFCS Under test</b>	<b>Uplink TFCS Under test</b>	<b>Implicitely tested</b>	<b>Restricted UL TFCIs</b>	<b>UL RLC SDU size (bits) (note)</b>	<b>Test data size (bits) (note)</b>
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 576	RB5: 576
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 576	RB5: 2x576
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

#### 14.2.16.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x576).
  - for sub-test 2: RB5/TF2 (2x576).
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS.
  - for sub-test 2: two RLC SDU on RB5 having the same content as sent by SS.

## 14.2.17 Streaming / unknown / UL:57.6/DL:57.6 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

### 14.2.17.1 Conformance requirement

See 14.2.4.1.

### 14.2.17.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.17.

### 14.2.17.3 Method of test

#### Initial Conditions

The following RLC Info parameter values shall be set by the SS:

Uplink RLC TM RLC Transmission RLC discard CHOICE <i>SDU Discard Mode</i> Timer based no explicit Timer_discard Segmentation indication	100ms FALSE
Downlink RLC TM RLC Segmentation indication	FALSE
NOTE: Timer based discard without explicit signalling is used in uplink to secure that the UE will be able to return data for the case when the UE test loop function will not deliver all the SDUs in one and the same TTI .	

#### Uplink TFS:

	TFI	RB5 (57.6 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148
	TF2, bits	2x576	N/A
	TF3, bits	3x576	N/A
	TF4, bits	4x576	N/A

#### Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

#### Downlink TFS:

	TFI	RB5 (57.6 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148
	TF2, bits	2x576	N/A
	TF3, bits	3x576	N/A
	TF4, bits	4x576	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5,	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 576	RB5: 576
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 576	RB5: 2x576
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 576	RB5: 3x576
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 576	RB5: 4x576

NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

#### 14.2.17.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x576).
  - for sub-test 2: RB5/TF2 (2x576).
  - for sub-test 3: RB5/TF3 (3x576).
  - for sub-test 4: RB5/TF4 (4x576).

3. At step 15 the UE shall return

- for sub-test 1: one RLC SDU on RB5 having the same content as sent by SS.
- for sub-test 2: two RLC SDU on RB5 having the same content as sent by SS.
- for sub-test 3: three RLC SDU on RB5 having the same content as sent by SS.
- for sub-test 4: four RLC SDU on RB5 having the same content as sent by SS.

### 14.2.18 Streaming / unknown / UL:0 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

#### 14.2.18.1 Conformance requirement

See 14.2.4.1.

#### 14.2.18.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.18.

To be able to test the downlink radio bearer using the UE loopback function for the reference radio bearer UL:0 DL: 64 kbps, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.1 (Streaming/unknown/UL:14.4 kbps) is used in uplink.

#### 14.2.18.3 Method of test

##### Initial Conditions

The following RLC Info parameter values shall be set by the SS:

Uplink RLC TM RLC Transmission RLC discard CHOICE <i>SDU Discard Mode</i> Timer based no explicit Timer_discard Segmentation indication	100ms FALSE
Downlink RLC TM RLC Segmentation indication	FALSE
NOTE: Timer based discard without explicit signalling is used in uplink to secure that the UE will be able to return data for the case when the UE test loop function will not deliver all the SDUs in one and the same TTI .	

Uplink TFS:

	TFI	RB5 (14.4 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x320	0x148
	TF1, bits	1x320	1x148
	TF2, bits	2x320	N/A
	TF3, bits	4x320	N/A
	TF4, bits	8x320	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitly tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576	RB5: 320
2	DL_TFC2	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576	RB5: 2x320
3	DL_TFC3	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576	RB5: 4x320
4	DL_TFC4	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 576	RB5: 8x320

NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

#### 14.2.18.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 where the first 320 bits have the same content as the RLC SDU sent by the SS.
  - for sub-test 2 to 4: one or more RLC SDUs on RB5 where the first 320 bits have the same content as the RLC SDU sent by the SS.

## 14.2.19 Streaming / unknown / UL:64 DL:0 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

### 14.2.19.1 Conformance requirement

See 14.2.4.1.

### 14.2.19.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.19.

To be able to test the uplink radio bearer using the UE loopback function for the reference radio bearer UL:64 DL: 0 kbps, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.2 (Streaming/unknown/DL:14.4 kbps) is used in downlink.

### 14.2.19.3 Method of test

#### Initial Conditions

The following RLC Info parameter values shall be set by the SS:

Uplink RLC TM RLC Segmentation indication	TRUE
Downlink RLC TM RLC Segmentation indication	TRUE

#### Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x320	0x148
	TF1, bits	1x320	1x148
	TF2, bits	2x320	N/A
	TF3, bits	4x320	N/A
	TF4, bits	8x320	N/A

#### Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

#### Downlink TFS:

	TFI	RB5 (14.4 kbps)	DCCH
TFS	TF0, bits	0x576	0x148
	TF1, bits	1x576	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 320	RB5: 576 (note 2)
2	DL_TFC1	UL_TFC2	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 640	RB5: 576 (note 3)
3	DL_TFC1	UL_TFC3	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1280	RB5: 576 (note 4)
4	DL_TFC1	UL_TFC4	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2560	RB5: 576 (note 5)

NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  
NOTE 2: SS is using a DL RLC SDU with 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return the first 320 bits of the test data.  
NOTE 3: SS is using a DL RLC SDU size of 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return an RLC SDU repeating the received DL RLC SDU two times (truncating the last one to fit the UL RLC SDU size of 640 bits).  
NOTE 4: SS is using a DL RLC SDU size of 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return an RLC SDU repeating the received DL RLC SDU three times (truncating the last one to fit the UL RLC SDU size of 1280 bits).  
NOTE 5: SS is using a DL RLC SDU size of 576 bits as test data (=DL RLC PDU size for DL/TF1). UE will return an RLC SDU repeating the received DL RLC SDU five times (truncating the last one to fit the UL RLC SDU size of 2560 bits).

See 14.1.1 for test procedure.

#### 14.2.19.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x320).
  - for sub-test 2: RB5/TF2 (2x320).
  - for sub-test 3: RB5/TF3 (4x320).

- for sub-test 4: RB5/TF4 (8x320).

3. At step 15 the UE shall return

- for sub-test 1: an RLC SDU on RB5 having the same content as the first 320 bits of the DL RLC SDU sent by the SS.
- for sub-test 2: an RLC SDU on RB5 for which the first 576 bits are equal to the sent DL RLC SDU bit pattern and the remaining 64 bits are equal to the first 64 bits of the sent DL RLC SDU.
- for sub-test 3: an RLC SDU on RB5 for which the first 1152 bits are equal to the sent DL RLC SDU bit pattern repeated twice and the remaining 128 bits are equal to the first 128 bits of the sent DL RLC SDU.
- for sub-test 4: an RLC SDU on RB5 for which the first 2304 bits are equal to the sent DL RLC SDU bit pattern repeated four times and the remaining 256 bits are equal to the first 256 of the sent DL RLC SDU.

## 14.2.20 Void

## 14.2.21 Void

## 14.2.22 Void

## 14.2.23 Interactive or background / UL:32 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

### 14.2.23.1 Interactive or background / UL:32 DL:8 kbps / PS RAB / (TC,10 ms TTI)

#### 14.2.23.1.1 Conformance requirement

See 14.2.4.1.

#### 14.2.23.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.23 for the turbo channel coding and uplink 10 ms TTI case.

#### 14.2.23.1.3 Method of test

Uplink TFS:

	<b>TFI</b>	<b>RB5 (32 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, DCCH)</b>
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (8 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 312	RB5: 312
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

#### 14.2.23.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

#### 14.2.23.2 Interactive or background / UL:32 DL:8 kbps / PS RAB / (TC, 20 ms TTI)

##### 14.2.23.2.1 Conformance requirement

See 14.2.4.1.

##### 14.2.23.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.23 for the turbo channel coding and uplink 20 ms TTI case.

##### 14.2.23.2.3 Method of test

Uplink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF0, TF1)
UL_TFC4	(TF1, TF1)
UL_TFC5	(TF2, TF1)

Downlink TFS:

	TFI	RB5 (8 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 312	RB5: 312
2	DL_TFC1	UL_TFC2	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 632	RB5: 632
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

#### 14.2.23.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).

3. At step 15 the UE shall return

- for sub-test 1 and 2: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

#### 14.2.23.3 Interactive or background / UL:32 DL:8 kbps / PS RAB / (CC, 10 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.23 for the convolutional channel coding and uplink 10 ms TTI case.

See test case 14.2.23.1 for test procedure and test requirement.

#### 14.2.23.4 Interactive or background / UL:32 DL:8 kbps / PS RAB / (CC, 20 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.23 for the convolutional channel coding and uplink 20 ms TTI case.

See test case 14.2.23.2 for test procedure and test requirement.

### 14.2.23a Interactive or background / UL:8 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.

14.2.23a.1 Conformance requirement

See 14.2.4.1.

14.2.23a.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.23a.

14.2.23a.3 Method of test

See 14.1.1 for test procedure.

Uplink TFS:

	TFI	RB5 (8 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148

Uplink TFCS:

TFCI	(8 kbps RAB, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

		RB5 (8 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148

Downlink TFCS:

<b>TFCI</b>	<b>(8 kbps RAB, DCCH)</b>
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

<b>Sub-test</b>	<b>Downlink TFCs Under Test</b>	<b>Uplink TFCs Under test</b>	<b>Implicitely tested</b>	<b>Restricted UL TFCs</b>	<b>UL RLC SDU size (bits) (note)</b>	<b>Test data size (bits) (note)</b>
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC2,	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 312	RB5: 312
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB5: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size has been set equal to the uplink TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit).						

#### 14.2.23a.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

#### 14.2.23b Interactive or background / UL:16 DL:16 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.

##### 14.2.23b.1 Conformance requirement

See clause 14.2.4.1.

##### 14.2.23b.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.23b.

##### 14.2.23b.3 Method of test

Uplink TFS:

	<b>TFI</b>	<b>RB5 (16 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF0, TF1)
UL_TFC4	(TF1, TF1)
UL_TFC5	(TF2, TF1)

Downlink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF0, TF1)
DL_TFC4	(TF1, TF1)
DL_TFC5	(TF2, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, UL_TFC0 DL_TFC3,UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 312	RB5: 312
2	DL_TFC2	UL_TFC2	DL_TFC0, UL_TFC0 DL_TFC3 ,UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 632	RB5: 632
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB5: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size has been set equal to the size of the payload size of the UL TF under test minus 8 bits (the size of 7 bit length indicator and expansion bit).						

See 14.1.1 for test procedure.

14.2.23b.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send a RADIO BEARER SETUP COMPLETE message.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).

3. At step 15 the UE shall return

- for sub-test 1 and 2: an RLC SDU on RB5 having the same content as sent by the SS.

### 14.2.23c Interactive or background / UL:32 DL:32 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.23c.

14.2.23c.1 Conformance requirement

See 14.2.4.1.

14.2.23c.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.23c.

14.2.23c.3 Method of test

Uplink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, DCCH)</b>
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

<b>Sub-test</b>	<b>Downlink TFCS Under test</b>	<b>Uplink TFCS Under test</b>	<b>Implicitely tested</b>	<b>Restricted UL TFCIs</b>	<b>UL RLC SDU size (bits) (note)</b>	<b>Test data size (bits) (note)</b>
1	DL_TFC1	UL_TFC1	DL_TFC0, UL_TFC0 DL_TFC5, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312	RB5: 312
2	DL_TFC2	UL_TFC2	DL_TFC0, UL_TFC0 DL_TFC5, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632	RB5: 632
3	DL_TFC3	UL_TFC3	DL_TFC0, UL_TFC0 DL_TFC5, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 952	RB5: 952
4	DL_TFC4	UL_TFC4	DL_TFC0, UL_TFC0 DL_TFC5, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 1272	RB5: 1272
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. For RB5: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size has been set equal to the size of the payload size of the UL TF under test minus 8 bits (the size of 7 bit length indicator and expansion bit).</p>						

See 14.1.1 for test procedure.

#### 14.2.23c.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send a RADIO BEARER SETUP COMPLETE message.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (3x336).
  - for sub-test 4: RB5/TF4 (4x336).

3. At step 15 the UE shall return

- for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

### 14.2.23d Interactive or background / UL:32 DL:32 kbps / PS RAB (20 ms TTI) + UL:3.4 DL:3.4 kbps SRBs for DCCH.

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.23d.

### 14.2.24 Interactive or background / UL:64 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

#### 14.2.24.1 Interactive or background / UL:64 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / TC

14.2.24.1.1 Conformance requirement

See 14.2.4.1.1.

14.2.24.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.24 for the downlink turbo coding case.

14.2.24.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (8 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312	RB5: 312
2	DL_TFC1	UL_TFC2	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632	RB5: 632
3	DL_TFC1	UL_TFC3	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 952	RB5: 952
4	DL_TFC1	UL_TFC4	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 1272	RB5: 1272
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

#### 14.2.24.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (3x336).
  - for sub-test 4: RB5/TF4 (4x336).
3. At step 15 the UE shall return
  - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

#### 14.2.24.2 Interactive or background / UL:64 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / CC

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.24 for the downlink convolutional channel coding case.

See test case 14.2.24.1 for test procedure and test requirement.

## 14.2.25 Interactive or background / UL:32 DL: 64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

### 14.2.25.1 Interactive or background / UL:32 DL: 64 kbps / PS RAB / (TC, 10 ms TTI)

#### 14.2.25.1.1 Conformance requirement

See 14.2.4.1.

#### 14.2.25.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.25 for the uplink turbo channel coding and 10 ms TTI case.

#### 14.2.25.1.3 Method of test

Uplink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under test	Uplink TFCs Under test	Implicitly tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 312	RB5: 312
2	DL_TFC2	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 632	RB5: 632
3	DL_TFC3	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 952	RB5: 952
4	DL_TFC4	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 1272	RB5: 1272
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

#### 14.2.25.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1 to 4: RB5/TF1 (1x336).
3. At step 15 the UE shall return
  - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

#### 14.2.25.2 Interactive or background / UL:32 DL: 64 kbps / PS RAB / (TC, 20 ms TTI)

##### 14.2.25.2.1 Conformance requirement

See 14.2.4.1.

##### 14.2.25.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.25 for the uplink turbo channel coding and 20 ms TTI case.

##### 14.2.25.2.3 Method of test

Uplink TFS:

	TFI	RB5 (32 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, DCCH)</b>
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF0, TF1)
UL_TFC4	(TF1, TF1)
UL_TFC5	(TF2, TF1)

Downlink TFS:

	<b>TFI</b>	<b>RB5 (64 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, DCCH)</b>
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

<b>Sub-test</b>	<b>Downlink TFCS Under test</b>	<b>Uplink TFCS Under test</b>	<b>Implicitely tested</b>	<b>Restricted UL TFCIs</b>	<b>UL RLC SDU size (bits) (note)</b>	<b>Test data size (bits) (note)</b>
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 312	RB5: 312
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 632	RB5: 632
3	DL_TFC3	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 952	RB5: 952
4	DL_TFC4	UL_TFC2	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 1272	RB5: 1272
<b>NOTE:</b> See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

#### 14.2.25.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF1 (1x336).
  - for sub-test 4: RB5/TF2 (2x336).
3. At step 15 the UE shall return
  - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

#### 14.2.25.3 Interactive or background / UL:32 DL:64 kbps / PS RAB / (CC, 10 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.25 for the uplink convolutional channel coding and 10 ms TTI case.

See test case 14.2.25.1 for test procedure and test requirement.

#### 14.2.25.4 Interactive or background / UL:32 DL:64 kbps / PS RAB / (CC, 20 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.25 for the uplink convolutional channel coding and 20 ms TTI case.

See test case 14.2.25.2 for test procedure and test requirement.

### 14.2.26 Interactive or background / UL:64 DL: 64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

#### 14.2.26.1 Conformance requirement

See 14.2.4.1.

#### 14.2.26.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.26.

#### 14.2.26.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps, 20 ms TTI)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, DCCH)</b>
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	<b>TFI</b>	<b>RB5 (64 kbps, 20 ms TTI)</b>	<b>DCCH</b>
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, DCCH)</b>
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312	RB5: 312
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632	RB5: 632
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 952	RB5: 952
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 1272	RB5: 1272
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  RB5: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size parameter has been set to achieve verification of all test data sent by SS in downlink, i.e. UL RLC SDU size is set to nearest multiple of the payload size of the UL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit) which is equal or bigger than the test data size.</p>						

See 14.1.1 for test procedure.

#### 14.2.26.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (3x336).
  - for sub-test 4: RB5/TF4 (4x336).
3. At step 15 the UE shall return
  - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

### 14.2.27 Interactive or background / UL:64 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

#### 14.2.27.1 Conformance requirement

See 14.2.4.1.

#### 14.2.27.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.27.

## 14.2.27.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312	RB5: 312
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632	RB5: 632
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1912	RB5: 1272
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552	RB5: 2552
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  RB5: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size parameter has been set to achieve verification of all test data sent by SS in downlink, i.e. UL RLC SDU size is set to nearest multiple of the payload size of the UL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit) which is equal or bigger than the test data size.</p>						

See 14.1.1 for test procedure.

#### 14.2.27.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (3x336).
  - for sub-test 4: RB5/TF4 (4x336).
3. At step 15 the UE shall return
  - for sub-test 1, 2 and 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.
  - for sub-test 3: an RLC SDU on RB5 having the first 1272 bits equal to the content of the test data sent by the SS in downlink.

### 14.2.28 Interactive or background / UL:128 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

#### 14.2.28.1 Conformance requirement

See 14.2.4.1.

#### 14.2.28.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.28.

## 14.2.28.3 Method of test

Uplink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312	RB5: 312
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632	RB5: 632
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1272	RB5: 1272
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552	RB5: 2552
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

#### 14.2.28.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (4x336).
  - for sub-test 4: RB5/TF4 (8x336).
3. At step 15 the UE shall return
  - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

#### 14.2.29 Interactive or background / UL:64 DL:144 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

##### 14.2.29.1 Conformance requirement

See 14.2.4.1.

##### 14.2.29.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.29.

##### 14.2.29.3 Method of test

Uplink TFS:

	<b>TFI</b>	<b>RB5 (64 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, DCCH)</b>
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	<b>TFI</b>	<b>RB5 (144 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	9x336	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, DCCH)</b>
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF0, TF1)
DL_TFC7	(TF1, TF1)
DL_TFC8	(TF2, TF1)
DL_TFC9	(TF3, TF1)
DL_TFC10	(TF4, TF1)
DL_TFC11	(TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312	RB5: 312
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632	RB5: 632
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1912	RB5: 1272
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552	RB5: 2552
5	DL_TFC5	UL_TFC3	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 2872	RB5: 2872
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  RB5: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size parameter has been set to achieve verification of all test data sent by SS in downlink, i.e. UL RLC SDU size is set to nearest multiple of the payload size of the UL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit) which is equal or bigger than the test data size.</p>						

See 14.1.1 for test procedure.

#### 14.2.29.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (4x336).
  - for sub-test 4: RB5/TF4 (8x336).
  - for sub-test 5: RB5/TF3 (4x336).
3. At step 15 the UE shall return
  - for sub-test 1, 2, 4 and 5: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.
  - for sub-test 3: an RLC SDU on RB5 having the first 1272 bits equal to the content of the test data sent by the SS in downlink.

#### 14.2.30 Interactive or background / UL:144 DL:144 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

##### 14.2.30.1 Conformance requirement

See 14.2.4.1.

## 14.2.30.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.30.

## 14.2.30.3 Method of test

Uplink TFS:

	TFI	RB5 (144 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	9x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF5, TF0)
UL_TFC6	(TF0, TF1)
UL_TFC7	(TF1, TF1)
UL_TFC8	(TF2, TF1)
UL_TFC9	(TF3, TF1)
UL_TFC10	(TF4, TF1)
UL_TFC11	(TF5, TF1)

Downlink TFS:

	TFI	RB5 (144 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	9x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF0, TF1)
DL_TFC7	(TF1, TF1)
DL_TFC8	(TF2, TF1)
DL_TFC9	(TF3, TF1)
DL_TFC10	(TF4, TF1)
DL_TFC11	(TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under test	Uplink TFCs Under test	Implicitly tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 312	RB5: 312
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 632	RB5: 632
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 1272	RB5: 1272
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 2552	RB5: 2552
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 2872	RB5: 2872
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

#### 14.2.30.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (4x336).
  - for sub-test 4: RB5/TF4 (8x336).
  - for sub-test 5: RB5/TF5 (9x336).
3. At step 15 the UE shall return
  - for sub-test 1 to 5: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

#### 14.2.31 Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

##### 14.2.31.1 Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH/ 10 ms TTI

###### 14.2.31.1.1 Conformance requirement

See 14.2.4.1.

## 14.2.31.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.31 for the downlink 10 ms TTI case.

## 14.2.31.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (256 kbps, 10ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under test	Uplink TFCs Under test	Implicitly tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312	RB5: 312
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632	RB5: 632
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1912	RB5: 1272
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552	RB5: 2552
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  RB5: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size parameter has been set to achieve verification of all test data sent by SS in downlink, i.e. UL RLC SDU size is set to nearest multiple of the payload size of the UL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit) which is equal or bigger than the test data size.</p>						

See 14.1.1 for test procedure.

#### 14.2.31.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (3x336).
  - for sub-test 4: RB5/TF4 (4x336).
3. At step 15 the UE shall return
  - for sub-test 1, 2 and 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.
  - for sub-test 3: an RLC SDU on RB5 having the first 1272 bits equal to the content of the test data sent by the SS in downlink.

#### 14.2.31.2 Interactive or background / UL:64 DL:256 kbps / PS RAB / 20 ms TTI

##### 14.2.31.2.1 Conformance requirement

See 14.2.4.1.

##### 14.2.31.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.31 for the downlink 20 ms TTI case.

## 14.2.31.2.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (256 kbps, 20ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A
	TF6, bits	16x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF0, TF1)
DL_TFC8	(TF1, TF1)
DL_TFC9	(TF2, TF1)
DL_TFC10	(TF3, TF1)
DL_TFC11	(TF4, TF1)
DL_TFC12	(TF5, TF1)
DL_TFC13	(TF6, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under test	Uplink TFCs Under test	Implicitly tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312	RB5: 312
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632	RB5: 632
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1912	RB5: 1272
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552	RB5: 2552
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 3832	RB5: 3832
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5112	RB5: 5112
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

#### 14.2.31.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (3x336).
  - for sub-test 4 to 6: RB5/TF4 (4x336).
3. At step 15 the UE shall return
  - for sub-test 1 to 6: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

#### 14.2.32 Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

##### 14.2.32.1 Interactive or background / UL:64 DL:384 kbps / PS RAB / 10 ms TTI

###### 14.2.32.1.1 Conformance requirement

See 14.2.4.1.

## 14.2.32.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.32 for the 10 ms TTI case.

## 14.2.32.1.3 Method of test

Uplink TFS:

	<b>TFI</b>	<b>RB5 (64 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, DCCH)</b>
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	<b>TFI</b>	<b>RB5 (384 kbps, 10ms)</b>	<b>DCCH</b>
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, DCCH)</b>
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF0, TF1)
DL_TFC7	(TF1, TF1)
DL_TFC8	(TF2, TF1)
DL_TFC9	(TF3, TF1)
DL_TFC10	(TF4, TF1)
DL_TFC11	(TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under test	Uplink TFCs Under test	Implicitly tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312	RB5: 312
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632	RB5: 632
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1912	RB5: 1272
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552	RB5: 2552
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 3832	RB5: 3832
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  RB5: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size parameter has been set to achieve verification of all test data sent by SS in downlink, i.e. UL RLC SDU size is set to nearest multiple of the payload size of the UL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit) which is equal or bigger than the test data size.</p>						

See 14.1.1 for test procedure.

#### 14.2.32.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (3x336).
  - for sub-test 4 and 5: RB5/TF4 (4x336).
3. At step 15 the UE shall return
  - for sub-test 1, 2, 4 and 5: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.
  - for sub-test 3: an RLC SDU on RB5 having the first 1272 bits equal to the content of the test data sent by the SS in downlink.

#### 14.2.32.2 Interactive or background / UL:64 DL:384 kbps / PS RAB / 20 ms TTI

##### 14.2.32.2.1 Conformance requirement

See 14.2.4.1.

## 14.2.32.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.32 for the 20 ms TTI case.

## 14.2.32.2.3 Method of test

Uplink TFS:

	<b>TFI</b>	<b>RB5 (64 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCs:

<b>TFCI</b>	<b>(RB5, DCCH)</b>
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	<b>TFI</b>	<b>RB5 (384 kbps, 20ms)</b>	<b>DCCH</b>
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A
	TF6, bits	16x336	N/A
	TF7, bits	20x336	N/A
	TF8, bits	24x336	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, DCCH)</b>
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF0, TF1)
DL_TFC10	(TF1, TF1)
DL_TFC11	(TF2, TF1)
DL_TFC12	(TF3, TF1)
DL_TFC13	(TF4, TF1)
DL_TFC14	(TF5, TF1)
DL_TFC15	(TF6, TF1)
DL_TFC16	(TF7, TF1)
DL_TFC17	(TF8, TF1)

Sub-tests:

<b>Sub-test</b>	<b>Downlink TFCS Under test</b>	<b>Uplink TFCS Under test</b>	<b>Implicitly tested</b>	<b>Restricted UL TFCIs</b>	<b>UL RLC SDU size (bits) (note)</b>	<b>Test data size (bits) (note)</b>
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312	RB5: 312
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632	RB5: 632
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1912	RB5: 1272
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552	RB5: 2552
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 3832	RB5: 3832
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5112	RB5: 5112
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC9, , UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 6392	RB5: 6392
8	DL_TFC8	UL_TFC4	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 7672	RB5: 7672

NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

See 14.1.1 for test procedure.

## 14.2.32.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (3x336).
  - for sub-test 4 to 8: RB5/TF4 (4x336).
3. At step 15 the UE shall return
  - for sub-test 1 to 8: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

### 14.2.33 Interactive or background / UL:128 DL:384 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

#### 14.2.33.1 Interactive or background / UL:128 DL:384 kbps / PS RAB / 10 ms TTI

##### 14.2.33.1.1 Conformance requirement

See 14.2.4.1.

##### 14.2.33.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.33 for the 10 ms TTI case.

##### 14.2.33.1.3 Method of test

Uplink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (384 kbps, 10ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF0, TF1)
DL_TFC7	(TF1, TF1)
DL_TFC8	(TF2, TF1)
DL_TFC9	(TF3, TF1)
DL_TFC10	(TF4, TF1)
DL_TFC11	(TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312	RB5: 312
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632	RB5: 632
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1272	RB5: 1272
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552	RB5: 2552
5	DL_TFC5	UL_TFC3	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 3832	RB5: 3832
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. The UL RLC SDU size have been choosen such that the UE will return all data received in downlink and that the UL RLC SDU will fill up the uplink transport format set under test over one or several transmission time intervals.						

See 14.1.1 for test procedure.

#### 14.2.33.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (4x336).
  - for sub-test 4 and 5: RB5/TF4 (8x336).
3. At step 15 the UE shall return
  - for sub-test 1 to 5: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

### 14.2.33.2 Interactive or background / UL:128 DL:384 kbps / PS RAB / 20 ms TTI

#### 14.2.33.2.1 Conformance requirement

See 14.2.4.1.

#### 14.2.33.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.33 for the 20 ms TTI case.

#### 14.2.33.2.3 Method of test

Uplink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (384 kbps, 20ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A
	TF6, bits	16x336	N/A
	TF7, bits	20x336	N/A
	TF8, bits	24x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF0, TF1)
DL_TFC10	(TF1, TF1)
DL_TFC11	(TF2, TF1)
DL_TFC12	(TF3, TF1)
DL_TFC13	(TF4, TF1)
DL_TFC14	(TF5, TF1)
DL_TFC15	(TF6, TF1)
DL_TFC16	(TF7, TF1)
DL_TFC17	(TF8, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312	RB5: 312
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632	RB5: 632
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1272	RB5: 1272
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552	RB5: 2552
5	DL_TFC5	UL_TFC3	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5,	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 3832	RB5: 3832
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5112	RB5: 5112
7	DL_TFC7	UL_TFC3	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 6392	RB5: 6392
8	DL_TFC8	UL_TFC4	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 7672	RB5: 7672
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. The UL RLC SDU size have been choosen such that the UE will return all data received in downlink and that the UL RLC SDU will fill up the uplink transport format set under test over one or several transmission time intervals.</p>						

See 14.1.1 for test procedure.

#### 14.2.33.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (4x336).
  - for sub-test 4 to 8: RB5/TF4 (8x336).
3. At step 15 the UE shall return
  - for sub-test 1 to 8: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

## 14.2.34 Interactive or background / UL:384 DL:384 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

### 14.2.34.1 Interactive or background / UL:384 DL:384 kbps / PS RAB / 10 ms TTI

#### 14.2.34.1.1 Conformance requirement

See 14.2.4.1.

#### 14.2.34.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.34 for the 10 ms TTI case.

#### 14.2.34.1.3 Method of test

Uplink TFS:

	TFI	RB5 (384 kbps, 10ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF5, TF0)
UL_TFC6	(TF0, TF1)
UL_TFC7	(TF1, TF1)
UL_TFC8	(TF2, TF1)
UL_TFC9	(TF3, TF1)
UL_TFC10	(TF4, TF1)
UL_TFC11	(TF5, TF1)

Downlink TFS:

	TFI	RB5 (384 kbps, 10ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, DCCH)</b>
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF0, TF1)
DL_TFC7	(TF1, TF1)
DL_TFC8	(TF2, TF1)
DL_TFC9	(TF3, TF1)
DL_TFC10	(TF4, TF1)
DL_TFC11	(TF5, TF1)

Sub-tests:

<b>Sub-test</b>	<b>Downlink TFCS Under test</b>	<b>Uplink TFCS Under test</b>	<b>Implicitely tested</b>	<b>Restricted UL TFCIs</b>	<b>UL RLC SDU size (bits) (note)</b>	<b>Test data size (bits) (note)</b>
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC7	UL_TFC0, UL_TFC1, UL_TFC7, UL_TFC8	RB5: 312	RB5: 312
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC7	UL_TFC0, UL_TFC2, UL_TFC7, UL_TFC9	RB5: 632	RB5: 632
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC7	UL_TFC0, UL_TFC3, UL_TFC7, UL_TFC10	RB5: 1272	RB5: 1272
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC7	UL_TFC0, UL_TFC4, UL_TFC7, UL_TFC11	RB5: 2552	RB5: 2552
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC7, UL_TFC0, UL_TFC7	UL_TFC0, UL_TFC5, UL_TFC7, UL_TFC12	RB5: 3832	RB5: 3832
<b>NOTE:</b> See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

#### 14.2.34.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (4x336).
  - for sub-test 4: RB5/TF4 (8x336).
  - for sub-test 5: RB5/TF4 (12x336).

3. At step 15 the UE shall return

- for sub-test 1 to 5: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

#### 14.2.34.2 Interactive or background / UL:384 DL:384 kbps / PS RAB / 20 ms TTI

14.2.34.2.1 Conformance requirement

See 14.2.4.1.

14.2.34.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.34. for the 20 ms TTI case

14.2.34.2.3 Method of test

Uplink TFS:

	TFI	RB5 (384 kbps, 20ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A
	TF6, bits	16x336	N/A
	TF7, bits	20x336	N/A
	TF8, bits	24x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF5, TF0)
UL_TFC6	(TF6, TF0)
UL_TFC7	(TF7, TF0)
UL_TFC8	(TF8, TF0)
UL_TFC9	(TF0, TF1)
UL_TFC10	(TF1, TF1)
UL_TFC11	(TF2, TF1)
UL_TFC12	(TF3, TF1)
UL_TFC13	(TF4, TF1)
UL_TFC14	(TF5, TF1)
UL_TFC15	(TF6, TF1)
UL_TFC16	(TF7, TF1)
UL_TFC17	(TF8, TF1)

Downlink TFS:

	TFI	RB5 (384 kbps, 20ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A
	TF6, bits	16x336	N/A
	TF7, bits	20x336	N/A
	TF8, bits	24x336	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF0, TF1)
DL_TFC10	(TF1, TF1)
DL_TFC11	(TF2, TF1)
DL_TFC12	(TF3, TF1)
DL_TFC13	(TF4, TF1)
DL_TFC14	(TF5, TF1)
DL_TFC15	(TF6, TF1)
DL_TFC16	(TF7, TF1)
DL_TFC17	(TF8, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10	RB5: 312	RB5: 312
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11	RB5: 632	RB5: 632
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 1272	RB5: 1272
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC9, UL_TFC13	RB5: 2552	RB5: 2552
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC5, UL_TFC9, UL_TFC14	RB5: 3832	RB5: 3832
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC6, UL_TFC9, UL_TFC15	RB5: 5112	RB5: 5112
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC7, UL_TFC9, UL_TFC16	RB5: 6392	RB5: 6392
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC9, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 7672	RB5: 7672
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

#### 14.2.34.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (4x336).
  - for sub-test 4: RB5/TF4 (8x336).
  - for sub-test 5: RB5/TF5 (12x336).
  - for sub-test 6: RB5/TF6 (16x336).
  - for sub-test 7: RB5/TF7 (20x336).
  - for sub-test 8: RB5/TF8 (24x336).

3. At step 15 the UE shall return

- for sub-test 1 to 8: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

### 14.2.35 Interactive or background / UL:64 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

#### 14.2.35.1 Interactive or background / UL:64 DL:2048 kbps / PS RAB / 10 ms TTI

##### 14.2.35.1.1 Conformance requirement

See 14.2.4.1.

##### 14.2.35.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.35 for the 10 ms TTI case.

##### 14.2.35.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (2048 kbps, 10ms)	DCCH
TFS	TF0, bits	0x656	0x148
	TF1, bits	1x656	1x148
	TF2, bits	2x656	N/A
	TF3, bits	4x656	N/A
	TF4, bits	8x656	N/A
	TF5, bits	12x656	N/A
	TF6, bits	16x656	N/A
	TF7, bits	20x656	N/A
	TF8, bits	24x656	N/A
	TF9, bits	28x656	N/A
	TF10, bits	32x656	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF9, TF0)
DL_TFC10	(TF10, TF0)
DL_TFC11	(TF0, TF1)
DL_TFC12	(TF1, TF1)
DL_TFC13	(TF2, TF1)
DL_TFC14	(TF3, TF1)
DL_TFC15	(TF4, TF1)
DL_TFC16	(TF5, TF1)
DL_TFC17	(TF6, TF1)
DL_TFC18	(TF7, TF1)
DL_TFC19	(TF8, TF1)
DL_TFC20	(TF9, TF1)
DL_TFC21	(TF10, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 632	RB5: 632
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 1272	RB5: 1272
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 2872	RB5: 2552
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5112	RB5: 5112
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 7672	RB5: 7672
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 10232	RB5: 10232
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 12792	RB5: 12792
8	DL_TFC8	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 15352	RB5: 15352
9	DL_TFC9	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 17912	RB5: 17912
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 20472	RB5: 20472

NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. The UL RLC SDU size have been choosen such that the UE will return all data received in downlink and that the UL RLC SDU will fill up the uplink transport format set under test over one or several transmission time intervals.

See 14.1.1 for test procedure.

#### 14.2.35.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).

- for sub-test 3: RB5/TF3 (3x336).
- for sub-test 4 to 10: RB5/TF4 (4x336).

3. At step 15 the UE shall return

- for sub-test 1 to 10: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

## 14.2.35.2 Interactive or background / UL:64 DL:2048 kbps / PS RAB / 20 ms TTI

### 14.2.35.2.1 Conformance requirement

See 14.2.4.1.

### 14.2.35.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.35 for the 20 ms TTI case.

### 14.2.35.2.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (2048 kbps, 10ms)	DCCH
TFS	TF0, bits	0x656	0x148
	TF1, bits	1x656	1x148
	TF2, bits	2x656	N/A
	TF3, bits	4x656	N/A
	TF4, bits	8x656	N/A
	TF5, bits	12x656	N/A
	TF6, bits	16x656	N/A
	TF7, bits	20x656	N/A
	TF8, bits	24x656	N/A
	TF9, bits	28x656	N/A
	TF10, bits	32x656	N/A
	TF11, bits	36x656	N/A
	TF12, bits	40x656	N/A
	TF13, bits	44x656	N/A
	TF14, bits	48x656	N/A
	TF15, bits	52x656	N/A
	TF16, bits	56x656	N/A
	TF17, bits	60x656	N/A
TF18, bits	64x656	N/A	

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF9, TF0)
DL_TFC10	(TF10, TF0)
DL_TFC11	(TF11, TF0)
DL_TFC12	(TF12, TF0)
DL_TFC13	(TF13, TF0)
DL_TFC14	(TF14, TF0)
DL_TFC15	(TF15, TF0)
DL_TFC16	(TF16, TF0)
DL_TFC17	(TF17, TF0)
DL_TFC18	(TF18, TF0)
DL_TFC19	(TF0, TF1)
DL_TFC20	(TF1, TF1)
DL_TFC21	(TF2, TF1)
DL_TFC22	(TF3, TF1)
DL_TFC23	(TF4, TF1)
DL_TFC24	(TF5, TF1)
DL_TFC25	(TF6, TF1)
DL_TFC26	(TF7, TF1)
DL_TFC27	(TF8, TF1)
DL_TFC28	(TF9, TF1)
DL_TFC29	(TF10, TF1)
DL_TFC30	(TF11, TF1)
DL_TFC31	(TF12, TF1)
DL_TFC32	(TF13, TF1)
DL_TFC33	(TF14, TF1)
DL_TFC34	(TF15, TF1)

<b>TFCI</b>	<b>(RB5, DCCH)</b>
DL_TFC35	(TF16, TF1)
DL_TFC36	(TF17, TF1)
DL_TFC37	(TF18, TF1)

Sub-tests:

<b>Sub-test</b>	<b>Downlink TFCs Under Test</b>	<b>Uplink TFCs Under test</b>	<b>Implicitely tested</b>	<b>Restricted UL TFCIs</b>	<b>UL RLC SDU size (bits)</b> (note)	<b>Test data size (bits)</b> (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 632	RB5: 632
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 1272	RB5: 1272
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 2872	RB5: 2552
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5112	RB5: 5112
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 7672	RB5: 7672
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 10232	RB5: 10232
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 12792	RB5: 12792
8	DL_TFC8	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 15352	RB5: 15352
9	DL_TFC9	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 17912	RB5: 17912
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 20472	RB5: 20472
11	DL_TFC11	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 23032	RB5: 23032
12	DL_TFC12	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 25592	RB5: 25592
13	DL_TFC13	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 28152	RB5: 28152

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
14	DL_TFC14	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 30712	RB5: 30712
15	DL_TFC15	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 33272	RB5: 33272
16	DL_TFC16	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 35832	RB5: 35832
17	DL_TFC17	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 38392	RB5: 38392
18	DL_TFC18	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 40952	RB5: 40952
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. The UL RLC SDU size have been choosen such that the UE will return all data received in downlink and that the UL RLC SDU will fill up the uplink transport format set under test over one or several transmission time intervals.						

See 14.1.1 for test procedure.

#### 14.2.35.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (3x336).
  - for sub-test 4 to 18: RB5/TF4 (4x336).
3. At step 15 the UE shall return
  - for sub-test 1 to 18: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

#### 14.2.36 Interactive or background / UL:128 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

##### 14.2.36.1 Interactive or background / UL:128 DL:2048 kbps / PS RAB / 10 ms TTI

###### 14.2.36.1.1 Conformance requirement

See 14.2.4.1.

## 14.2.36.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.36 for the 10 ms TTI case.

## 14.2.36.1.3 Method of test

Uplink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (2048 kbps, 10ms)	DCCH
TFS	TF0, bits	0x656	0x148
	TF1, bits	1x656	1x148
	TF2, bits	2x656	N/A
	TF3, bits	4x656	N/A
	TF4, bits	8x656	N/A
	TF5, bits	12x656	N/A
	TF6, bits	16x656	N/A
	TF7, bits	20x656	N/A
	TF8, bits	24x656	N/A
	TF9, bits	28x656	N/A
	TF10, bits	32x656	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF9, TF0)
DL_TFC10	(TF10, TF0)

<b>TFCI</b>	<b>(RB5, DCCH)</b>
DL_TFC11	(TF0, TF1)
DL_TFC12	(TF1, TF1)
DL_TFC13	(TF2, TF1)
DL_TFC14	(TF3, TF1)
DL_TFC15	(TF4, TF1)
DL_TFC16	(TF5, TF1)
DL_TFC17	(TF6, TF1)
DL_TFC18	(TF7, TF1)
DL_TFC19	(TF8, TF1)
DL_TFC20	(TF9, TF1)
DL_TFC21	(TF10, TF1)

Sub-tests:

<b>Sub-test</b>	<b>Downlink TFCs Under Test</b>	<b>Uplink TFCs Under test</b>	<b>Implicitely tested</b>	<b>Restricted UL TFCIs</b>	<b>UL RLC SDU size (bits)</b> (note)	<b>Test data size (bits)</b> (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 632	RB5: 632
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 1272	RB5: 1272
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 2552	RB5: 2552
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5112	RB5: 5112
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 7672	RB5: 7672
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 10232	RB5: 10232
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 12792	RB5: 12792
8	DL_TFC8	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 15352	RB5: 15352
9	DL_TFC9	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 17912	RB5: 17912
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 20472	RB5: 20472
<p><b>NOTE:</b> See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. The UL RLC SDU size have been chosen such that the UE will return all data received in downlink and that the UL RLC SDU will fill up the uplink transport format set under test over one or several transmission time intervals.</p>						

See 14.1.1 for test procedure.

#### 14.2.36.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (4x336).
  - for sub-test 4 to 10: RB5/TF4 (8x336).
3. At step 15 the UE shall return
  - for sub-test 1 to 10: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

### 14.2.36.2 Interactive or background / UL:128 DL:2048 kbps / PS RAB / 20 ms TTI

#### 14.2.36.2.1 Conformance requirement

See 14.2.4.1.

#### 14.2.36.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.36 for the 20 ms TTI case.

#### 14.2.36.2.3 Method of test

Uplink TFS:

	TFI	RB5 (128 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	TFI	RB5 (2048 kbps, 10ms)	DCCH
TFS	TF0, bits	0x656	0x148
	TF1, bits	1x656	1x148
	TF2, bits	2x656	N/A
	TF3, bits	4x656	N/A
	TF4, bits	8x656	N/A
	TF5, bits	12x656	N/A
	TF6, bits	16x656	N/A
	TF7, bits	20x656	N/A
	TF8, bits	24x656	N/A
	TF9, bits	28x656	N/A
	TF10, bits	32x656	N/A
	TF11, bits	36x656	N/A
	TF12, bits	40x656	N/A
	TF13, bits	44x656	N/A
	TF14, bits	48x656	N/A
	TF15, bits	52x656	N/A
	TF16, bits	56x656	N/A
	TF17, bits	60x656	N/A
TF18, bits	64x656	N/A	

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF9, TF0)
DL_TFC10	(TF10, TF0)
DL_TFC11	(TF11, TF0)
DL_TFC12	(TF12, TF0)
DL_TFC13	(TF13, TF0)
DL_TFC14	(TF14, TF0)
DL_TFC15	(TF15, TF0)
DL_TFC16	(TF16, TF0)
DL_TFC17	(TF17, TF0)
DL_TFC18	(TF18, TF0)
DL_TFC19	(TF0, TF1)
DL_TFC20	(TF1, TF1)
DL_TFC21	(TF2, TF1)
DL_TFC22	(TF3, TF1)
DL_TFC23	(TF4, TF1)
DL_TFC24	(TF5, TF1)
DL_TFC25	(TF6, TF1)
DL_TFC26	(TF7, TF1)
DL_TFC27	(TF8, TF1)
DL_TFC28	(TF9, TF1)
DL_TFC29	(TF10, TF1)
DL_TFC30	(TF11, TF1)
DL_TFC31	(TF12, TF1)
DL_TFC32	(TF13, TF1)
DL_TFC33	(TF14, TF1)
DL_TFC34	(TF15, TF1)

<b>TFCI</b>	<b>(RB5, DCCH)</b>
DL_TFC35	(TF16, TF1)
DL_TFC36	(TF17, TF1)
DL_TFC37	(TF18, TF1)

Sub-tests:

<b>Sub-test</b>	<b>Downlink TFCs Under Test</b>	<b>Uplink TFCs Under test</b>	<b>Implicitely tested</b>	<b>Restricted UL TFCIs</b>	<b>UL RLC SDU size (bits)</b> (note)	<b>Test data size (bits)</b> (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 632	RB5: 632
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 1272	RB5: 1272
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 2552	RB5: 2552
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5112	RB5: 5112
5	DL_TFC5	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 7672	RB5: 7672
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 10232	RB5: 10232
7	DL_TFC7	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 12792	RB5: 12792
8	DL_TFC8	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 15352	RB5: 15352
9	DL_TFC9	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 17912	RB5: 17912
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 20472	RB5: 20472
11	DL_TFC11	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 23032	RB5: 23032
12	DL_TFC12	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 25592	RB5: 25592
13	DL_TFC13	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 28152	RB5: 28152

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
14	DL_TFC14	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 30712	RB5: 30712
15	DL_TFC15	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 33272	RB5: 33272
16	DL_TFC16	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 35832	RB5: 35832
17	DL_TFC17	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 38392	RB5: 38392
18	DL_TFC18	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 40952	RB5: 40952
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. The UL RLC SDU size have been chosen such that the UE will return all data received in downlink and that the UL RLC SDU will fill up the uplink transport format set under test over one or several transmission time intervals.						

See 14.1.1 for test procedure.

#### 14.2.36.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (4x336).
  - for sub-test 4 to 18: RB5/TF4 (8x336).
3. At step 15 the UE shall return
  - for sub-test 1 to 18: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

### 14.2.37 Interactive or background / UL:384 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

#### 14.2.37.1 Interactive or background / UL:384 DL:2048 kbps / PS RAB / 10 ms TTI

##### 14.2.37.1.1 Conformance requirement

See 14.2.4.1.

## 14.2.37.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.37 for the 10 ms TTI case.

## 14.2.37.1.3 Method of test

Uplink TFS:

	TFI	RB5 (384 kbps, 10ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF5, TF0)
UL_TFC6	(TF0, TF1)
UL_TFC7	(TF1, TF1)
UL_TFC8	(TF2, TF1)
UL_TFC9	(TF3, TF1)
UL_TFC10	(TF4, TF1)
UL_TFC11	(TF5, TF1)

Downlink TFS:

	TFI	RB5 (2048 kbps, 10ms)	DCCH
TFS	TF0, bits	0x656	0x148
	TF1, bits	1x656	1x148
	TF2, bits	2x656	N/A
	TF3, bits	4x656	N/A
	TF4, bits	8x656	N/A
	TF5, bits	12x656	N/A
	TF6, bits	16x656	N/A
	TF7, bits	20x656	N/A
	TF8, bits	24x656	N/A
	TF9, bits	28x656	N/A
	TF10, bits	32x656	N/A

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)

<b>TFCI</b>	<b>(RB5, DCCH)</b>
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF9, TF0)
DL_TFC10	(TF10, TF0)
DL_TFC11	(TF0, TF1)
DL_TFC12	(TF1, TF1)
DL_TFC13	(TF2, TF1)
DL_TFC14	(TF3, TF1)
DL_TFC15	(TF4, TF1)
DL_TFC16	(TF5, TF1)
DL_TFC17	(TF6, TF1)
DL_TFC18	(TF7, TF1)
DL_TFC19	(TF8, TF1)
DL_TFC20	(TF9, TF1)
DL_TFC21	(TF10, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 632	RB5: 632
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 1272	RB5: 1272
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 2552	RB5: 2552
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 5112	RB5: 5112
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 7672	RB5: 7672
6	DL_TFC6	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 10232	RB5: 10232
7	DL_TFC7	UL_TFC3	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 12792	RB5: 12792
8	DL_TFC8	UL_TFC5	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 15352	RB5: 15352
9	DL_TFC9	UL_TFC3	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 17912	RB5: 17912
10	DL_TFC10	UL_TFC4	DL_TFC0, DL_TFC11, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 20472	RB5: 20472
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. The UL RLC SDU size have been chosen such that the UE will return all data received in downlink and that the UL RLC SDU will fill up the uplink transport format set under test over one or several transmission time intervals.</p>						

See 14.1.1 for test procedure.

#### 14.2.37.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (4x336).

- for sub-test 4: RB5/TF3 (8x336).
- for sub-test 5 to 10: RB5/TF4 (12x336).

3. At step 15 the UE shall return

- for sub-test 1 to 10: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

## 14.2.37.2 Interactive or background / UL:384 DL:2048 kbps / PS RAB / 20 ms TTI

### 14.2.37.2.1 Conformance requirement

See 14.2.4.1.

### 14.2.37.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.37 for the 20 ms TTI case.

### 14.2.37.2.3 Method of test

Uplink TFS:

	TFI	RB5 (384 kbps, 20ms)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	4x336	N/A
	TF4, bits	8x336	N/A
	TF5, bits	12x336	N/A
	TF6, bits	16x336	N/A
	TF7, bits	20x336	N/A
	TF8, bits	24x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF5, TF0)
UL_TFC6	(TF6, TF0)
UL_TFC7	(TF7, TF0)
UL_TFC8	(TF8, TF0)
UL_TFC9	(TF0, TF1)
UL_TFC10	(TF1, TF1)
UL_TFC11	(TF2, TF1)
UL_TFC12	(TF3, TF1)
UL_TFC13	(TF4, TF1)
UL_TFC14	(TF5, TF1)
UL_TFC15	(TF6, TF1)
UL_TFC16	(TF7, TF1)
UL_TFC17	(TF8, TF1)

Downlink TFS:

	TFI	RB5 (2048 kbps, 10ms)	DCCH
TFS	TF0, bits	0x656	0x148
	TF1, bits	1x656	1x148
	TF2, bits	2x656	N/A
	TF3, bits	4x656	N/A
	TF4, bits	8x656	N/A
	TF5, bits	12x656	N/A
	TF6, bits	16x656	N/A
	TF7, bits	20x656	N/A
	TF8, bits	24x656	N/A
	TF9, bits	28x656	N/A
	TF10, bits	32x656	N/A
	TF11, bits	36x656	N/A
	TF12, bits	40x656	N/A
	TF13, bits	44x656	N/A
	TF14, bits	48x656	N/A
	TF15, bits	52x656	N/A
	TF16, bits	56x656	N/A
	TF17, bits	60x656	N/A
TF18, bits	64x656	N/A	

Downlink TFCS:

TFCI	(RB5, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF5, TF0)
DL_TFC6	(TF6, TF0)
DL_TFC7	(TF7, TF0)
DL_TFC8	(TF8, TF0)
DL_TFC9	(TF9, TF0)
DL_TFC10	(TF10, TF0)
DL_TFC11	(TF11, TF0)
DL_TFC12	(TF12, TF0)
DL_TFC13	(TF13, TF0)
DL_TFC14	(TF14, TF0)
DL_TFC15	(TF15, TF0)
DL_TFC16	(TF16, TF0)
DL_TFC17	(TF17, TF0)
DL_TFC18	(TF18, TF0)
DL_TFC19	(TF0, TF1)
DL_TFC20	(TF1, TF1)
DL_TFC21	(TF2, TF1)
DL_TFC22	(TF3, TF1)
DL_TFC23	(TF4, TF1)
DL_TFC24	(TF5, TF1)
DL_TFC25	(TF6, TF1)
DL_TFC26	(TF7, TF1)
DL_TFC27	(TF8, TF1)
DL_TFC28	(TF9, TF1)
DL_TFC29	(TF10, TF1)
DL_TFC30	(TF11, TF1)
DL_TFC31	(TF12, TF1)
DL_TFC32	(TF13, TF1)
DL_TFC33	(TF14, TF1)
DL_TFC34	(TF15, TF1)
DL_TFC35	(TF16, TF1)
DL_TFC36	(TF17, TF1)

<b>TFCI</b>	<b>(RB5, DCCH)</b>
DL_TFC37	(TF18, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10	RB5: 632	RB5: 632
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11	RB5: 1272	RB5: 1272
3	DL_TFC3	UL_TFC3	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 2552	RB5: 2552
4	DL_TFC4	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC9, UL_TFC13	RB5: 5112	RB5: 5112
5	DL_TFC5	UL_TFC5	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC5, UL_TFC9, UL_TFC14	RB5: 7672	RB5: 7672
6	DL_TFC6	UL_TFC6	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC6, UL_TFC9, UL_TFC15	RB5: 10232	RB5: 10232
7	DL_TFC7	UL_TFC7	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC7, UL_TFC9, UL_TFC16	RB5: 12792	RB5: 12792
8	DL_TFC8	UL_TFC8	DL_TFC0, DL_TFC19, , UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 15352	RB5: 15352
9	DL_TFC9	UL_TFC3	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 17912	RB5: 17912
10	DL_TFC10	UL_TFC6	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC6, UL_TFC9, UL_TFC15	RB5: 20472	RB5: 20472
11	DL_TFC11	UL_TFC3	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 23032	RB5: 23032
12	DL_TFC12	UL_TFC7	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC7, UL_TFC9, UL_TFC16	RB5: 25592	RB5: 25592
13	DL_TFC13	UL_TFC3	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 28152	RB5: 28152
14	DL_TFC14	UL_TFC8	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC8, UL_TFC9, UL_TFC17	RB5: 30712	RB5: 30712

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
15	DL_TFC15	UL_TFC3	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 33272	RB5: 33272
16	DL_TFC16	UL_TFC4	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC4, UL_TFC9, UL_TFC13	RB5: 35832	RB5: 35832
17	DL_TFC17	UL_TFC7	DL_TFC0, DL_TFC19, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC7, UL_TFC9, UL_TFC16	RB5: 38392	RB5: 38392
18	DL_TFC18	UL_TFC6	DL_TFC0, DL_TFC19, , UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC6, UL_TFC9, UL_TFC15	RB5: 40952	RB5: 40952
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. The UL RLC SDU size have been choosen such that the UE will return all data received in downlink and that the UL RLC SDU will fill up the uplink transport format set under test over one or several transmission time intervals.</p>						

See 14.1.1 for test procedure.

#### 14.2.37.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (4x336).
  - for sub-test 4: RB5/TF4 (8336).
  - for sub-test 5: RB5/TF5 (12x336).
  - for sub-test 6: RB5/TF6 (16x336).
  - for sub-test 7: RB5/TF7 (20x336).
  - for sub-test 8 to 18: RB5/TF4 (24x336).
3. At step 15 the UE shall return
  - for sub-test 1 to 18: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

### 14.2.38 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

#### 14.2.38.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:8 kbps / PS RAB / (TC, 20 ms TTI)

##### 14.2.38.1.1 Conformance requirement

See 14.2.4.1.

##### 14.2.38.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38 for the turbo channel coding and 20 ms TTI case.

##### 14.2.38.1.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (32 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF0, TF1)
UL_TFC10	(TF1, TF0, TF0, TF0, TF1)
UL_TFC11	(TF2, TF1, TF1, TF0, TF1)
UL_TFC12	(TF0, TF0, TF0, TF1, TF1)
UL_TFC13	(TF1, TF0, TF0, TF1, TF1)
UL_TFC14	(TF2, TF1, TF1, TF1, TF1)
UL_TFC15	(TF0, TF0, TF0, TF2, TF1)
UL_TFC16	(TF1, TF0, TF0, TF2, TF1)
UL_TFC17	(TF2, TF1, TF1, TF2, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (8 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF0, TF1)
DL_TFC7	(TF1, TF0, TF0, TF0, TF1)
DL_TFC8	(TF2, TF1, TF1, TF0, TF1)
DL_TFC9	(TF0, TF0, TF0, TF1, TF1)
DL_TFC10	(TF1, TF0, TF0, TF1, TF1)
DL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1 DL_TFC7	UL_TFC1 UL_TFC10	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2 DL_TFC8	UL_TFC2 UL_TFC11	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3 DL_TFC9	UL_TFC3 UL_TFC12	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: No data RB6: No data RB7: No data RB8: 312
4	DL_TFC4 DL_TFC10	UL_TFC4 UL_TFC13	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC9, UL_TFC10, UL_TFC12, UL_TFC13	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: 39 RB6: No data RB7: No data RB8: 312
5	DL_TFC5 DL_TFC11	UL_TFC5 UL_TFC14	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC9, UL_TFC11, UL_TFC12, UL_TFC14	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: 312
6	DL_TFC3 DL_TFC9	UL_TFC6 UL_TFC15	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC6, UL_TFC9, UL_TFC15	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: No data RB6: No data RB7: No data RB8: 312
7	DL_TFC4 DL_TFC10	UL_TFC7 UL_TFC16	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7, UL_TFC9, UL_TFC10, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: 39 RB6: No data RB7: No data RB8: 312
8	DL_TFC5 DL_TFC11	UL_TFC8 UL_TFC17	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 1272	RB5: 81 RB6: 103 RB7: 60 RB8: 312
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB8: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the uplink TTI for RB8 is 20 ms while the downlink TTI is 40 ms then, to achieve continuous data transmission in uplink the size of the uplink RLC SDU has been set such that it will be transmitted over two subsequent TTIs, i.e. UL RLC SDU SIZE has been set to two times the uplink TFS size minus 8 (the size of a 7 bit length indicator and expansion bit).						

#### 14.2.38.1.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.

2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub test.
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
  - for sub-test 3 and 6: an RLC SDU on RB8 having the first 312 bits equal to the content sent by the SS in the downlink; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 4 and 7: an RLC SDU on RB5 having the same content as sent by SS and on RB8 having the first 312 bits equal to the content sent by the SS in the downlink; and no data shall be received on RB6 and RB7.
  - for sub-test 5 and 8: an RLC SDU on RB5, RB6, RB7 having the same content as sent by SS and on RB8 having the first 312 bits equal to the content sent by the SS in the downlink.
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

#### 14.2.38.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:8 kbps / PS RAB / (TC, 10 ms TTI)

##### 14.2.38.2.1 Conformance requirement

See 14.2.4.1.

##### 14.2.38.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38 for the turbo channel coding and 10 ms TTI case.

##### 14.2.38.2.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (32 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF1, TF0, TF1)
UL_TFC9	(TF0, TF0, TF0, TF1, TF1)
UL_TFC10	(TF1, TF0, TF0, TF1, TF1)
UL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (8 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF0, TF1)
DL_TFC7	(TF1, TF0, TF0, TF0, TF1)
DL_TFC8	(TF2, TF1, TF1, TF0, TF1)
DL_TFC9	(TF0, TF0, TF0, TF1, TF1)
DL_TFC10	(TF1, TF0, TF0, TF1, TF1)
DL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1 DL_TFC7	UL_TFC1 UL_TFC7	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2 DL_TFC8	UL_TFC2 UL_TFC8	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 81 RB6: 103 RB7: 60 RB8: 1272	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3 DL_TFC9	UL_TFC3 UL_TFC9	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: No data RB6: No data RB7: No data RB8: 312
4	DL_TFC4 DL_TFC10	UL_TFC4 UL_TFC10	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC6, UL_TFC7, UL_TFC9, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: 39 RB6: No data RB7: No data RB8: 312
5	DL_TFC5 DL_TFC11	UL_TFC5 UL_TFC11	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 1272	RB5: 81 RB6: 103 RB7: 60 RB8: 312

NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

RB8: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the uplink TTI for RB8 is 10 ms while the downlink TTI is 40 ms then, to achieve continuous data transmission in uplink the size of the uplink RLC SDU has been set such that it will be transmitted over four subsequent TTIs, i.e. UL RLC SDU SIZE has been set to four times the uplink TFS size minus 8 (the size of a 7 bit length indicator and expansion bit).

#### 14.2.38.2.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub test.
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
  - for sub-test 3: an RLC SDU on RB8 having the first 312 bits equal to the content sent by the SS in the downlink; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 4: an RLC SDU on RB5 having the same content as sent by SS and on RB8 having the first 312 bits equal to the content sent by the SS in the downlink; and no data shall be received on RB6 and RB7.
  - for sub-test 5: an RLC SDU on RB5, RB6, RB7 having the same content as sent by SS and on RB8 having the first 312 bits equal to the content sent by the SS in the downlink.
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

#### 14.2.38.3 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:8 kbps / PS RAB / (CC, 20 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38 for the convolutional channel coding and 20 ms TTI case.

See test case 14.2.38.1 for test procedure and test requirement.

#### 14.2.38.4 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:8 kbps / PS RAB / (CC, 10 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38 for the convolutional channel coding and 10 ms TTI case.

See test case 14.2.38.2 for test procedure and test requirement.

#### 14.2.38a Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:0 DL:0 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.

##### 14.2.38a.1 Conformance requirement

See 14.2.4.1.

##### 14.2.38a.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38a.

##### 14.2.38a.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (0 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	N/A	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF0, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1, TF0, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (0 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	N/A	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF0, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1, TF0, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1 DL_TFC4	UL_TFC1 UL_TFC4	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3,	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 RB6: 103 RB7: 60 RB8: 0	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2 DL_TFC5	UL_TFC2 UL_TFC5	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3,	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 81 RB6: 103 RB7: 60 RB8: 0	RB5: 81 RB6: 103 RB7: 60 RB8: No data

NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

#### 14.2.38a.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

- At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
- At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
- At step 15a and step 15b the UE shall return

- for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
- for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

### 14.2.38b Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:8 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.

14.2.38b.1 Conformance requirement

See 14.2.4.1.

14.2.38b.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38b.

14.2.38b.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (8 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF1, TF0, TF1)
UL_TFC9	(TF0, TF0, TF0, TF1, TF1)
UL_TFC10	(TF1, TF0, TF0, TF1, TF1)
UL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (8 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF0, TF1)
DL_TFC7	(TF1, TF0, TF0, TF0, TF1)
DL_TFC8	(TF2, TF1, TF1, TF0, TF1)
DL_TFC9	(TF0, TF0, TF0, TF1, TF1)
DL_TFC10	(TF1, TF0, TF0, TF1, TF1)
DL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1 DL_TFC7	UL_TFC1 UL_TFC7	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2 DL_TFC8	UL_TFC2 UL_TFC8	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 81 RB6: 103 RB7: 60 RB8: 312	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3 DL_TFC9	UL_TFC3 UL_TFC9	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 81 RB6: 103 RB7: 60 RB8: 312	RB5: No data RB6: No data RB7: No data RB8: 312
4	DL_TFC4 DL_TFC10	UL_TFC4 UL_TFC10	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC6, UL_TFC7, UL_TFC9, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: 39 RB6: No data RB7: No data RB8: 312
5	DL_TFC5 DL_TFC11	UL_TFC5 UL_TFC11	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 312	RB5: 81 RB6: 103 RB7: 60 RB8: 312
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB8: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the TTI for RB8 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size has been set equal to the uplink TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit).						

#### 14.2.38b.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.

3. At step 15a and step 15b the UE shall return

- for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
- for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
- for sub-test 3: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 4: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 5: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

**14.2.38c Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB +  
Interactive or background / UL:32 DL:32 kbps / PS RAB + UL:3.4  
DL:3.4 kbps SRBs for DCCH.**

14.2.38c.1 Conformance requirement

See 14.2.4.1.

14.2.38c.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38c.

14.2.38c.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (32 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		<b>RB5 (RAB subflow #1)</b>	<b>RB6 (RAB subflow #2)</b>	<b>RB7 (RAB subflow #3)</b>	<b>RB8 (32 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC16	UL_TFC1, UL_TFC16	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2, DL_TFC17	UL_TFC2, UL_TFC17	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 312	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3, DL_TFC18	UL_TFC3, UL_TFC18	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 81 RB6: 103 RB7: 60 RB8: 312	RB5: No data RB6: No data RB7: No data RB8: 312
4	DL_TFC4, DL_TFC19	UL_TFC4, UL_TFC19	DL_TFC0, DL_TFC15, DL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC15, UL_TFC16, UL_TFC18, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: 39 RB6: No data RB7: No data RB8: 312
5	DL_TFC5, DL_TFC20	UL_TFC5, UL_TFC20	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC15, UL_TFC17, UL_TFC18, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 312	RB5: 81 RB6: 103 RB7: 60 RB8: 312
6	DL_TFC6, DL_TFC21	UL_TFC6, UL_TFC21	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: No data RB6: No data RB7: No data RB8: 632
7	DL_TFC7, DL_TFC22	UL_TFC7, UL_TFC22	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7, UL_TFC15, UL_TFC16, UL_TFC21, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: 39 RB6: No data RB7: No data RB8: 632
8	DL_TFC8, DL_TFC23	UL_TFC8, UL_TFC23	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8, UL_TFC15, UL_TFC17, UL_TFC21, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: 632
9	DL_TFC9, DL_TFC24	UL_TFC9, UL_TFC24	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 81 RB6: 103 RB7: 60 RB8: 952	RB5: No data RB6: No data RB7: No data RB8: 952
10	DL_TFC10, DL_TFC25	UL_TFC10, UL_TFC25	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10, UL_TFC15, UL_TFC16, UL_TFC24, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 952	RB5: 39 RB6: No data RB7: No data RB8: 952

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
11	DL_TFC11 , DL_TFC26	UL_TFC11 , UL_TFC26	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11, UL_TFC15, UL_TFC17, UL_TFC24, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 952	RB5: 81 RB6: 103 RB7: 60 RB8: 952
12	DL_TFC12 , DL_TFC27	UL_TFC12 , UL_TFC27	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 81 RB6: 103 RB7: 60 RB8: 1272	RB5: No data RB6: No data RB7: No data RB8: 1272
13	DL_TFC13 , DL_TFC28	UL_TFC13 , UL_TFC28	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: 39 RB6: No data RB7: No data RB8: 1272
14	DL_TFC14 , DL_TFC29	UL_TFC14 , UL_TFC29	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1272	RB5: 81 RB6: 103 RB7: 60 RB8: 1272
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB8: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size has been set equal to the size of the payload size of the UL TF under test minus 8 bits (the size of 7 bit length indicator and expansion bit).						

#### 14.2.38c.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15a and step 15b the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
  - for sub-test 3, 6, 9 and 12: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 4, 7, 10 and 13: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
  - for sub-test 5, 8, 11 and 14: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

14.2.38d Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB +  
 Interactive or background / UL:64 DL:64 kbps / PS RAB +  
 Interactive or background / UL:64 DL:64 kbps / PS RAB + UL:3.4  
 DL:3.4 kbps SRBs for DCCH.

14.2.38d.1 Conformance requirement

See 14.2.4.1.

14.2.38d.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38d.

14.2.38d.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 + RB9 (64 kbps, 20 ms TTI)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x340	0x148
	TF1, bits	1x39	1x103	1x60	1x340	1x148
	TF2, bits	1x81	N/A	N/A	2x340	N/A
	TF3, bits	N/A	N/A	N/A	3x340	N/A
	TF4, bits	N/A	N/A	N/A	4x340	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8+RB9, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		<b>RB5 (RAB subflow #1)</b>	<b>RB6 (RAB subflow #2)</b>	<b>RB7 (RAB subflow #3)</b>	<b>RB8 + RB9 (64 kbps, 20 ms TTI)</b>	<b>DCCH</b>
TFS	TF0, bits	1x0	0x103	0x60	0x340	0x148
	TF1, bits	1x39	1x103	1x60	1x340	1x148
	TF2, bits	1x81	N/A	N/A	2x340	N/A
	TF3, bits	N/A	N/A	N/A	3x340	N/A
	TF4, bits	N/A	N/A	N/A	4x340	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8+RB9, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1, DL_TFC16	UL_TFC1, UL_TFC16	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 312 RB9: 312	RB5: 39 RB6: No data RB7: No data RB8: No data RB9: No data
2	DL_TFC2, DL_TFC17	UL_TFC2, UL_TFC17	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 312 RB9: 312	RB5: 81 RB6: 103 RB7: 60 RB8: No data RB9: No data
3	DL_TFC3, DL_TFC18	UL_TFC3, UL_TFC18	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 312 RB9: 312	RB5: No data RB6: No data RB7: No data RB8: 312 RB9: No data
4	DL_TFC4, DL_TFC19	UL_TFC4, UL_TFC19	DL_TFC0, DL_TFC15, DUL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC15, UL_TFC16, UL_TFC18, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 312 RB9: 312	RB5: 39 RB6: No data RB7: No data RB8: 312 RB9: No data
5	DL_TFC5, DL_TFC20	UL_TFC5, UL_TFC20	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC15, UL_TFC17, UL_TFC18, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 312 RB9: 312	RB5: 81 RB6: 103 RB7: 60 RB8: 312 RB9: No data
6	DL_TFC6, DL_TFC21	UL_TFC6, UL_TFC21	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 632 RB9: 632	RB5: No data RB6: No data RB7: No data RB8: 632 RB9: No data
7	DL_TFC7, DL_TFC22	UL_TFC7, UL_TFC22	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7, UL_TFC15, UL_TFC16, UL_TFC21, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 632 RB9: 632	RB5: 39 RB6: No data RB7: No data RB8: 632 RB9: No data
8	DL_TFC8, DL_TFC23	UL_TFC8, UL_TFC23	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8, UL_TFC15, UL_TFC17, UL_TFC21, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 632 RB9: 632	RB5: 81 RB6: 103 RB7: 60 RB8: 632 RB9: No data
9	DL_TFC9, DL_TFC24	UL_TFC9, UL_TFC24	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 952 RB9: 952	RB5: No data RB6: No data RB7: No data RB8: 952 RB9: No data

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
10	DL_TFC10, DL_TFC25	UL_TFC10, UL_TFC25	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10, UL_TFC15, UL_TFC16, UL_TFC24, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 952 RB9: 952	RB5: 39 RB6: No data RB7: No data RB8: 952 RB9: No data
11	DL_TFC11, DL_TFC26	UL_TFC11, UL_TFC26	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11, UL_TFC15, UL_TFC17, UL_TFC24, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 952 RB9: 952	RB5: 81 RB6: 103 RB7: 60 RB8: 952 RB9: No data
12	DL_TFC12, DL_TFC27	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 1272 RB9: 1272	RB5: No data RB6: No data RB7: No data RB8: 1272 RB9: No data
13	DL_TFC13, DL_TFC28	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1272 RB9: 1272	RB5: 39 RB6: No data RB7: No data RB8: 1272 RB9: No data
14	DL_TFC14, DL_TFC29	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1272 RB9: 1272	RB5: 81 RB6: 103 RB7: 60 RB8: 1272 RB9: No data
15	DL_TFC14, DL_TFC29	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1272 RB9: 1272	RB5: 81 RB6: 103 RB7: 60 RB8: No data RB9: 1272
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB5 and RB6: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size has been set equal to the size of the payload size of the UL TF under test minus 8 bits (the size of 7 bit length indicator and expansion bit).						

#### 14.2.38d.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15a and step 15b the UE shall return

- for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7, RB8 or RB9.
- for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8 or RB9.
- for sub-test 3, 6, 9 and 12: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6, RB7 or RB9.
- for sub-test 4, 7, 10 and 13: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6, RB7 or RB9.
- for sub-test 5, 8, 11 and 14: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS. No data shall be received on RB9.
- for sub-test 15: an RLC SDU on RB5, RB6, RB7 and RB9 having the same content as sent by SS; and no data shall be received on RB8.

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

### 14.2.38e Conversational / speech / UL:(12.2 7.95 5.9 4.75) DL:(12.2 7.95 5.9 4.75) kbps / CS RAB + Interactive or background / UL:0 DL:0 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.

14.2.38e.1 Conformance requirement

See 14.2.4.1.

14.2.38e.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38e.

14.2.38e.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (0 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x53	1x60	N/A	1x148
	TF2, bits	1x42	1x63	N/A	N/A	N/A
	TF3, bits	1x55	1x84	N/A	N/A	N/A
	TF4, bits	1x75	1x103	N/A	N/A	N/A
	TF5, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0, TF0, TF0)
UL_TFC3	(TF3, TF2, TF0, TF0, TF0)
UL_TFC4	(TF4, TF3, TF0, TF0, TF0)
UL_TFC5	(TF5, TF1, TF1, TF0, TF0)
UL_TFC6	(TF0, TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF0, TF0, TF1)
UL_TFC9	(TF3, TF2, TF0, TF0, TF1)
UL_TFC10	(TF4, TF3, TF0, TF0, TF1)
UL_TFC11	(TF5, TF1, TF1, TF0, TF1)

Downlink TFS:

	<b>TFI</b>	<b>RB5 (RAB subflow #1)</b>	<b>RB6 (RAB subflow #2)</b>	<b>RB7 (RAB subflow #3)</b>	<b>RB8 (0 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x53	1x60	N/A	1x148
	TF2, bits	1x42	1x63	N/A	N/A	N/A
	TF3, bits	1x55	1x84	N/A	N/A	N/A
	TF4, bits	1x75	1x103	N/A	N/A	N/A
	TF5, bits	1x81	N/A	N/A	N/A	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0, TF0, TF0)
DL_TFC3	(TF3, TF2, TF0, TF0, TF0)
DL_TFC4	(TF4, TF3, TF0, TF0, TF0)
DL_TFC5	(TF5, TF1, TF1, TF0, TF0)
DL_TFC6	(TF0, TF0, TF0, TF0, TF1)
DL_TFC7	(TF1, TF0, TF0, TF0, TF1)
DL_TFC8	(TF2, TF1, TF0, TF0, TF1)
DL_TFC9	(TF3, TF2, TF0, TF0, TF1)
DL_TFC10	(TF4, TF3, TF0, TF0, TF1)
DL_TFC11	(TF5, TF1, TF1, TF0, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitly tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC7	UL_TFC1, UL_TFC7	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 39 bits RB6: 103 bits RB7: 60 bits RB8: 0 bits	RB5: 39 bits RB6: No data RB7: No data RB8: No data
2	DL_TFC2, DL_TFC8	UL_TFC2, UL_TFC8	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 42 bits RB6: 53 bits RB7: 60 bits RB8: 0 bits	RB5: 42 bits RB6: 53 bits RB7: No data RB8: No data
3	DL_TFC3, DL_TFC9	UL_TFC3, UL_TFC9	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 55 bits RB6: 63 bits RB7: 60 bits RB8: 0 bits	RB5: 55 bits RB6: 63 bits RB7: No data RB8: No data
4	DL_TFC4, DL_TFC10	UL_TFC4, UL_TFC10	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 0 bits	RB5: 75 bits RB6: 84 bits RB7: No data RB8: No data
5	DL_TFC5, DL_TFC11	UL_TFC5, UL_TFC11	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 0 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: No data
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

#### 14.2.38e.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

- At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
- At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
- At step 15a and step 15b the UE shall return
  - for sub-test 1: RLC SDUs on RB5 having the same content as sent by the SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2,3 and 4: RLC SDUs on RB5 and RB6 having the same content as sent by the SS; and no data shall be received on RB7 and RB8.
  - for sub-test 5: RLC SDUs on RB5, RB6 and RB7 having the same content as sent by the SS; and no data shall be received on RB8.
- At step 15b the UE shall send at least one MEASUREMENT REPORT message.

#### 14.2.38f Conversational / speech / UL:(12.2 7.95 5.9 4.75) DL:(12.2 7.95 5.9 4.75) kbps / CS RAB + Interactive or background / UL:8 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.

##### 14.2.38f.1 Conformance requirement

See clause 14.2.4.1.

##### 14.2.38f.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38f.

## 14.2.38f.3 Method of test

See clause 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (8 kbps, 40 ms TTI)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x53	1x60	1x336	1x148
	TF2, bits	1x42	1x63	N/A	N/A	N/A
	TF3, bits	1x55	1x84	N/A	N/A	N/A
	TF4, bits	1x75	1x103	N/A	N/A	N/A
	TF5, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0, TF0, TF0)
UL_TFC3	(TF3, TF2, TF0, TF0, TF0)
UL_TFC4	(TF4, TF3, TF0, TF0, TF0)
UL_TFC5	(TF5, TF4, TF1, TF0, TF0)
UL_TFC6	(TF0, TF0, TF0, TF1, TF0)
UL_TFC7	(TF1, TF0, TF0, TF1, TF0)
UL_TFC8	(TF2, TF1, TF0, TF1, TF0)
UL_TFC9	(TF3, TF2, TF0, TF1, TF0)
UL_TFC10	(TF4, TF3, TF0, TF1, TF0)
UL_TFC11	(TF5, TF4, TF1, TF1, TF0)
UL_TFC12	(TF0, TF0, TF0, TF0, TF1)
UL_TFC13	(TF1, TF0, TF0, TF0, TF1)
UL_TFC14	(TF2, TF1, TF0, TF0, TF1)
UL_TFC15	(TF3, TF2, TF0, TF0, TF1)
UL_TFC16	(TF4, TF3, TF0, TF0, TF1)
UL_TFC17	(TF5, TF4, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF0, TF1, TF1)
UL_TFC21	(TF3, TF2, TF0, TF1, TF1)
UL_TFC22	(TF4, TF3, TF0, TF1, TF1)
UL_TFC23	(TF5, TF4, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (8 kbps, 40 ms TTI)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x53	1x60	1x336	1x148
	TF2, bits	1x42	1x63	N/A	N/A	N/A
	TF3, bits	1x55	1x84	N/A	N/A	N/A
	TF4, bits	1x75	1x103	N/A	N/A	N/A
	TF5, bits	1x81	N/A	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0,TF0,TF0,TF0,TF0)
DL_TFC1	(TF1,TF0,TF0,TF0,TF0)
DL_TFC2	(TF2,TF1,TF0,TF0,TF0)
DL_TFC3	(TF3,TF2,TF0,TF0,TF0)
DL_TFC4	(TF4,TF3,TF0,TF0,TF0)
DL_TFC5	(TF5,TF4,TF1,TF0,TF0)
DL_TFC6	(TF0,TF0,TF0,TF1,TF0)
DL_TFC7	(TF1,TF0,TF0,TF1,TF0)
DL_TFC8	(TF2,TF1,TF0,TF1,TF0)
DL_TFC9	(TF3,TF2,TF0,TF1,TF0)
DL_TFC10	(TF4,TF3,TF0,TF1,TF0)
DL_TFC11	(TF5,TF4,TF1,TF1,TF0)
DL_TFC12	(TF0,TF0,TF0,TF0,TF1)
DL_TFC13	(TF1,TF0,TF0,TF0,TF1)
DL_TFC14	(TF2,TF1,TF0,TF0,TF1)
DL_TFC15	(TF3,TF2,TF0,TF0,TF1)
DL_TFC16	(TF4,TF3,TF0,TF0,TF1)
DL_TFC17	(TF5,TF4,TF1,TF0,TF1)
DL_TFC18	(TF0,TF0,TF0,TF1,TF1)
DL_TFC19	(TF1,TF0,TF0,TF1,TF1)
DL_TFC20	(TF2,TF1,TF0,TF1,TF1)
DL_TFC21	(TF3,TF2,TF0,TF1,TF1)
DL_TFC22	(TF4,TF3,TF0,TF1,TF1)
DL_TFC23	(TF5,TF4,TF1,TF1,TF1)

Sub-tests:

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1, DL_TFC13	UL_TFC1, UL_TFC13	DL_TFC0, DL_TFC12, UL_TFC0, UL_TFC12	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13	RB5: 39 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: 39 bits RB6: No data RB7: No data RB8: No data
2	DL_TFC2, DL_TFC14	UL_TFC2, UL_TFC14	DL_TFC0, DL_TFC12, UL_TFC0, UL_TFC12	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14	RB5: 42 bits RB6: 53 bits RB7: 60 bits RB8: 312 bits	RB5: 42 bits RB6: 53 bits RB7: No data RB8: No data
3	DL_TFC3, DL_TFC15	UL_TFC3, UL_TFC15	DL_TFC0, DL_TFC12, UL_TFC0, UL_TFC12	UL_TFC0, UL_TFC3, UL_TFC12, UL_TFC15	RB5: 55 bits RB6: 63 bits RB7: 60 bits RB8: 312 bits	RB5: 55 bits RB6: 63 bits RB7: No data RB8: No data
4	DL_TFC4, DL_TFC16	UL_TFC4, UL_TFC16	DL_TFC0, DL_TFC12, UL_TFC0, UL_TFC12	UL_TFC0, UL_TFC4, UL_TFC12, UL_TFC16	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 312 bits	RB5: 75 bits RB6: 84 bits RB7: No data RB8: No data
5	DL_TFC5, DL_TFC17	UL_TFC5, UL_TFC17	DL_TFC0, DL_TFC12, UL_TFC0, UL_TFC12	UL_TFC0, UL_TFC5, UL_TFC12, UL_TFC17	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: No data
6	DL_TFC6, DL_TFC18	UL_TFC6, UL_TFC18	DL_TFC0, DL_TFC12, UL_TFC0, UL_TFC12	UL_TFC0, UL_TFC6, UL_TFC12, UL_TFC18	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: No data RB6: No data RB7: No data RB8: 312 bits
7	DL_TFC7, DL_TFC19	UL_TFC7, UL_TFC19	DL_TFC0, DL_TFC12, UL_TFC0, UL_TFC12	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7, UL_TFC12, UL_TFC13, UL_TFC18, UL_TFC19	RB5: 39 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: 39 bits RB6: No data RB7: No data RB8: 312 bits
8	DL_TFC8, DL_TFC20	UL_TFC8, UL_TFC20	DL_TFC0, DL_TFC12, UL_TFC0, UL_TFC12	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8, UL_TFC12, UL_TFC14, UL_TFC18, UL_TFC20	RB5: 42 bits RB6: 53 bits RB7: 60 bits RB8: 312 bits	RB5: 42 bits RB6: 53 bits RB7: No data RB8: 312 bits
9	DL_TFC9, DL_TFC21	UL_TFC9, UL_TFC21	DL_TFC0, DL_TFC12, UL_TFC0, UL_TFC12	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9, UL_TFC12, UL_TFC15, UL_TFC18, UL_TFC21	RB5: 55 bits RB6: 63 bits RB7: 60 bits RB8: 312 bits	RB5: 55 bits RB6: 63 bits RB7: No data RB8: 312 bits
10	DL_TFC10, DL_TFC22	UL_TFC10, UL_TFC22	DL_TFC0, DL_TFC12, UL_TFC0, UL_TFC12	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10, UL_TFC12, UL_TFC16, UL_TFC18, UL_TFC22	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 312 bits	RB5: 75 bits RB6: 84 bits RB7: No data RB8: 312 bits
11	DL_TFC11, DL_TFC23	UL_TFC11, UL_TFC23	DL_TFC0, DL_TFC12, UL_TFC0, UL_TFC12	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11, UL_TFC12, UL_TFC17, UL_TFC18, UL_TFC23	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits

NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  
 RB8: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size parameter has been set equal to the size of the payload size of the UL TF under test minus 8 bits (the size of 7 bit length indicator and expansion bit).

#### 14.2.38f.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15 the UE shall return
  - for sub-test 1: RLC SDUs on RB5 having the same content as sent by the SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2,3 and 4: RLC SDUs on RB5 and RB6 having the same content as sent by the SS; and no data shall be received on RB7 and RB8.
  - for sub-test 5: RLC SDUs on RB5, RB6 and RB7 having the same content as sent by the SS; and no data shall be received on RB8.
  - for sub-test 6: RLC SDUs on RB8 having the same content as sent by the SS; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 7: RLC SDUs on RB5 and RB8 having the same content as sent by the SS; and no data shall be received on RB6 and RB7.
  - for sub-test 8,9 and 10: RLC SDUs on RB5, RB6 and RB8 having the same content as sent by the SS; and no data shall be received on RB7.
  - for sub-test 11: RLC SDUs on RB5, RB6 , RB7 and RB8 having the same content as sent by the SS.
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

**14.2.38g Conversational / speech / UL:(12.2 7.95 5.9 4.75) DL:(12.2 7.95 5.9 4.75) kbps / CS RAB + Interactive or background / UL:16 DL:16 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.**

#### 14.2.38g.1 Conformance requirement

See clause 14.2.4.1.

#### 14.2.38g.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38g.

#### 14.2.38g.3 Method of test

See clause 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (16 kbps, 40 ms TTI)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x53	1x60	1x336	1x148
	TF2, bits	1x42	1x63	N/A	2x336	N/A
	TF3, bits	1x55	1x84	N/A	N/A	N/A
	TF4, bits	1x75	1x103	N/A	N/A	N/A
	TF5, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0, TF0, TF0)
UL_TFC3	(TF3, TF2, TF0, TF0, TF0)
UL_TFC4	(TF4, TF3, TF0, TF0, TF0)
UL_TFC5	(TF5, TF4, TF1, TF0, TF0)
UL_TFC6	(TF0, TF0, TF0, TF1, TF0)
UL_TFC7	(TF1, TF0, TF0, TF1, TF0)
UL_TFC8	(TF3, TF2, TF0, TF1, TF0)
UL_TFC9	(TF4, TF3, TF0, TF1, TF0)
UL_TFC10	(TF5, TF4, TF1, TF1, TF0)
UL_TFC11	(TF0, TF0, TF0, TF2, TF0)
UL_TFC12	(TF1, TF0, TF0, TF2, TF0)
UL_TFC13	(TF3, TF2, TF0, TF2, TF0)
UL_TFC14	(TF4, TF3, TF0, TF2, TF0)
UL_TFC15	(TF5, TF4, TF1, TF2, TF0)
UL_TFC16	(TF0, TF0, TF0, TF0, TF1)
UL_TFC17	(TF1, TF0, TF0, TF0, TF1)
UL_TFC18	(TF2, TF1, TF0, TF0, TF1)
UL_TFC19	(TF3, TF2, TF0, TF0, TF1)
UL_TFC20	(TF4, TF3, TF0, TF0, TF1)
UL_TFC21	(TF5, TF4, TF1, TF0, TF1)
UL_TFC22	(TF0, TF0, TF0, TF1, TF1)
UL_TFC23	(TF1, TF0, TF0, TF1, TF1)
UL_TFC24	(TF3, TF2, TF0, TF1, TF1)
UL_TFC25	(TF4, TF3, TF0, TF1, TF1)
UL_TFC26	(TF5, TF4, TF1, TF1, TF1)
UL_TFC27	(TF0, TF0, TF0, TF2, TF1)
UL_TFC28	(TF1, TF0, TF0, TF2, TF1)
UL_TFC29	(TF3, TF2, TF0, TF2, TF1)
UL_TFC30	(TF4, TF3, TF0, TF2, TF1)
UL_TFC31	(TF5, TF4, TF1, TF2, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (16 kbps, 40 ms TTI)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x53	1x60	1x336	1x148
	TF2, bits	1x42	1x63	N/A	2x336	N/A
	TF3, bits	1x55	1x84	N/A	N/A	N/A
	TF4, bits	1x75	1x103	N/A	N/A	N/A
	TF5, bits	1x81	N/A	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0,TF0,TF0,TF0,TF0)
DL_TFC1	(TF1,TF0,TF0,TF0,TF0)
DL_TFC2	(TF2,TF1,TF0,TF0,TF0)
DL_TFC3	(TF3,TF2,TF0,TF0,TF0)
DL_TFC4	(TF4,TF3,TF0,TF0,TF0)
DL_TFC5	(TF5,TF4,TF1,TF0,TF0)
DL_TFC6	(TF0,TF0,TF0,TF1,TF0)
DL_TFC7	(TF1,TF0,TF0,TF1,TF0)
DL_TFC8	(TF2,TF1,TF0,TF1,TF0)
DL_TFC9	(TF3,TF2,TF0,TF1,TF0)
DL_TFC10	(TF4,TF3,TF0,TF1,TF0)
DL_TFC11	(TF5,TF4,TF1,TF1,TF0)
DL_TFC12	(TF0,TF0,TF0,TF2,TF0)
DL_TFC13	(TF1,TF0,TF0,TF2,TF0)
DL_TFC14	(TF2,TF1,TF0,TF2,TF0)
DL_TFC15	(TF3,TF2,TF0,TF2,TF0)
DL_TFC16	(TF4,TF3,TF0,TF2,TF0)
DL_TFC17	(TF5,TF4,TF1,TF2,TF0)
DL_TFC18	(TF0,TF0,TF0,TF0,TF1)
DL_TFC19	(TF1,TF0,TF0,TF0,TF1)
DL_TFC20	(TF2,TF1,TF0,TF0,TF1)
DL_TFC21	(TF3,TF2,TF0,TF0,TF1)
DL_TFC22	(TF4,TF3,TF0,TF0,TF1)
DL_TFC23	(TF5,TF4,TF1,TF0,TF1)
DL_TFC24	(TF0,TF0,TF0,TF1,TF1)
DL_TFC25	(TF1,TF0,TF0,TF1,TF1)
DL_TFC26	(TF2,TF1,TF0,TF1,TF1)
DL_TFC27	(TF3,TF2,TF0,TF1,TF1)
DL_TFC28	(TF4,TF3,TF0,TF1,TF1)
DL_TFC29	(TF5,TF4,TF1,TF1,TF1)
DL_TFC30	(TF0,TF0,TF0,TF2,TF1)
DL_TFC31	(TF1,TF0,TF0,TF2,TF1)
DL_TFC32	(TF2,TF1,TF0,TF2,TF1)
DL_TFC33	(TF3,TF2,TF0,TF2,TF1)
DL_TFC34	(TF4,TF3,TF0,TF2,TF1)
DL_TFC35	(TF5,TF4,TF1,TF2,TF1)

Sub-tests:

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1, DL_TFC19	UL_TFC1, UL_TFC17	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC16, UL_TFC17	RB5: 39 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: 39 bits RB6: No data RB7: No data RB8: No data
2	DL_TFC2, DL_TFC20	UL_TFC2, UL_TFC18	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC2, UL_TFC16, UL_TFC18	RB5: 42 bits RB6: 53 bits RB7: 60 bits RB8: 312 bits	RB5: 42 bits RB6: 53 bits RB7: No data RB8: No data
3	DL_TFC3, DL_TFC21	UL_TFC3, UL_TFC19	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC3, UL_TFC16, UL_TFC19	RB5: 55 bits RB6: 63 bits RB7: 60 bits RB8: 312 bits	RB5: 55 bits RB6: 63 bits RB7: No data RB8: No data
4	DL_TFC4, DL_TFC22	UL_TFC4, UL_TFC20	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC4, UL_TFC16, UL_TFC20	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 312 bits	RB5: 75 bits RB6: 84 bits RB7: No data RB8: No data
5	DL_TFC5, DL_TFC23	UL_TFC5, UL_TFC21	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC5, UL_TFC16, UL_TFC21	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: No data
6	DL_TFC6, DL_TFC24	UL_TFC6, UL_TFC22	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC6, UL_TFC16, UL_TFC22	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: No data RB6: No data RB7: No data RB8: 312 bits
7	DL_TFC7, DL_TFC25	UL_TFC7, UL_TFC23	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7, UL_TFC16, UL_TFC17, UL_TFC22, UL_TFC23	RB5: 39 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: 39 bits RB6: No data RB7: No data RB8: 312 bits
8	DL_TFC8, DL_TFC26	UL_TFC8, UL_TFC24	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC8, UL_TFC16, UL_TFC19, UL_TFC22, UL_TFC24	RB5: 55 bits RB6: 63 bits RB7: 60 bits RB8: 312 bits	RB5: 42 bits RB6: 53 bits RB7: No data RB8: 312 bits
9	DL_TFC9, DL_TFC27	UL_TFC8, UL_TFC24	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC8, UL_TFC16, UL_TFC19, UL_TFC22, UL_TFC24	RB5: 55 bits RB6: 63 bits RB7: 60 bits RB8: 312 bits	RB5: 55 bits RB6: 63 bits RB7: No data RB8: 312 bits
10	DL_TFC10, DL_TFC28	UL_TFC9, UL_TFC25	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC9, UL_TFC16, UL_TFC20, UL_TFC22, UL_TFC25	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 312 bits	RB5: 75 bits RB6: 84 bits RB7: No data RB8: 312 bits
11	DL_TFC11, DL_TFC29	UL_TFC10, UL_TFC26	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC10, UL_TFC16, UL_TFC21, UL_TFC22, UL_TFC26	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits

12	DL_TFC12, DL_TFC30	UL_TFC11, UL_TFC27	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC11, UL_TFC16, UL_TFC27	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 632 bits	RB5: No data RB6: No data RB7: No data RB8: 632 bits
13	DL_TFC13, DL_TFC31	UL_TFC12, UL_TFC28	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC11, UL_TFC12, UL_TFC16, UL_TFC17, UL_TFC27, UL_TFC28	RB5: 39 bits RB6: 103 bits RB7: 60 bits RB8: 632 bits	RB5: 39 bits RB6: No data RB7: No data RB8: 632 bits
14	DL_TFC14, DL_TFC32	UL_TFC13, UL_TFC29	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC3, UL_TFC11, UL_TFC13, UL_TFC16, UL_TFC19, UL_TFC27, UL_TFC29	RB5: 55 bits RB6: 63 bits RB7: 60 bits RB8: 632 bits	RB5: 42 bits RB6: 53 bits RB7: No data RB8: 632 bits
15	DL_TFC15, DL_TFC33	UL_TFC13, UL_TFC29	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC3, UL_TFC11, UL_TFC13, UL_TFC16, UL_TFC19, UL_TFC27, UL_TFC29	RB5: 55 bits RB6: 63 bits RB7: 60 bits RB8: 632 bits	RB5: 55 bits RB6: 63 bits RB7: No data RB8: 632 bits
16	DL_TFC16, DL_TFC34	UL_TFC14, UL_TFC30	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC4, UL_TFC11, UL_TFC14, UL_TFC16, UL_TFC20, UL_TFC27, UL_TFC30	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 632 bits	RB5: 75 bits RB6: 84 bits RB7: No data RB8: 632 bits
17	DL_TFC17, DL_TFC35	UL_TFC15, UL_TFC31	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC5, UL_TFC11, UL_TFC15, UL_TFC16, UL_TFC21, UL_TFC27, UL_TFC31	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 632 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 632 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB8: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size parameter has been set equal to the size of the payload size of the UL TF under test minus 8 bits (the size of 7 bit length indicator and expansion bit).						

#### 14.2.38g.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.

3. At step 15 the UE shall return

- for sub-test 1: RLC SDUs on RB5 having the same content as sent by the SS; and no data shall be received on RB6, RB7 and RB8.
- for sub-test 2,3 and 4: RLC SDUs on RB5 and RB6 having the same content as sent by the SS; and no data shall be received on RB7 and RB8.
- for sub-test 5: RLC SDUs on RB5, RB6 and RB7 having the same content as sent by the SS; and no data shall be received on RB8.
- for sub-test 6: RLC SDUs on RB8 having the same content as sent by the SS; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 7: RLC SDUs on RB5 and RB8 having the same content as sent by the SS; and no data shall be received on RB6 and RB7.
- for sub-test 8: RLC SDUs on RB5 having the first 42 bits equal to the content of the test data sent by the SS in downlink ; RLC SDUs on RB6 having the first 53 bits equal to the content of the test data sent by the SS in downlink ; RLC SDUs on RB8 having the same content as sent by the SS; and no data shall be received on RB7.
- for sub-test 9 and 10: RLC SDUs on RB5, RB6 and RB8 having the same content as sent by the SS; and no data shall be received on RB7.
- for sub-test 11: RLC SDUs on RB5, RB6 , RB7 and RB8 having the same content as sent by the SS.
- for sub-test 12: RLC SDUs on RB8 having the same content as sent by the SS; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 13: RLC SDUs on RB5 and RB8 having the same content as sent by the SS; and no data shall be received on RB6 and RB7.
- for sub-test 14: RLC SDUs on RB5 having the first 42 bits equal to the content of the test data sent by the SS in downlink ; RLC SDUs on RB6 having the first 53 bits equal to the content of the test data sent by the SS in downlink ; RLC SDUs on RB8 having the same content as sent by the SS; and no data shall be received on RB7.
- for sub-test 15 and 16: RLC SDUs on RB5, RB6 and RB8 having the same content as sent by the SS; and no data shall be received on RB7.
- for sub-test 17: RLC SDUs on RB5, RB6 , RB7 and RB8 having the same content as sent by the SS.

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

### 14.2.38h Conversational / speech / UL:(12.2 7.95 5.9 4.75) DL:(12.2 7.95 5.9 4.75) kbps / CS RAB + Interactive or background / UL:32 DL:32 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.

14.2.38h.1 Conformance requirement

See clause 14.2.4.1.

14.2.38h.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38h.

14.2.38h.3 Method of test

See clause 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (32 kbps, 40 ms TTI)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x53	1x60	1x336	1x148
	TF2, bits	1x42	1x63	N/A	2x336	N/A
	TF3, bits	1x55	1x84	N/A	3x336	N/A
	TF4, bits	1x75	1x103	N/A	4x336	N/A
	TF5, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF0, TF0, TF0, TF1, TF0)
UL_TFC2	(TF0, TF0, TF0, TF2, TF0)
UL_TFC3	(TF0, TF0, TF0, TF4, TF0)
UL_TFC4	(TF5, TF4, TF1, TF0, TF0)
UL_TFC5	(TF5, TF4, TF1, TF1, TF0)
UL_TFC6	(TF5, TF4, TF1, TF2, TF0)
UL_TFC7	(TF5, TF4, TF1, TF4, TF0)
UL_TFC8	(TF4, TF3, TF0, TF0, TF0)
UL_TFC9	(TF4, TF3, TF0, TF1, TF0)
UL_TFC10	(TF3, TF2, TF0, TF0, TF0)
UL_TFC11	(TF2, TF1, TF0, TF0, TF0)
UL_TFC12	(TF1, TF0, TF0, TF0, TF0)
UL_TFC13	(TF1, TF0, TF0, TF1, TF0)
UL_TFC14	(TF1, TF0, TF0, TF2, TF0)
UL_TFC15	(TF1, TF0, TF0, TF4, TF0)
UL_TFC16	(TF0, TF0, TF0, TF0, TF1)
UL_TFC17	(TF0, TF0, TF0, TF1, TF1)
UL_TFC18	(TF0, TF0, TF0, TF2, TF1)
UL_TFC19	(TF0, TF0, TF0, TF4, TF1)
UL_TFC20	(TF5, TF4, TF1, TF0, TF1)
UL_TFC21	(TF5, TF4, TF1, TF1, TF1)
UL_TFC22	(TF5, TF4, TF1, TF2, TF1)
UL_TFC23	(TF5, TF4, TF1, TF4, TF1)
UL_TFC24	(TF4, TF3, TF0, TF0, TF1)
UL_TFC25	(TF4, TF3, TF0, TF1, TF1)
UL_TFC26	(TF3, TF2, TF0, TF0, TF1)
UL_TFC27	(TF2, TF1, TF0, TF0, TF1)
UL_TFC28	(TF1, TF0, TF0, TF0, TF1)
UL_TFC29	(TF1, TF0, TF0, TF1, TF1)
UL_TFC30	(TF1, TF0, TF0, TF2, TF1)
UL_TFC31	(TF1, TF0, TF0, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (32 kbps, 40 ms TTI)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x53	1x60	1x336	1x148
	TF2, bits	1x42	1x63	N/A	2x336	N/A
	TF3, bits	1x55	1x84	N/A	3x336	N/A
	TF4, bits	1x75	1x103	N/A	4x336	N/A
	TF5, bits	1x81	N/A	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0,TF0,TF0,TF0,TF0)
DL_TFC1	(TF0,TF0,TF0,TF1,TF0)
DL_TFC2	(TF0,TF0,TF0,TF2,TF0)
DL_TFC3	(TF0,TF0,TF0,TF4,TF0)
DL_TFC4	(TF5,TF4,TF1,TF0,TF0)
DL_TFC5	(TF5,TF4,TF1,TF1,TF0)
DL_TFC6	(TF5,TF4,TF1,TF2,TF0)
DL_TFC7	(TF5,TF4,TF1,TF4,TF0)
DL_TFC8	(TF4,TF3,TF0,TF0,TF0)
DL_TFC9	(TF4,TF3,TF0,TF1,TF0)
DL_TFC10	(TF4,TF3,TF0,TF2,TF0)
DL_TFC11	(TF4,TF3,TF0,TF4,TF0)
DL_TFC12	(TF3,TF2,TF0,TF0,TF0)
DL_TFC13	(TF3,TF2,TF0,TF1,TF0)
DL_TFC14	(TF3,TF2,TF0,TF2,TF0)
DL_TFC15	(TF3,TF2,TF0,TF4,TF0)
DL_TFC16	(TF2,TF1,TF0,TF0,TF0)
DL_TFC17	(TF2,TF1,TF0,TF1,TF0)
DL_TFC18	(TF2,TF1,TF0,TF2,TF0)
DL_TFC19	(TF2,TF1,TF0,TF4,TF0)
DL_TFC20	(TF1,TF0,TF0,TF0,TF0)
DL_TFC21	(TF1,TF0,TF0,TF1,TF0)
DL_TFC22	(TF1,TF0,TF0,TF2,TF0)
DL_TFC23	(TF1,TF0,TF0,TF4,TF0)
DL_TFC24	(TF0,TF0,TF0,TF0,TF1)
DL_TFC25	(TF0,TF0,TF0,TF1,TF1)
DL_TFC26	(TF0,TF0,TF0,TF2,TF1)
DL_TFC27	(TF0,TF0,TF0,TF4,TF1)
DL_TFC28	(TF5,TF4,TF1,TF0,TF1)
DL_TFC29	(TF5,TF4,TF1,TF1,TF1)
DL_TFC30	(TF5,TF4,TF1,TF2,TF1)
DL_TFC31	(TF5,TF4,TF1,TF4,TF1)
DL_TFC32	(TF4,TF3,TF0,TF0,TF1)
DL_TFC33	(TF4,TF3,TF0,TF1,TF1)
DL_TFC34	(TF4,TF3,TF0,TF2,TF1)
DL_TFC35	(TF4,TF3,TF0,TF4,TF1)
DL_TFC36	(TF3,TF2,TF0,TF0,TF1)
DL_TFC37	(TF3,TF2,TF0,TF1,TF1)
DL_TFC38	(TF3,TF2,TF0,TF2,TF1)
DL_TFC39	(TF3,TF2,TF0,TF4,TF1)
DL_TFC40	(TF2,TF1,TF0,TF0,TF1)
DL_TFC41	(TF2,TF1,TF0,TF1,TF1)
DL_TFC42	(TF2,TF1,TF0,TF2,TF1)
DL_TFC43	(TF2,TF1,TF0,TF4,TF1)
DL_TFC44	(TF1,TF0,TF0,TF0,TF1)
DL_TFC45	(TF1,TF0,TF0,TF1,TF1)
DL_TFC46	(TF1,TF0,TF0,TF2,TF1)
DL_TFC47	(TF1,TF0,TF0,TF4,TF1)

Sub-tests:

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1, DL_TFC25	UL_TFC1, UL_TFC17	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC16, UL_TFC17	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: No data RB6: No data RB7: No data RB8: 312
2	DL_TFC2, DL_TFC26	UL_TFC2, UL_TFC18	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC2, UL_TFC16, UL_TFC18	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 632 bits	RB5: No data RB6: No data RB7: No data RB8: 632
3	DL_TFC3, DL_TFC27	UL_TFC3, UL_TFC19	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC3, UL_TFC16, UL_TFC19	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 1272 bits	RB5: No data RB6: No data RB7: No data RB8: 1272
4	DL_TFC4, DL_TFC28	UL_TFC4, UL_TFC20	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC4, UL_TFC16, UL_TFC20	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: No data
5	DL_TFC5, DL_TFC29	UL_TFC5, UL_TFC21	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC4, UL_TFC5, UL_TFC16, UL_TFC17, UL_TFC20, UL_TFC21	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits
6	DL_TFC6, DL_TFC30	UL_TFC6, UL_TFC22	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC2, UL_TFC4, UL_TFC6, UL_TFC16, UL_TFC18, UL_TFC20, UL_TFC22	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 632 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 632 bits
7	DL_TFC7, DL_TFC31	UL_TFC7, UL_TFC23	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC3, UL_TFC4, UL_TFC7, UL_TFC16, UL_TFC19, UL_TFC20, UL_TFC23	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 1272 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 1272 bits
8	DL_TFC8, DL_TFC32	UL_TFC8, UL_TFC24	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC8, UL_TFC16, UL_TFC24	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 312 bits	RB5: 75 bits RB6: 84 bits RB7: No data RB8: No data
9	DL_TFC9, DL_TFC33	UL_TFC9, UL_TFC25	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC8, UL_TFC9, UL_TFC16, UL_TFC17, UL_TFC24, UL_TFC25	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 312 bits	RB5: 75 bits RB6: 84 bits RB7: No data RB8: 312 bits
10	DL_TFC10, DL_TFC34	UL_TFC9, UL_TFC25	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC8, UL_TFC9, UL_TFC16, UL_TFC17, UL_TFC24, UL_TFC25	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 312 bits	RB5: 75 bits RB6: 84 bits RB7: No data RB8: 632 bits

11	DL_TFC11, DL_TFC35	UL_TFC9, UL_TFC25	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC8, UL_TFC9, UL_TFC16, UL_TFC17, UL_TFC24, UL_TFC25	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 312 bits	RB5: 75 bits RB6: 84 bits RB7: No data RB8: 1272 bits
12	DL_TFC12, DL_TFC36	UL_TFC10, UL_TFC26	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC10, UL_TFC16, UL_TFC26	RB5: 55 bits RB6: 63 bits RB7: 60 bits RB8: 312 bits	RB5: 55 bits RB6: 63 bits RB7: No data RB8: No data
13	DL_TFC13, DL_TFC37	UL_TFC9, UL_TFC25	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC8, UL_TFC9, UL_TFC16, UL_TFC17, UL_TFC24, UL_TFC25	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 312 bits	RB5: 55 bits RB6: 63 bits RB7: No data RB8: 312 bits
14	DL_TFC14, DL_TFC38	UL_TFC9, UL_TFC25	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC8, UL_TFC9, UL_TFC16, UL_TFC17, UL_TFC24, UL_TFC25	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 312 bits	RB5: 55 bits RB6: 63 bits RB7: No data RB8: 632 bits
15	DL_TFC15, DL_TFC39	UL_TFC9, UL_TFC25	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC8, UL_TFC9, UL_TFC16, UL_TFC17, UL_TFC24, UL_TFC25	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 312 bits	RB5: 55 bits RB6: 63 bits RB7: No data RB8: 1272 bits
16	DL_TFC16, DL_TFC40	UL_TFC11, UL_TFC27	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC11, UL_TFC16, UL_TFC27	RB5: 42 bits RB6: 53 bits RB7: 60 bits RB8: 312 bits	RB5: 42 bits RB6: 53 bits RB7: No data RB8: No data
17	DL_TFC17, DL_TFC41	UL_TFC9, UL_TFC25	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC8, UL_TFC9, UL_TFC16, UL_TFC17, UL_TFC24, UL_TFC25	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 312 bits	RB5: 42 bits RB6: 53 bits RB7: No data RB8: 312 bits
18	DL_TFC18, DL_TFC42	UL_TFC9, UL_TFC25	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC8, UL_TFC9, UL_TFC16, UL_TFC17, UL_TFC24, UL_TFC25	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 312 bits	RB5: 42 bits RB6: 53 bits RB7: No data RB8: 632 bits
19	DL_TFC19, DL_TFC43	UL_TFC9, UL_TFC25	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC8, UL_TFC9, UL_TFC16, UL_TFC17, UL_TFC24, UL_TFC25	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 312 bits	RB5: 42 bits RB6: 53 bits RB7: No data RB8: 1272 bits
20	DL_TFC20, DL_TFC44	UL_TFC12, UL_TFC28	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC12, UL_TFC16, UL_TFC28	RB5: 39 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: 39 bits RB6: No data RB7: No data RB8: No data

21	DL_TFC21, DL_TFC45	UL_TFC13, UL_TFC29	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC16, UL_TFC17, UL_TFC28, UL_TFC29	RB5: 39 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: 39 bits RB6: No data RB7: No data RB8: 312 bits
22	DL_TFC22, DL_TFC46	UL_TFC14, UL_TFC30	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC16, UL_TFC18, UL_TFC28, UL_TFC30	RB5: 39 bits RB6: 103 bits RB7: 60 bits RB8: 632 bits	RB5: 39 bits RB6: No data RB7: No data RB8: 632 bits
23	DL_TFC23, DL_TFC47	UL_TFC15, UL_TFC31	DL_TFC0, DL_TFC24, UL_TFC0, UL_TFC16	UL_TFC0, UL_TFC3, UL_TFC12, UL_TFC15, UL_TFC16, UL_TFC19, UL_TFC28, UL_TFC31	RB5: 39 bits RB6: 103 bits RB7: 60 bits RB8: 1272 bits	RB5: 39 bits RB6: No data RB7: No data RB8: 1272 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB8: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size parameter has been set equal to the size of the payload size of the UL TF under test minus 8 bits (the size of 7 bit length indicator and expansion bit).						

#### 14.2. 38h.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15 the UE shall return
  - for sub-test 1,2 and 3: RLC SDUs on RB8 having the same content as sent by the SS; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 4: RLC SDUs on RB5, RB6 and RB7 having the same content as sent by the SS; and no data shall be received on RB8.
  - for sub-test 5, 6 and 7: RLC SDUs on RB5, RB6, RB7 and RB8 having the same content as sent by the SS.
  - for sub-test 8: RLC SDUs on RB5 and RB6 having the same content as sent by the SS; and no data shall be received on RB7 and RB8.
  - for sub-test 9: RLC SDUs on RB5, RB6 and RB8 having the same content as sent by the SS; and no data shall be received on RB7.
  - for sub-test 10 and 11: RLC SDUs on RB5 and RB6 having the same content as sent by the SS; RLC SDUs on RB8 having the same content as the first 312 bits of the test data sent by the SS in downlink; and no data shall be received on RB7.

- for sub-test 12: RLC SDUs on RB5 and RB6 having the same content as sent by the SS; and no data shall be received on RB7 and RB8.
- for sub-test 13: RLC SDUs on RB5 having the first 55 bits equal to the content of the test data sent by the SS in downlink; RLC SDUs on RB6 having the first 63 bits equal to the content of the test data sent by the SS in downlink; RLC SDUs on RB8 having the same content as sent by the SS; and no data shall be received on RB7.
- for sub-test 14 and 15: RLC SDUs on RB5 having the first 55 bits equal to the content of the test data sent by the SS in downlink; RLC SDUs on RB6 having the first 63 bits equal to the content of the test data sent by the SS in downlink; RLC SDUs on RB8 having the same content as the first 312 bits of the test data sent by the SS in downlink; and no data shall be received on RB7.
- for sub-test 16: RLC SDUs on RB5 and RB6 having the same content as sent by the SS; and no data shall be received on RB7 and RB8.
- for sub-test 17: RLC SDUs on RB5 having the first 42 bits equal to the content of the test data sent by the SS in downlink; RLC SDUs on RB6 having the first 53 bits equal to the content of the test data sent by the SS in downlink; RLC SDUs on RB8 having the same content as sent by the SS; and no data shall be received on RB7.
- for sub-test 18 and 19: RLC SDUs on RB5 having the first 42 bits equal to the content of the test data sent by the SS in downlink; RLC SDUs on RB6 having the first 53 bits equal to the content of the test data sent by the SS in downlink; RLC SDUs on RB8 having the same content as the first 312 bits of the test data sent by the SS in downlink; and no data shall be received on RB7.
- for sub-test 20: RLC SDUs on RB5 having the same content as sent by the SS; and no data shall be received on RB6, RB7 and RB8.
- for sub-test 21, 22 and 23: RLC SDUs on RB5 and RB8 having the same content as sent by the SS; and no data shall be received on RB6 and RB7.

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

**14.2.38i Conversational / speech / UL:(12.2 7.95 5.9 4.75) DL:(12.2 7.95 5.9 4.75) kbps / CS RAB + Interactive or background / UL:64 DL:64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.**

14.2.38i.1 Conformance requirement

See clause 14.2.4.1.

14.2.38i.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38i.

14.2.38i.3 Method of test

See clause 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps, 20 ms TTI)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x53	1x60	1x336	1x148
	TF2, bits	1x42	1x63	N/A	2x336	N/A
	TF3, bits	1x55	1x84	N/A	3x336	N/A
	TF4, bits	1x75	1x103	N/A	4x336	N/A
	TF5, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0, TF0, TF0)
UL_TFC3	(TF3, TF2, TF0, TF0, TF0)
UL_TFC4	(TF4, TF3, TF0, TF0, TF0)
UL_TFC5	(TF5, TF4, TF1, TF0, TF0)
UL_TFC6	(TF0, TF0, TF0, TF1, TF0)
UL_TFC7	(TF1, TF0, TF0, TF1, TF0)
UL_TFC8	(TF2, TF1, TF0, TF1, TF0)
UL_TFC9	(TF3, TF2, TF0, TF1, TF0)
UL_TFC10	(TF4, TF3, TF0, TF1, TF0)
UL_TFC11	(TF5, TF4, TF1, TF1, TF0)
UL_TFC12	(TF0, TF0, TF0, TF2, TF0)
UL_TFC13	(TF1, TF0, TF0, TF2, TF0)
UL_TFC14	(TF2, TF1, TF0, TF2, TF0)
UL_TFC15	(TF3, TF2, TF0, TF2, TF0)
UL_TFC16	(TF4, TF3, TF0, TF2, TF0)
UL_TFC17	(TF5, TF4, TF1, TF2, TF0)
UL_TFC18	(TF0, TF0, TF0, TF4, TF0)
UL_TFC19	(TF1, TF0, TF0, TF4, TF0)
UL_TFC20	(TF2, TF1, TF0, TF4, TF0)
UL_TFC21	(TF3, TF2, TF0, TF4, TF0)
UL_TFC22	(TF4, TF3, TF0, TF4, TF0)
UL_TFC23	(TF5, TF4, TF1, TF4, TF0)
UL_TFC24	(TF0, TF0, TF0, TF0, TF1)
UL_TFC25	(TF1, TF0, TF0, TF0, TF1)
UL_TFC26	(TF2, TF1, TF0, TF0, TF1)
UL_TFC27	(TF3, TF2, TF0, TF0, TF1)
UL_TFC28	(TF4, TF3, TF0, TF0, TF1)
UL_TFC29	(TF5, TF4, TF1, TF0, TF1)
UL_TFC30	(TF0, TF0, TF0, TF1, TF1)
UL_TFC31	(TF1, TF0, TF0, TF1, TF1)
UL_TFC32	(TF2, TF1, TF0, TF1, TF1)
UL_TFC33	(TF3, TF2, TF0, TF1, TF1)
UL_TFC34	(TF4, TF3, TF0, TF1, TF1)
UL_TFC35	(TF5, TF4, TF1, TF1, TF1)
UL_TFC36	(TF0, TF0, TF0, TF2, TF1)
UL_TFC37	(TF1, TF0, TF0, TF2, TF1)
UL_TFC38	(TF2, TF1, TF0, TF2, TF1)
UL_TFC39	(TF3, TF2, TF0, TF2, TF1)
UL_TFC40	(TF4, TF3, TF0, TF2, TF1)
UL_TFC41	(TF5, TF4, TF1, TF2, TF1)
UL_TFC42	(TF0, TF0, TF0, TF4, TF1)
UL_TFC43	(TF1, TF0, TF0, TF4, TF1)
UL_TFC44	(TF2, TF1, TF0, TF4, TF1)
UL_TFC45	(TF3, TF2, TF0, TF4, TF1)
UL_TFC46	(TF4, TF3, TF0, TF4, TF1)
UL_TFC47	(TF5, TF4, TF1, TF4, TF1)

Downlink TFS:

		<b>RB5 (RAB subflow #1)</b>	<b>RB6 (RAB subflow #2)</b>	<b>RB7 (RAB subflow #3)</b>	<b>RB8 (64 kbps, 20 ms TTI)</b>	<b>DCCH</b>
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x53	1x60	1x336	1x148
	TF2, bits	1x42	1x63	N/A	2x336	N/A
	TF3, bits	1x55	1x84	N/A	3x336	N/A
	TF4, bits	1x75	1x103	N/A	4x336	N/A
	TF5, bits	1x81	N/A	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0,TF0,TF0,TF0,TF0)
DL_TFC1	(TF1,TF0,TF0,TF0,TF0)
DL_TFC2	(TF2,TF1,TF0,TF0,TF0)
DL_TFC3	(TF3,TF2,TF0,TF0,TF0)
DL_TFC4	(TF4,TF3,TF0,TF0,TF0)
DL_TFC5	(TF5,TF4,TF1,TF0,TF0)
DL_TFC6	(TF0,TF0,TF0,TF1,TF0)
DL_TFC7	(TF1,TF0,TF0,TF1,TF0)
DL_TFC8	(TF2,TF1,TF0,TF1,TF0)
DL_TFC9	(TF3,TF2,TF0,TF1,TF0)
DL_TFC10	(TF4,TF3,TF0,TF1,TF0)
DL_TFC11	(TF5,TF4,TF1,TF1,TF0)
DL_TFC12	(TF0,TF0,TF0,TF2,TF0)
DL_TFC13	(TF1,TF0,TF0,TF2,TF0)
DL_TFC14	(TF2,TF1,TF0,TF2,TF0)
DL_TFC15	(TF3,TF2,TF0,TF2,TF0)
DL_TFC16	(TF4,TF3,TF0,TF2,TF0)
DL_TFC17	(TF5,TF4,TF1,TF2,TF0)
DL_TFC18	(TF0,TF0,TF0,TF3,TF0)
DL_TFC19	(TF1,TF0,TF0,TF3,TF0)
DL_TFC20	(TF2,TF1,TF0,TF3,TF0)
DL_TFC21	(TF3,TF2,TF0,TF3,TF0)
DL_TFC22	(TF4,TF3,TF0,TF3,TF0)
DL_TFC23	(TF5,TF4,TF1,TF3,TF0)
DL_TFC24	(TF0,TF0,TF0,TF4,TF0)
DL_TFC25	(TF1,TF0,TF0,TF4,TF0)
DL_TFC26	(TF2,TF1,TF0,TF4,TF0)
DL_TFC27	(TF3,TF2,TF0,TF4,TF0)
DL_TFC28	(TF4,TF3,TF0,TF4,TF0)
DL_TFC29	(TF5,TF4,TF1,TF4,TF0)
DL_TFC30	(TF0,TF0,TF0,TF0,TF1)
DL_TFC31	(TF1,TF0,TF0,TF0,TF1)
DL_TFC32	(TF2,TF1,TF0,TF0,TF1)
DL_TFC33	(TF3,TF2,TF0,TF0,TF1)
DL_TFC34	(TF4,TF3,TF0,TF0,TF1)
DL_TFC35	(TF5,TF4,TF1,TF0,TF1)
DL_TFC36	(TF0,TF0,TF0,TF1,TF1)
DL_TFC37	(TF1,TF0,TF0,TF1,TF1)
DL_TFC38	(TF2,TF1,TF0,TF1,TF1)
DL_TFC39	(TF3,TF2,TF0,TF1,TF1)
DL_TFC40	(TF4,TF3,TF0,TF1,TF1)
DL_TFC41	(TF5,TF4,TF1,TF1,TF1)
DL_TFC42	(TF0,TF0,TF0,TF2,TF1)
DL_TFC43	(TF1,TF0,TF0,TF2,TF1)
DL_TFC44	(TF2,TF1,TF0,TF2,TF1)
DL_TFC45	(TF3,TF2,TF0,TF2,TF1)
DL_TFC46	(TF4,TF3,TF0,TF2,TF1)
DL_TFC47	(TF5,TF4,TF1,TF2,TF1)
DL_TFC48	(TF0,TF0,TF0,TF3,TF1)
DL_TFC49	(TF1,TF0,TF0,TF3,TF1)
DL_TFC50	(TF2,TF1,TF0,TF3,TF1)
DL_TFC51	(TF3,TF2,TF0,TF3,TF1)
DL_TFC52	(TF4,TF3,TF0,TF3,TF1)
DL_TFC53	(TF5,TF4,TF1,TF3,TF1)
DL_TFC54	(TF0,TF0,TF0,TF4,TF1)
DL_TFC55	(TF1,TF0,TF0,TF4,TF1)
DL_TFC56	(TF2,TF1,TF0,TF4,TF1)
DL_TFC57	(TF3,TF2,TF0,TF4,TF1)
DL_TFC58	(TF4,TF3,TF0,TF4,TF1)
DL_TFC59	(TF5,TF4,TF1,TF4,TF1)

Sub-tests:

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1, DL_TFC31	UL_TFC1, UL_TFC25	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC1, UL_TFC24, UL_TFC25	RB5: 39 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: 39 bits RB6: No data RB7: No data RB8: No data
2	DL_TFC2, DL_TFC32	UL_TFC2, UL_TFC26	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC2, UL_TFC24, UL_TFC26	RB5: 42 bits RB6: 53 bits RB7: 60 bits RB8: 312 bits	RB5: 42 bits RB6: 53 bits RB7: No data RB8: No data
3	DL_TFC3, DL_TFC33	UL_TFC3, UL_TFC27	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC3, UL_TFC24, UL_TFC27	RB5: 55 bits RB6: 63 bits RB7: 60 bits RB8: 312 bits	RB5: 55 bits RB6: 63 bits RB7: No data RB8: No data
4	DL_TFC4, DL_TFC34	UL_TFC4, UL_TFC28	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC4, UL_TFC24, UL_TFC28	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 312 bits	RB5: 75 bits RB6: 84 bits RB7: No data RB8: No data
5	DL_TFC5, DL_TFC35	UL_TFC5, UL_TFC29	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC5, UL_TFC24, UL_TFC29	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: No data
6	DL_TFC6, DL_TFC36	UL_TFC6, UL_TFC30	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC6, UL_TFC24, UL_TFC30	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: No data RB6: No data RB7: No data RB8: 312 bits
7	DL_TFC7, DL_TFC37	UL_TFC7, UL_TFC31	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7, UL_TFC24, UL_TFC25, UL_TFC30, UL_TFC31	RB5: 39 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: 39 bits RB6: No data RB7: No data RB8: 312 bits
8	DL_TFC8, DL_TFC38	UL_TFC8, UL_TFC32	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8, UL_TFC24, UL_TFC26, UL_TFC30, UL_TFC32	RB5: 42 bits RB6: 53 bits RB7: 60 bits RB8: 312 bits	RB5: 42 bits RB6: 53 bits RB7: No data RB8: 312 bits
9	DL_TFC9, DL_TFC39	UL_TFC9, UL_TFC33	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9, UL_TFC24, UL_TFC27, UL_TFC30, UL_TFC33	RB5: 55 bits RB6: 63 bits RB7: 60 bits RB8: 312 bits	RB5: 55 bits RB6: 63 bits RB7: No data RB8: 312 bits
10	DL_TFC10, DL_TFC40	UL_TFC10, UL_TFC34	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10, UL_TFC24, UL_TFC28, UL_TFC30, UL_TFC34	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 312 bits	RB5: 75 bits RB6: 84 bits RB7: No data RB8: 312 bits
11	DL_TFC11, DL_TFC41	UL_TFC11, UL_TFC35	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11, UL_TFC24, UL_TFC29, UL_TFC30, UL_TFC35	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits

12	DL_TFC12, DL_TFC42	UL_TFC12, UL_TFC36	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC12, UL_TFC24, UL_TFC36	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 632 bits	RB5: No data RB6: No data RB7: No data RB8: 632 bits
13	DL_TFC13, DL_TFC43	UL_TFC13, UL_TFC37	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC24, UL_TFC25, UL_TFC36, UL_TFC37	RB5: 39 bits RB6: 103 bits RB7: 60 bits RB8: 632 bits	RB5: 39 bits RB6: No data RB7: No data RB8: 632 bits
14	DL_TFC14, DL_TFC44	UL_TFC14, UL_TFC38	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC24, UL_TFC26, UL_TFC36, UL_TFC38	RB5: 42 bits RB6: 53 bits RB7: 60 bits RB8: 632 bits	RB5: 42 bits RB6: 53 bits RB7: No data RB8: 632 bits
15	DL_TFC15, DL_TFC45	UL_TFC15, UL_TFC39	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC3, UL_TFC12, UL_TFC15, UL_TFC24, UL_TFC27, UL_TFC36, UL_TFC39	RB5: 55 bits RB6: 63 bits RB7: 60 bits RB8: 632 bits	RB5: 55 bits RB6: 63 bits RB7: No data RB8: 632 bits
16	DL_TFC16, DL_TFC46	UL_TFC16, UL_TFC40	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC4, UL_TFC12, UL_TFC16, UL_TFC24, UL_TFC28, UL_TFC36, UL_TFC40	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 632 bits	RB5: 75 bits RB6: 84 bits RB7: No data RB8: 632 bits
17	DL_TFC17, DL_TFC47	UL_TFC17, UL_TFC41	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC5, UL_TFC12, UL_TFC17, UL_TFC24, UL_TFC29, UL_TFC36, UL_TFC41	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 632 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 632 bits
18	DL_TFC18, DL_TFC48	UL_TFC18, UL_TFC42	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC18, UL_TFC24, UL_TFC42	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 1272 bits	RB5: No data RB6: No data RB7: No data RB8: 952 bits
19	DL_TFC19, DL_TFC49	UL_TFC19, UL_TFC43	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC1, UL_TFC18, UL_TFC19, UL_TFC24, UL_TFC25, UL_TFC42, UL_TFC43	RB5: 39 bits RB6: 103 bits RB7: 60 bits RB8: 1272 bits	RB5: 39 bits RB6: No data RB7: No data RB8: 952 bits
20	DL_TFC20, DL_TFC50	UL_TFC20, UL_TFC44	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC2, UL_TFC18, UL_TFC20, UL_TFC24, UL_TFC26, UL_TFC42, UL_TFC44	RB5: 42 bits RB6: 53 bits RB7: 60 bits RB8: 1272 bits	RB5: 42 bits RB6: 53 bits RB7: No data RB8: 952 bits

21	DL_TFC21, DL_TFC51	UL_TFC21, UL_TFC45	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC3, UL_TFC18, UL_TFC21, UL_TFC24, UL_TFC27, UL_TFC42, UL_TFC45	RB5: 55 bits RB6: 63 bits RB7: 60 bits RB8: 1272 bits	RB5: 55 bits RB6: 63 bits RB7: No data RB8: 952 bits
22	DL_TFC22, DL_TFC52	UL_TFC22, UL_TFC46	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC4, UL_TFC18, UL_TFC22, UL_TFC24, UL_TFC28, UL_TFC42, UL_TFC46	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 1272 bits	RB5: 75 bits RB6: 84 bits RB7: No data RB8: 952 bits
23	DL_TFC23, DL_TFC53	UL_TFC23, UL_TFC47	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC5, UL_TFC18, UL_TFC23, UL_TFC24, UL_TFC29, UL_TFC42, UL_TFC47	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 1272 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 952 bits
24	DL_TFC24, DL_TFC54	UL_TFC18, UL_TFC42	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC18, UL_TFC24, UL_TFC42	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 1272 bits	RB5: No data RB6: No data RB7: No data RB8: 1272 bits
25	DL_TFC25, DL_TFC55	UL_TFC19, UL_TFC43	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC1, UL_TFC18, UL_TFC19, UL_TFC24, UL_TFC25, UL_TFC42, UL_TFC43	RB5: 39 bits RB6: 103 bits RB7: 60 bits RB8: 1272 bits	RB5: 39 bits RB6: No data RB7: No data RB8: 1272 bits
26	DL_TFC26, DL_TFC56	UL_TFC20, UL_TFC44	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC2, UL_TFC18, UL_TFC20, UL_TFC24, UL_TFC26, UL_TFC42, UL_TFC44	RB5: 42 bits RB6: 53 bits RB7: 60 bits RB8: 1272 bits	RB5: 42 bits RB6: 53 bits RB7: No data RB8: 1272 bits
27	DL_TFC27, DL_TFC57	UL_TFC21, UL_TFC45	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC3, UL_TFC18, UL_TFC21, UL_TFC24, UL_TFC27, UL_TFC42, UL_TFC45	RB5: 55 bits RB6: 63 bits RB7: 60 bits RB8: 1272 bits	RB5: 55 bits RB6: 63 bits RB7: No data RB8: 1272 bits
28	DL_TFC28, DL_TFC58	UL_TFC22, UL_TFC46	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC4, UL_TFC18, UL_TFC22, UL_TFC24, UL_TFC28, UL_TFC42, UL_TFC46	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 1272 bits	RB5: 75 bits RB6: 84 bits RB7: No data RB8: 1272 bits
29	DL_TFC29, DL_TFC59	UL_TFC23, UL_TFC47	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC5, UL_TFC18, UL_TFC23, UL_TFC24, UL_TFC29, UL_TFC42, UL_TFC47	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 1272 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 1272 bits

NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  
RB8: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size parameter has been set equal to the size of the payload size of the UL TF under test minus 8 bits (the size of 7 bit length indicator and expansion bit).

#### 14.2.38i.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15 the UE shall return
  - for sub-test 1: RLC SDUs on RB5 having the same content as sent by the SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2,3 and 4: RLC SDUs on RB5 and RB6 having the same content as sent by the SS; and no data shall be received on RB7 and RB8.
  - for sub-test 5: RLC SDUs on RB5, RB6 and RB7 having the same content as sent by the SS; and no data shall be received on RB8.
  - for sub-test 6: RLC SDUs on RB8 having the same content as sent by the SS; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 7: RLC SDUs on RB5 and RB8 having the same content as sent by the SS; and no data shall be received on RB6 and RB7.
  - for sub-test 8,9 and 10: RLC SDUs on RB5, RB6 and RB8 having the same content as sent by the SS; and no data shall be received on RB7.
  - for sub-test 11: RLC SDUs on RB5, RB6 , RB7 and RB8 having the same content as sent by the SS.
  - for sub-test 12: RLC SDUs on RB8 having the same content as sent by the SS; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 13: RLC SDUs on RB5 and RB8 having the same content as sent by the SS; and no data shall be received on RB6 and RB7.
  - for sub-test 14,15 and 16: RLC SDUs on RB5, RB6 and RB8 having the same content as sent by the SS; and no data shall be received on RB7.
  - for sub-test 17: RLC SDUs on RB5, RB6 , RB7 and RB8 having the same content as sent by the SS.
  - for sub-test 18: RLC SDUs on RB8 having the first 952 bits equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 19: RLC SDUs on RB5 having the same content as sent by the SS; RLC SDUs on RB8 having the first 952 bits equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB6 and RB7.
  - for sub-test 20,21 and 22: RLC SDUs on RB5 and RB6 having the same content as sent by the SS; RLC SDUs on RB8 having the first 952 bits equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB7.
  - for sub-test 23: RLC SDUs on RB5, RB6 and RB7 having the same content as sent by the SS; and RLC SDUs on RB8 having the first 952 bits equal to the content of the test data sent by the SS in downlink.

- for sub-test 24: RLC SDUs on RB8 having the same content as sent by the SS; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 25: RLC SDUs on RB5 and RB8 having the same content as sent by the SS; and no data shall be received on RB6 and RB7.
- for sub-test 26,27 and 28: RLC SDUs on RB5, RB6 and RB8 having the same content as sent by the SS; and no data shall be received on RB7.
- for sub-test 29: RLC SDUs on RB5, RB6 , RB7 and RB8 having the same content as sent by the SS.

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

**14.2.38j Conversational / speech / UL:(12.2 7.95 5.9 4.75) DL:(12.2 7.95 5.9 4.75) kbps / CS RAB + Interactive or background / UL:64 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.**

14.2.38j.1 Conformance requirement

See clause 14.2.4.1.

14.2.38j.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.38j.

14.2.38j.3 Method of test

See clause 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps, 20 ms TTI)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x53	1x60	1x336	1x148
	TF2, bits	1x42	1x63	N/A	2x336	N/A
	TF3, bits	1x55	1x84	N/A	3x336	N/A
	TF4, bits	1x75	1x103	N/A	4x336	N/A
	TF5, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0, TF0, TF0)
UL_TFC3	(TF3, TF2, TF0, TF0, TF0)
UL_TFC4	(TF4, TF3, TF0, TF0, TF0)
UL_TFC5	(TF5, TF4, TF1, TF0, TF0)
UL_TFC6	(TF0, TF0, TF0, TF1, TF0)
UL_TFC7	(TF1, TF0, TF0, TF1, TF0)
UL_TFC8	(TF2, TF1, TF0, TF1, TF0)
UL_TFC9	(TF3, TF2, TF0, TF1, TF0)
UL_TFC10	(TF4, TF3, TF0, TF1, TF0)
UL_TFC11	(TF5, TF4, TF1, TF1, TF0)
UL_TFC12	(TF0, TF0, TF0, TF2, TF0)
UL_TFC13	(TF1, TF0, TF0, TF2, TF0)
UL_TFC14	(TF2, TF1, TF0, TF2, TF0)
UL_TFC15	(TF3, TF2, TF0, TF2, TF0)
UL_TFC16	(TF4, TF3, TF0, TF2, TF0)
UL_TFC17	(TF5, TF4, TF1, TF2, TF0)
UL_TFC18	(TF0, TF0, TF0, TF4, TF0)
UL_TFC19	(TF1, TF0, TF0, TF4, TF0)
UL_TFC20	(TF2, TF1, TF0, TF4, TF0)
UL_TFC21	(TF3, TF2, TF0, TF4, TF0)
UL_TFC22	(TF4, TF3, TF0, TF4, TF0)
UL_TFC23	(TF5, TF4, TF1, TF4, TF0)
UL_TFC24	(TF0, TF0, TF0, TF0, TF1)
UL_TFC25	(TF1, TF0, TF0, TF0, TF1)
UL_TFC26	(TF2, TF1, TF0, TF0, TF1)
UL_TFC27	(TF3, TF2, TF0, TF0, TF1)
UL_TFC28	(TF4, TF3, TF0, TF0, TF1)
UL_TFC29	(TF5, TF4, TF1, TF0, TF1)
UL_TFC30	(TF0, TF0, TF0, TF1, TF1)
UL_TFC31	(TF1, TF0, TF0, TF1, TF1)
UL_TFC32	(TF2, TF1, TF0, TF1, TF1)
UL_TFC33	(TF3, TF2, TF0, TF1, TF1)
UL_TFC34	(TF4, TF3, TF0, TF1, TF1)
UL_TFC35	(TF5, TF4, TF1, TF1, TF1)
UL_TFC36	(TF0, TF0, TF0, TF2, TF1)
UL_TFC37	(TF1, TF0, TF0, TF2, TF1)
UL_TFC38	(TF2, TF1, TF0, TF2, TF1)
UL_TFC39	(TF3, TF2, TF0, TF2, TF1)
UL_TFC40	(TF4, TF3, TF0, TF2, TF1)
UL_TFC41	(TF5, TF4, TF1, TF2, TF1)
UL_TFC42	(TF0, TF0, TF0, TF4, TF1)
UL_TFC43	(TF1, TF0, TF0, TF4, TF1)
UL_TFC44	(TF2, TF1, TF0, TF4, TF1)
UL_TFC45	(TF3, TF2, TF0, TF4, TF1)
UL_TFC46	(TF4, TF3, TF0, TF4, TF1)
UL_TFC47	(TF5, TF4, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (128 kbps, 20 ms TTI)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x53	1x60	1x336	1x148
	TF2, bits	1x42	1x63	N/A	2x336	N/A
	TF3, bits	1x55	1x84	N/A	4x336	N/A
	TF4, bits	1x75	1x103	N/A	8x336	N/A
	TF5, bits	1x81	N/A	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0,TF0,TF0,TF0,TF0)
DL_TFC1	(TF1,TF0,TF0,TF0,TF0)
DL_TFC2	(TF2,TF1,TF0,TF0,TF0)
DL_TFC3	(TF3,TF2,TF0,TF0,TF0)
DL_TFC4	(TF4,TF3,TF0,TF0,TF0)
DL_TFC5	(TF5,TF4,TF1,TF0,TF0)
DL_TFC6	(TF0,TF0,TF0,TF1,TF0)
DL_TFC7	(TF1,TF0,TF0,TF1,TF0)
DL_TFC8	(TF2,TF1,TF0,TF1,TF0)
DL_TFC9	(TF3,TF2,TF0,TF1,TF0)
DL_TFC10	(TF4,TF3,TF0,TF1,TF0)
DL_TFC11	(TF5,TF4,TF1,TF1,TF0)
DL_TFC12	(TF0,TF0,TF0,TF2,TF0)
DL_TFC13	(TF1,TF0,TF0,TF2,TF0)
DL_TFC14	(TF2,TF1,TF0,TF2,TF0)
DL_TFC15	(TF3,TF2,TF0,TF2,TF0)
DL_TFC16	(TF4,TF3,TF0,TF2,TF0)
DL_TFC17	(TF5,TF4,TF1,TF2,TF0)
DL_TFC18	(TF0,TF0,TF0,TF3,TF0)
DL_TFC19	(TF1,TF0,TF0,TF3,TF0)
DL_TFC20	(TF2,TF1,TF0,TF3,TF0)
DL_TFC21	(TF3,TF2,TF0,TF3,TF0)
DL_TFC22	(TF4,TF3,TF0,TF3,TF0)
DL_TFC23	(TF5,TF4,TF1,TF3,TF0)
DL_TFC24	(TF0,TF0,TF0,TF4,TF0)
DL_TFC25	(TF1,TF0,TF0,TF4,TF0)
DL_TFC26	(TF2,TF1,TF0,TF4,TF0)
DL_TFC27	(TF3,TF2,TF0,TF4,TF0)
DL_TFC28	(TF4,TF3,TF0,TF4,TF0)
DL_TFC29	(TF5,TF4,TF1,TF4,TF0)
DL_TFC30	(TF0,TF0,TF0,TF0,TF1)
DL_TFC31	(TF1,TF0,TF0,TF0,TF1)
DL_TFC32	(TF2,TF1,TF0,TF0,TF1)
DL_TFC33	(TF3,TF2,TF0,TF0,TF1)
DL_TFC34	(TF4,TF3,TF0,TF0,TF1)
DL_TFC35	(TF5,TF4,TF1,TF0,TF1)
DL_TFC36	(TF0,TF0,TF0,TF1,TF1)
DL_TFC37	(TF1,TF0,TF0,TF1,TF1)
DL_TFC38	(TF2,TF1,TF0,TF1,TF1)
DL_TFC39	(TF3,TF2,TF0,TF1,TF1)
DL_TFC40	(TF4,TF3,TF0,TF1,TF1)
DL_TFC41	(TF5,TF4,TF1,TF1,TF1)
DL_TFC42	(TF0,TF0,TF0,TF2,TF1)
DL_TFC43	(TF1,TF0,TF0,TF2,TF1)
DL_TFC44	(TF2,TF1,TF0,TF2,TF1)
DL_TFC45	(TF3,TF2,TF0,TF2,TF1)
DL_TFC46	(TF4,TF3,TF0,TF2,TF1)
DL_TFC47	(TF5,TF4,TF1,TF2,TF1)
DL_TFC48	(TF0,TF0,TF0,TF3,TF1)
DL_TFC49	(TF1,TF0,TF0,TF3,TF1)
DL_TFC50	(TF2,TF1,TF0,TF3,TF1)
DL_TFC51	(TF3,TF2,TF0,TF3,TF1)
DL_TFC52	(TF4,TF3,TF0,TF3,TF1)
DL_TFC53	(TF5,TF4,TF1,TF3,TF1)
DL_TFC54	(TF0,TF0,TF0,TF4,TF1)
DL_TFC55	(TF1,TF0,TF0,TF4,TF1)
DL_TFC56	(TF2,TF1,TF0,TF4,TF1)
DL_TFC57	(TF3,TF2,TF0,TF4,TF1)
DL_TFC58	(TF4,TF3,TF0,TF4,TF1)
DL_TFC59	(TF5,TF4,TF1,TF4,TF1)

Sub-tests:

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1, DL_TFC31	UL_TFC1, UL_TFC25	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC1, UL_TFC24, UL_TFC25	RB5: 39 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: 39 bits RB6: No data RB7: No data RB8: No data
2	DL_TFC2, DL_TFC32	UL_TFC2, UL_TFC26	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC2, UL_TFC24, UL_TFC26	RB5: 42 bits RB6: 53 bits RB7: 60 bits RB8: 312 bits	RB5: 42 bits RB6: 53 bits RB7: No data RB8: No data
3	DL_TFC3, DL_TFC33	UL_TFC3, UL_TFC27	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC3, UL_TFC24, UL_TFC27	RB5: 55 bits RB6: 63 bits RB7: 60 bits RB8: 312 bits	RB5: 55 bits RB6: 63 bits RB7: No data RB8: No data
4	DL_TFC4, DL_TFC34	UL_TFC4, UL_TFC28	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC4, UL_TFC24, UL_TFC28	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 312 bits	RB5: 75 bits RB6: 84 bits RB7: No data RB8: No data
5	DL_TFC5, DL_TFC35	UL_TFC5, UL_TFC29	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC5, UL_TFC24, UL_TFC29	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: No data
6	DL_TFC6, DL_TFC36	UL_TFC6, UL_TFC30	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC6, UL_TFC24, UL_TFC30	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: No data RB6: No data RB7: No data RB8: 312 bits
7	DL_TFC7, DL_TFC37	UL_TFC7, UL_TFC31	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7, UL_TFC24, UL_TFC25, UL_TFC30, UL_TFC31	RB5: 39 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: 39 bits RB6: No data RB7: No data RB8: 312 bits
8	DL_TFC8, DL_TFC38	UL_TFC8, UL_TFC32	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8, UL_TFC24, UL_TFC26, UL_TFC30, UL_TFC32	RB5: 42 bits RB6: 53 bits RB7: 60 bits RB8: 312 bits	RB5: 42 bits RB6: 53 bits RB7: No data RB8: 312 bits
9	DL_TFC9, DL_TFC39	UL_TFC9, UL_TFC33	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9, UL_TFC24, UL_TFC27, UL_TFC30, UL_TFC33	RB5: 55 bits RB6: 63 bits RB7: 60 bits RB8: 312 bits	RB5: 55 bits RB6: 63 bits RB7: No data RB8: 312 bits
10	DL_TFC10, DL_TFC40	UL_TFC10, UL_TFC34	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC4, UL_TFC6, UL_TFC10, UL_TFC24, UL_TFC28, UL_TFC30, UL_TFC34	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 312 bits	RB5: 75 bits RB6: 84 bits RB7: No data RB8: 312 bits
11	DL_TFC11, DL_TFC41	UL_TFC11, UL_TFC35	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC5, UL_TFC6, UL_TFC11, UL_TFC24, UL_TFC29, UL_TFC30, UL_TFC35	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 312 bits

12	DL_TFC12, DL_TFC42	UL_TFC12, UL_TFC36	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC12, UL_TFC24, UL_TFC36	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 632 bits	RB5: No data RB6: No data RB7: No data RB8: 632 bits
13	DL_TFC13, DL_TFC43	UL_TFC13, UL_TFC37	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC24, UL_TFC25, UL_TFC36, UL_TFC37	RB5: 39 bits RB6: 103 bits RB7: 60 bits RB8: 632 bits	RB5: 39 bits RB6: No data RB7: No data RB8: 632 bits
14	DL_TFC14, DL_TFC44	UL_TFC14, UL_TFC38	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC24, UL_TFC26, UL_TFC36, UL_TFC38	RB5: 42 bits RB6: 53 bits RB7: 60 bits RB8: 632 bits	RB5: 42 bits RB6: 53 bits RB7: No data RB8: 632 bits
15	DL_TFC15, DL_TFC45	UL_TFC15, UL_TFC39	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC3, UL_TFC12, UL_TFC15, UL_TFC24, UL_TFC27, UL_TFC36, UL_TFC39	RB5: 55 bits RB6: 63 bits RB7: 60 bits RB8: 632 bits	RB5: 55 bits RB6: 63 bits RB7: No data RB8: 632 bits
16	DL_TFC16, DL_TFC46	UL_TFC16, UL_TFC40	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC4, UL_TFC12, UL_TFC16, UL_TFC24, UL_TFC28, UL_TFC36, UL_TFC40	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 632 bits	RB5: 75 bits RB6: 84 bits RB7: No data RB8: 632 bits
17	DL_TFC17, DL_TFC47	UL_TFC17, UL_TFC41	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC5, UL_TFC12, UL_TFC17, UL_TFC24, UL_TFC29, UL_TFC36, UL_TFC41	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 632 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 632 bits
18	DL_TFC18, DL_TFC48	UL_TFC18, UL_TFC42	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC18, UL_TFC24, UL_TFC42	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 1272 bits	RB5: No data RB6: No data RB7: No data RB8: 1272 bits
19	DL_TFC19, DL_TFC49	UL_TFC19, UL_TFC43	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC1, UL_TFC18, UL_TFC19, UL_TFC24, UL_TFC25, UL_TFC42, UL_TFC43	RB5: 39 bits RB6: 103 bits RB7: 60 bits RB8: 1272 bits	RB5: 39 bits RB6: No data RB7: No data RB8: 1272 bits
20	DL_TFC20, DL_TFC50	UL_TFC20, UL_TFC44	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC2, UL_TFC18, UL_TFC20, UL_TFC24, UL_TFC26, UL_TFC42, UL_TFC44	RB5: 42 bits RB6: 53 bits RB7: 60 bits RB8: 1272 bits	RB5: 42 bits RB6: 53 bits RB7: No data RB8: 1272 bits

21	DL_TFC21, DL_TFC51	UL_TFC21, UL_TFC45	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC3, UL_TFC18, UL_TFC21, UL_TFC24, UL_TFC27, UL_TFC42, UL_TFC45	RB5: 55 bits RB6: 63 bits RB7: 60 bits RB8: 1272 bits	RB5: 55 bits RB6: 63 bits RB7: No data RB8: 1272 bits
22	DL_TFC22, DL_TFC52	UL_TFC22, UL_TFC46	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC4, UL_TFC18, UL_TFC22, UL_TFC24, UL_TFC28, UL_TFC42, UL_TFC46	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 1272 bits	RB5: 75 bits RB6: 84 bits RB7: No data RB8: 1272 bits
23	DL_TFC23, DL_TFC53	UL_TFC23, UL_TFC47	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC5, UL_TFC18, UL_TFC23, UL_TFC24, UL_TFC29, UL_TFC42, UL_TFC47	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 1272 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 1272 bits
24	DL_TFC24, DL_TFC54	UL_TFC18, UL_TFC42	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC18, UL_TFC24, UL_TFC42	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 1272 bits	RB5: No data RB6: No data RB7: No data RB8: 2552 bits
25	DL_TFC25, DL_TFC55	UL_TFC19, UL_TFC43	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC1, UL_TFC18, UL_TFC19, UL_TFC24, UL_TFC25, UL_TFC42, UL_TFC43	RB5: 39 bits RB6: 103 bits RB7: 60 bits RB8: 1272 bits	RB5: 39 bits RB6: No data RB7: No data RB8: 2552 bits
26	DL_TFC26, DL_TFC56	UL_TFC20, UL_TFC44	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC2, UL_TFC18, UL_TFC20, UL_TFC24, UL_TFC26, UL_TFC42, UL_TFC44	RB5: 42 bits RB6: 53 bits RB7: 60 bits RB8: 1272 bits	RB5: 42 bits RB6: 53 bits RB7: No data RB8: 2552 bits
27	DL_TFC27, DL_TFC57	UL_TFC21, UL_TFC45	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC3, UL_TFC18, UL_TFC21, UL_TFC24, UL_TFC27, UL_TFC42, UL_TFC45	RB5: 55 bits RB6: 63 bits RB7: 60 bits RB8: 1272 bits	RB5: 55 bits RB6: 63 bits RB7: No data RB8: 2552 bits
28	DL_TFC28, DL_TFC58	UL_TFC22, UL_TFC46	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC4, UL_TFC18, UL_TFC22, UL_TFC24, UL_TFC28, UL_TFC42, UL_TFC46	RB5: 75 bits RB6: 84 bits RB7: 60 bits RB8: 1272 bits	RB5: 75 bits RB6: 84 bits RB7: No data RB8: 2552 bits
29	DL_TFC29, DL_TFC59	UL_TFC23, UL_TFC47	DL_TFC0, DL_TFC30, UL_TFC0, UL_TFC24	UL_TFC0, UL_TFC5, UL_TFC18, UL_TFC23, UL_TFC24, UL_TFC29, UL_TFC42, UL_TFC47	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 1272 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits RB8: 2552 bits

NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  
RB8: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size parameter has been set equal to the size of the payload size of the UL TF under test minus 8 bits (the size of 7 bit length indicator and expansion bit).

#### 14.2.38j.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15 the UE shall return
  - for sub-test 1: RLC SDUs on RB5 having the same content as sent by the SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2,3 and 4: RLC SDUs on RB5 and RB6 having the same content as sent by the SS; and no data shall be received on RB7 and RB8.
  - for sub-test 5: RLC SDUs on RB5, RB6 and RB7 having the same content as sent by the SS; and no data shall be received on RB8.
  - for sub-test 6: RLC SDUs on RB8 having the same content as sent by the SS; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 7: RLC SDUs on RB5 and RB8 having the same content as sent by the SS; and no data shall be received on RB6 and RB7.
  - for sub-test 8,9 and 10: RLC SDUs on RB5, RB6 and RB8 having the same content as sent by the SS; and no data shall be received on RB7.
  - for sub-test 11: RLC SDUs on RB5, RB6 , RB7 and RB8 having the same content as sent by the SS.
  - for sub-test 12: RLC SDUs on RB8 having the same content as sent by the SS; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 13: RLC SDUs on RB5 and RB8 having the same content as sent by the SS; and no data shall be received on RB6 and RB7.
  - for sub-test 14,15 and 16: RLC SDUs on RB5, RB6 and RB8 having the same content as sent by the SS; and no data shall be received on RB7.
  - for sub-test 17: RLC SDUs on RB5, RB6 , RB7 and RB8 having the same content as sent by the SS.
  - for sub-test 18: RLC SDUs on RB8 having the same content as sent by the SS; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 19: RLC SDUs on RB5 and RB8 having the same content as sent by the SS; and no data shall be received on RB6 and RB7.
  - for sub-test 20,21 and 22: RLC SDUs on RB5, RB6 and RB8 having the same content as sent by the SS; and no data shall be received on RB7.
  - for sub-test 23: RLC SDUs on RB5, RB6 , RB7 and RB8 having the same content as sent by the SS.
  - for sub-test 24: RLC SDUs on RB8 having the first 1272 bits equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 25: RLC SDUs on RB5 having the same content as sent by the SS; RLC SDUs on RB8 having the first 1272 bits equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB6 and RB7.

- for sub-test 26,27 and 28: RLC SDUs on RB5 and RB6 having the same content as sent by the SS; RLC SDUs on RB8 having the first 1272 bits equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB7.
- for sub-test 29: RLC SDUs on RB5, RB6 and RB7 having the same content as sent by the SS; and RLC SDUs on RB8 having the first 1272 bits equal to the content of the test data sent by the SS in downlink.

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

### 14.2.39 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:64 kbps / PS RAB+ UL:3.4 DL: 3.4 kbps SRBs for DCCH

#### 14.2.39.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:64 kbps / PS RAB / (TC, 10 ms TTI)

14.2.39.1.1 Conformance requirement

See 14.2.4.1.

14.2.39.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.39 for the uplink turbo channel coding and 10 ms TTI case.

14.2.39.1.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (32 kbps, 10 ms TTI)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF1, TF0, TF1)
UL_TFC9	(TF0, TF0, TF0, TF1, TF1)
UL_TFC10	(TF1, TF0, TF0, TF1, TF1)
UL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps, 20 ms TTI)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC16	UL_TFC1 UL_TFC7	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2, DL_TFC17	UL_TFC2, UL_TFC8	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3, DL_TFC18	UL_TFC3, UL_TFC9	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: No data RB6: No data RB7: No data RB8: 312
4	DL_TFC4, DL_TFC19	UL_TFC4, UL_TFC10	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC6, UL_TFC7, UL_TFC9, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: 39 RB6: No data RB7: No data RB8: 312
5	DL_TFC5, DL_TFC20	UL_TFC5 UL_TFC11	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: 312
6	DL_TFC6, DL_TFC21	UL_TFC3, UL_TFC9	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: No data RB6: No data RB7: No data RB8: 632
7	DL_TFC7, DL_TFC22	UL_TFC4, UL_TFC10	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC6, UL_TFC7, UL_TFC9, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: 39 RB6: No data RB7: No data RB8: 632
8	DL_TFC8, DL_TFC23	UL_TFC5, UL_TFC11	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: 632
9	DL_TFC9, DL_TFC24	UL_TFC3, UL_TFC9	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: No data RB6: No data RB7: No data RB8: 952
10	DL_TFC10, DL_TFC25	UL_TFC4, UL_TFC10	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC6, UL_TFC7, UL_TFC9, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: 39 RB6: No data RB7: No data RB8: 952

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
11	DL_TFC11, DL_TFC26	UL_TFC5, UL_TFC11	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: 952
12	DL_TFC12, DL_TFC27	UL_TFC3, UL_TFC9	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: No data RB6: No data RB7: No data RB8: 1272
13	DL_TFC13, DL_TFC28	UL_TFC4, UL_TFC10	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC6, UL_TFC7, UL_TFC9, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: 39 RB6: No data RB7: No data RB8: 1272
14	DL_TFC14, DL_TFC29	UL_TFC5, UL_TFC11	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: 1272
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  RB8: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the uplink TTI for RB8 is 10 ms while the downlink TTI is 20 ms then, to achieve continous data transmission in uplink the size of the uplink RLC SDU has been set such that it will be transmitted over two subsequent TTIs, i.e. UL RLC SDU SIZE has been set to two times the uplink TFS size minus 8 bits (size of 7 bit length indicator and expansion bit).</p>						

#### 14.2.39.1.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCs as specified for the actual sub-test.
3. At step 15a and step 15b the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
  - for sub-test 3: an RLC SDU on RB8 having the first 312 bits equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 4: an RLC SDU on RB8 having the first 312 bits equal to the content of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
  - for sub-test 5: an RLC SDU on RB8 having the first 312 bits equal to the content of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.

- for sub-test 6: an RLC SDU on RB8 having the content equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 7: an RLC SDU on RB8 having the content equal to the content of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 8: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.
- for sub-test 9: an RLC SDU on RB8 having the content equal to the first 632 bits of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 10: an RLC SDU on RB8 having the content equal to the first 632 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 11: an RLC SDU on RB8 having the content equal to the first 632 bits of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.
- for sub-test 12: an RLC SDU on RB8 having the content equal to the first 632 bits of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 13: an RLC SDU on RB8 having the content equal to the first 632 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 14: an RLC SDU on RB8 having the content equal to the first 632 bits of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

**14.2.39.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:64 kbps / PS RAB / (TC, 20 ms TTI)**

14.2.39.2.1 Conformance requirement

See 14.2.4.1.

14.2.39.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.39 for the uplink turbo channel coding and 20 ms TTI case.

14.2.39.2.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (32 kbps, 20 ms TTI)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF0, TF1)
UL_TFC10	(TF1, TF0, TF0, TF0, TF1)
UL_TFC11	(TF2, TF1, TF1, TF0, TF1)
UL_TFC12	(TF0, TF0, TF0, TF1, TF1)
UL_TFC13	(TF1, TF0, TF0, TF1, TF1)
UL_TFC14	(TF2, TF1, TF1, TF1, TF1)
UL_TFC15	(TF0, TF0, TF0, TF2, TF1)
UL_TFC16	(TF1, TF0, TF0, TF2, TF1)
UL_TFC17	(TF2, TF1, TF1, TF2, TF1)

Downlink TFS:

		<b>RB5 (RAB subflow #1)</b>	<b>RB6 (RAB subflow #2)</b>	<b>RB7 (RAB subflow #3)</b>	<b>RB8 (64 kbps, 20 ms TTI)</b>	<b>DCCH</b>
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC16	UL_TFC1, UL_TFC10	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2, DL_TFC17	UL_TFC2, UL_TFC11	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 312	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3, DL_TFC18	UL_TFC3, UL_TFC12	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC3, UL_TFC9, UL_TFC12	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: No data RB6: No data RB7: No data RB8: 312
4	DL_TFC4, DL_TFC19	UL_TFC4, UL_TFC13	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC9, UL_TFC10, UL_TFC12, UL_TFC13	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: 39 RB6: No data RB7: No data RB8: 312
5	DL_TFC5, DL_TFC20	UL_TFC5, UL_TFC14	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC9, UL_TFC11, UL_TFC12, UL_TFC14	RB5: 81 RB6: 103 RB7: 60 RB8: 312	RB5: 81 RB6: 103 RB7: 60 RB8: 312
6	DL_TFC6, DL_TFC21	UL_TFC6, UL_TFC15	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC6, UL_TFC9, UL_TFC15	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: No data RB6: No data RB7: No data RB8: 632
7	DL_TFC7, DL_TFC22	UL_TFC7, UL_TFC16	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7, UL_TFC9, UL_TFC10, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: 39 RB6: No data RB7: No data RB8: 632
8	DL_TFC8, DL_TFC23	UL_TFC8, UL_TFC17	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: 632
9	DL_TFC9, DL_TFC24	UL_TFC6, UL_TFC15	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC6, UL_TFC9, UL_TFC15	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: No data RB6: No data RB7: No data RB8: 952
10	DL_TFC10, DL_TFC25	UL_TFC7, UL_TFC16	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7, UL_TFC9, UL_TFC10, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: 39 RB6: No data RB7: No data RB8: 952

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
11	DL_TFC11, DL_TFC26	UL_TFC8, UL_TFC17	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: 952
12	DL_TFC12, DL_TFC27	UL_TFC6, UL_TFC15	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC6, UL_TFC9, UL_TFC15	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: No data RB6: No data RB7: No data RB8: 1272
13	DL_TFC13, DL_TFC28	UL_TFC7, UL_TFC16	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7, UL_TFC9, UL_TFC10, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: 39 RB6: No data RB7: No data RB8: 1272
14	DL_TFC14, DL_TFC29	UL_TFC8, UL_TFC17	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC9	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: 1272
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  RB8: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the TTI for RB8 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size has been set equal to the uplink TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit).</p>						

#### 14.2.39.2.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCs as specified for the actual sub-test.
3. At step 15a and step 15b the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
  - for sub-test 3: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 4: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
  - for sub-test 5: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.
  - for sub-test 6: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.

- for sub-test 7: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 8: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.
- for sub-test 9: an RLC SDU on RB8 having the first 632 bits equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 10: an RLC SDU on RB8 having the first 632 bits equal to the content of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 11: an RLC SDU on RB8 having the first 632 bits equal to the content of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.
- for sub-test 12: an RLC SDU on RB8 having the first 632 bits equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 13: an RLC SDU on RB8 having the first 632 bits equal to the content of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 14: an RLC SDU on RB8 having the first 632 bits equal to the content of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

#### 14.2.39.3 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:64 kbps / PS RAB / (CC, 10 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.39 for the uplink convolutional channel coding and 10 ms TTI case.

See test case 14.2.39.1 for test procedure and test requirement.

#### 14.2.39.4 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:32 DL:64 kbps / PS RAB / (CC, 20 ms TTI)

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.39 for the uplink convolutional channel coding and 20 ms TTI case.

See test case 14.2.39.2 for test procedure and test requirement.

#### 14.2.40 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:64 kbps / PS RAB+ UL:3.4 DL: 3.4 kbps SRBs for DCCH

14.2.40.1 Conformance requirement

See 14.2.4.1.

14.2.40.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.40.

14.2.40.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps, 20 ms TTI)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps, 20 ms TTI)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC16	UL_TFC1, UL_TFC16	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2, DL_TFC17	UL_TFC2, UL_TFC17	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 312	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3, DL_TFC18	UL_TFC3, UL_TFC18	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: No data RB6: No data RB7: No data RB8: 312
4	DL_TFC4, DL_TFC19	UL_TFC4, UL_TFC19	DL_TFC0, DL_TFC15, DUL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC15, UL_TFC16, UL_TFC18, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: 39 RB6: No data RB7: No data RB8: 312
5	DL_TFC5, DL_TFC20	UL_TFC5, UL_TFC20	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC15, UL_TFC17, UL_TFC18, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 312	RB5: 81 RB6: 103 RB7: 60 RB8: 312
6	DL_TFC6, DL_TFC21	UL_TFC6, UL_TFC21	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: No data RB6: No data RB7: No data RB8: 632
7	DL_TFC7, DL_TFC22	UL_TFC7, UL_TFC22	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7, UL_TFC15, UL_TFC16, UL_TFC21, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: 39 RB6: No data RB7: No data RB8: 632
8	DL_TFC8, DL_TFC23	UL_TFC8, UL_TFC23	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8, UL_TFC15, UL_TFC17, UL_TFC21, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: 632
9	DL_TFC9, DL_TFC24	UL_TFC9, UL_TFC24	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 952	RB5: No data RB6: No data RB7: No data RB8: 952
10	DL_TFC10, DL_TFC25	UL_TFC10, UL_TFC25	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10, UL_TFC15, UL_TFC16, UL_TFC24, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 952	RB5: 39 RB6: No data RB7: No data RB8: 952

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
11	DL_TFC11, DL_TFC26	UL_TFC11, UL_TFC26	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11, UL_TFC15, UL_TFC17, UL_TFC24, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 952	RB5: 81 RB6: 103 RB7: 60 RB8: 952
12	DL_TFC12, DL_TFC27	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: No data RB6: No data RB7: No data RB8: 1272
13	DL_TFC13, DL_TFC28	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: 39 RB6: No data RB7: No data RB8: 1272
14	DL_TFC14, DL_TFC29	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1272	RB5: 81 RB6: 103 RB7: 60 RB8: 1272
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  RB8: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the TTI for RB8 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size has been set equal to the the payload size of the UL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit).</p>						

#### 14.2.40.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15a and step 15b the UE shall return
  - for sub-test 1: RLC SDUs on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2: RLC SDUs on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
  - for sub-test 3, 6, 9 and 12: RLC SDUs on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 4, 7, 10 and 13: RLC SDUs on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
  - for sub-test 5, 8, 11 and 14: RLC SDUs on RB5, RB6, RB7 and RB8 having the same content as sent by SS.
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

### 14.2.41 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.41.1 Conformance requirement

See 14.2.4.1.

14.2.41.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.41.

14.2.41.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps, 20 ms TTI)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		<b>RB5 (RAB subflow #1)</b>	<b>RB6 (RAB subflow #2)</b>	<b>RB7 (RAB subflow #3)</b>	<b>RB8 (128 kbps, 20 ms TTI)</b>	<b>DCCH</b>
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC16	UL_TFC1, UL_TFC16	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2, DL_TFC17	UL_TFC2, UL_TFC17	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 312	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3, DL_TFC18	UL_TFC3, UL_TFC18	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: No data RB6: No data RB7: No data RB8: 312
4	DL_TFC4, DL_TFC19	UL_TFC4, UL_TFC19	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC15, UL_TFC16, UL_TFC18, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: 39 RB6: No data RB7: No data RB8: 312
5	DL_TFC5, DL_TFC20	UL_TFC5, UL_TFC20	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC15, UL_TFC17, UL_TFC18, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 312	RB5: 81 RB6: 103 RB7: 60 RB8: 312
6	DL_TFC6, DL_TFC21	UL_TFC6, UL_TFC21	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: No data RB6: No data RB7: No data RB8: 632
7	DL_TFC7, DL_TFC22	UL_TFC7, UL_TFC22	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7, UL_TFC15, UL_TFC16, UL_TFC21, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: 39 RB6: No data RB7: No data RB8: 632
8	DL_TFC8, DL_TFC23	UL_TFC8, UL_TFC23	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8, UL_TFC15, UL_TFC17, UL_TFC21, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: 632
9	DL_TFC9, DL_TFC24	UL_TFC9, UL_TFC24	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 952	RB5: No data RB6: No data RB7: No data RB8: 1272
10	DL_TFC10, DL_TFC25	UL_TFC10, UL_TFC25	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10, UL_TFC15, UL_TFC16, UL_TFC24, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 952	RB5: 39 RB6: No data RB7: No data RB8: 1272

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
11	DL_TFC11, DL_TFC26	UL_TFC11, UL_TFC26	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11, UL_TFC15, UL_TFC17, UL_TFC24, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 952	RB5: 81 RB6: 103 RB7: 60 RB8: 1272
12	DL_TFC12, DL_TFC27	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: No data RB6: No data RB7: No data RB8: 2552
13	DL_TFC13, DL_TFC28	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC15, , UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: 39 RB6: No data RB7: No data RB8: 2552
14	DL_TFC14, DL_TFC29	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1272	RB5: 81 RB6: 103 RB7: 60 RB8: 2552
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  RB8: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the TTI for RB8 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size has been set equal to the the payload size of the UL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit).</p>						

#### 14.2.41.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15a and step 15b the UE shall return
  - for sub-test 1: RLC SDUs on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2: RLC SDUs on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
  - for sub-test 3: RLC SDUs on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 4: RLC SDUs on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
  - for sub-test 5: RLC SDUs on RB5, RB6, RB7 and RB8 having the same content as sent by SS.
  - for sub-test 6: RLC SDUs on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.

- for sub-test 7: RLC SDUs on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 8: RLC SDUs on RB5, RB6, RB7 and RB8 having the same content as sent by SS.
- for sub-test 9: RLC SDUs on RB8 having the first 952 bits equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 10: RLC SDUs on RB8 having the first 952 bits equal to the content of the test data sent by the SS in downlink; RLC SDUs on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 11: RLC SDUs on RB8 having the first 952 bits equal to the content of the test data sent by the SS in downlink; RLC SDUs on RB5, RB6 and RB7 having the same content as sent by SS.
- for sub-test 12: RLC SDUs on RB8 having the first 1272 bits equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 13: RLC SDUs on RB8 having the first 1272 bits equal to the content of the test data sent by the SS in downlink; RLC SDUs on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 14: RLC SDUs on RB8 having the first 1272 bits equal to the content of the test data sent by the SS in downlink; RLC SDUs on RB5, RB6 and RB7 having the same content as sent by SS.

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

#### 14.2.42 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

##### 14.2.42.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB / 10 ms TTI

14.2.42.1.1 Conformance requirement

See 14.2.4.1.

14.2.42.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.42 for the downlink 10 ms TTI case.

14.2.42.1.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		<b>RB5 (RAB subflow #1)</b>	<b>RB6 (RAB subflow #2)</b>	<b>RB7 (RAB subflow #3)</b>	<b>RB8 (256 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC16	UL_TFC1, DL_TFC16	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2, DL_TFC17	UL_TFC2, DL_TFC17	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 312	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3, DL_TFC18	UL_TFC3, DL_TFC18	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: No data RB6: No data RB7: No data RB8: 312
4	DL_TFC4, DL_TFC19	UL_TFC4, DL_TFC19	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC15, UL_TFC16, UL_TFC18, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: 39 RB6: No data RB7: No data RB8: 312
5	DL_TFC5, DL_TFC20	UL_TFC5, DL_TFC20	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC15, UL_TFC17, UL_TFC18, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 312	RB5: 81 RB6: 103 RB7: 60 RB8: 312
6	DL_TFC6, DL_TFC21	UL_TFC6, DL_TFC21	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: No data RB6: No data RB7: No data RB8: 632
7	DL_TFC7, DL_TFC22	UL_TFC7, DL_TFC22	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7, UL_TFC15, UL_TFC16, UL_TFC21, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: 39 RB6: No data RB7: No data RB8: 632
8	DL_TFC8, DL_TFC23	UL_TFC8, DL_TFC23	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8, UL_TFC15, UL_TFC17, UL_TFC21, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: 632
9	DL_TFC9, DL_TFC24	UL_TFC9, DL_TFC24	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 952	RB5: No data RB6: No data RB7: No data RB8: 1272
10	DL_TFC10, DL_TFC25	UL_TFC10, DL_TFC25	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10, UL_TFC15, UL_TFC16, UL_TFC24, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 952	RB5: 39 RB6: No data RB7: No data RB8: 1272

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
11	DL_TFC11, DL_TFC26	UL_TFC11, DL_TFC26	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11, UL_TFC15, UL_TFC17, UL_TFC24, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 952	RB5: 81 RB6: 103 RB7: 60 RB8: 1272
12	DL_TFC12, DL_TFC27	UL_TFC12, DL_TFC27	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: No data RB6: No data RB7: No data RB8: 2552
13	DL_TFC13, DL_TFC28	UL_TFC13, DL_TFC28	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: 39 RB6: No data RB7: No data RB8: 2552
14	DL_TFC14, DL_TFC29	UL_TFC14, DL_TFC29	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1272	RB5: 81 RB6: 103 RB7: 60 RB8: 2552
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB8: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the uplink TTI for RB8 is 20 ms while the downlink TTI is 10 ms then, to achieve continuous data transmission in uplink the size of the uplink RLC SDU has been set such that it will be transmitted over each TTIs, i.e. UL RLC SDU SIZE has been set to the uplink TFS size under test minus 8 (the size of a 7 bit length indicator and expansion bit).						

#### 14.2.42.1.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
  - for sub-test 3: an RLC SDU on RB8 having the first 312 bits equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 4: an RLC SDU on RB8 having the first 312 bits equal to the content of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
  - for sub-test 5: an RLC SDU on RB8 having the first 312 bits equal to the content of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.

- for sub-test 6: an RLC SDU on RB8 having the content equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 7: an RLC SDU on RB8 having the content equal to the content of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 8: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.
- for sub-test 9: an RLC SDU on RB8 having the content equal to the first 952 bits of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 10: an RLC SDU on RB8 having the content equal to the first 952 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 11: an RLC SDU on RB8 having the content equal to the first 952 bits of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.
- for sub-test 12: an RLC SDU on RB8 having the content equal to the first 1272 bits of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 13: an RLC SDU on RB8 having the content equal to the first 1272 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 14: an RLC SDU on RB8 having the content equal to the first 1272 bits of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

#### 14.2.42.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB / 20 ms TTI

##### 14.2.42.2.1 Conformance requirement

See 14.2.4.1.

##### 14.2.42.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.42 for the downlink 20 ms TTI case.

##### 14.2.42.2.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		<b>RB5 (RAB subflow #1)</b>	<b>RB6 (RAB subflow #2)</b>	<b>RB7 (RAB subflow #3)</b>	<b>RB8 (256 kbps, 20 ms)</b>	<b>DCCH</b>
<b>TFS</b>	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A
	TF5, bits	N/A	N/A	N/A	12x336	N/A
	TF6, bits	N/A	N/A	N/A	16x336	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF5, TF0)
DL_TFC16	(TF1, TF0, TF0, TF5, TF0)
DL_TFC17	(TF2, TF1, TF1, TF5, TF0)
DL_TFC18	(TF0, TF0, TF0, TF6, TF0)
DL_TFC19	(TF1, TF0, TF0, TF6, TF0)
DL_TFC20	(TF2, TF1, TF1, TF6, TF0)
DL_TFC21	(TF0, TF0, TF0, TF0, TF1)
DL_TFC22	(TF1, TF0, TF0, TF0, TF1)
DL_TFC23	(TF2, TF1, TF1, TF0, TF1)
DL_TFC24	(TF0, TF0, TF0, TF1, TF1)
DL_TFC25	(TF1, TF0, TF0, TF1, TF1)
DL_TFC26	(TF2, TF1, TF1, TF1, TF1)
DL_TFC27	(TF0, TF0, TF0, TF2, TF1)
DL_TFC28	(TF1, TF0, TF0, TF2, TF1)
DL_TFC29	(TF2, TF1, TF1, TF2, TF1)
DL_TFC30	(TF0, TF0, TF0, TF3, TF1)
DL_TFC31	(TF1, TF0, TF0, TF3, TF1)
DL_TFC32	(TF2, TF1, TF1, TF3, TF1)
DL_TFC33	(TF0, TF0, TF0, TF4, TF1)
DL_TFC34	(TF1, TF0, TF0, TF4, TF1)
DL_TFC35	(TF2, TF1, TF1, TF4, TF1)
DL_TFC36	(TF0, TF0, TF0, TF5, TF1)
DL_TFC37	(TF1, TF0, TF0, TF5, TF1)
DL_TFC38	(TF2, TF1, TF1, TF5, TF1)
DL_TFC39	(TF0, TF0, TF0, TF6, TF1)
DL_TFC40	(TF1, TF0, TF0, TF6, TF1)
DL_TFC41	(TF2, TF1, TF1, TF6, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC22	UL_TFC1, UL_TFC16	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2, DL_TFC23	UL_TFC2, UL_TFC17	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 312	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3, DL_TFC24	UL_TFC3, UL_TFC18	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: No data RB6: No data RB7: No data RB8: 312
4	DL_TFC4, DL_TFC25	UL_TFC4, UL_TFC19	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC15, UL_TFC16, UL_TFC18, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: 39 RB6: No data RB7: No data RB8: 312
5	DL_TFC5, DL_TFC26	UL_TFC5, UL_TFC20	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC15, UL_TFC17, UL_TFC18, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 312	RB5: 81 RB6: 103 RB7: 60 RB8: 312
6	DL_TFC6, DL_TFC27	UL_TFC6, UL_TFC21	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: No data RB6: No data RB7: No data RB8: 632
7	DL_TFC7, DL_TFC28	UL_TFC7, UL_TFC22	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7, UL_TFC15, UL_TFC16, UL_TFC21, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: 39 RB6: No data RB7: No data RB8: 632
8	DL_TFC8, DL_TFC29	UL_TFC8, UL_TFC23	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8, UL_TFC15, UL_TFC17, UL_TFC21 UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: 632
9	DL_TFC9, DL_TFC30	UL_TFC9, UL_TFC24	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 952	RB5: No data RB6: No data RB7: No data RB8: 1272
10	DL_TFC10, DL_TFC31	UL_TFC10, UL_TFC25	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10, UL_TFC15, UL_TFC16, UL_TFC24, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 952	RB5: 39 RB6: No data RB7: No data RB8: 1272

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
11	DL_TFC11, DL_TFC32	UL_TFC11, UL_TFC26	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11, UL_TFC15, UL_TFC17, UL_TFC24, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 952	RB5: 81 RB6: 103 RB7: 60 RB8: 1272
12	DL_TFC12, DL_TFC33	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: No data RB6: No data RB7: No data RB8: 2552
13	DL_TFC13, DL_TFC34	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27 UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: 39 RB6: No data RB7: No data RB8: 2552
14	DL_TFC14, DL_TFC35	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1272	RB5: 81 RB6: 103 RB7: 60 RB8: 2552
15	DL_TFC15, DL_TFC36	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: No data RB6: No data RB7: No data RB8: 3832
16	DL_TFC16, DL_TFC37	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27 UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: 39 RB6: No data RB7: No data RB8: 3832
17	DL_TFC17, DL_TFC38	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1272	RB5: 81 RB6: 103 RB7: 60 RB8: 3832
18	DL_TFC18, DL_TFC39	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: No data RB6: No data RB7: No data RB8: 5112
19	DL_TFC19, DL_TFC40	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: 39 RB6: No data RB7: No data RB8: 5112

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
20	DL_TFC20, DL_TFC41	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC21, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1272	RB5: 81 RB6: 103 RB7: 60 RB8: 5112
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  RB8: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the TTI for RB8 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size has been set equal to the uplink TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit).</p>						

#### 14.2.42.2.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
  - for sub-test 3: an RLC SDU on RB8 having the content equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 4: an RLC SDU on RB5 and RB8 having the content equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB6 and RB7.
  - for sub-test 5: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.
  - for sub-test 6: an RLC SDU on RB8 having the content equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 7: an RLC SDU on RB5 and RB8 having the content equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB6 and RB7.
  - for sub-test 8: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.
  - for sub-test 9: an RLC SDU on RB8 having the content equal to the first 952 bits of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 10: an RLC SDU on RB8 having the content equal to the first 952 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
  - for sub-test 11: an RLC SDU on RB8 having the content equal to the first 952 bits of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.
  - for sub-test 12: an RLC SDU on RB8 having the content equal to the first 1272 bits of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.

- for sub-test 13: an RLC SDU on RB8 having the content equal to the first 1272 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 14: an RLC SDU on RB8 having the content equal to the first 1272 bits of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.
- for sub-test 15: an RLC SDU on RB8 having the content equal to the first 1272 bits of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 16: an RLC SDU on RB8 having the content equal to the first 1272 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 17: an RLC SDU on RB8 having the content equal to the first 1272 bits of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.
- for sub-test 18: an RLC SDU on RB8 having the content equal to the first 1272 bits of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 19: an RLC SDU on RB8 having the content equal to the first 1272 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 20: an RLC SDU on RB8 having the content equal to the first 1272 bits of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

#### 14.2.43 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

##### 14.2.43.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB / 10 ms TTI

###### 14.2.43.1.1 Conformance requirement

See 14.2.4.1.

###### 14.2.43.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.43 for the downlink 10 ms TTI case.

###### 14.2.43.1.3 Method of test

See 14.1.2 for test procedure.

For the PS DL:384/UL:64 kbps radio bearer the downlink TTI is 10ms while the uplink TTI is 20ms. As the SS will send one DL SDU every 10 ms then the UE test loop function will return 2 UL SDUs per uplink TTI. To not cause uplink transmission buffer overflow then the UL RLC SDU size should be chosen such that the UE will transmit 2 RLC SDUs per uplink TTI. For the case when the transport format under test does not allow for 2 SDUs to fit into the transport format size without requiring concatenation then the UL RLC SDU size shall be chosen such that one SDU is returned per uplink TTI.

The following RLC parameter value is used in the RADIO BEARER SETUP message used to setup the PS DL:384/UL:64 kbps radio bearer:

Uplink RLC Transmission window size	512
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NOTE The transmission window size value have been chosen to avoid that UE transmission buffer becomes full during the test.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps, 20 ms TTI)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (384 kbps, 10 ms)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A
	TF5, bits	N/A	N/A	N/A	12x336	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF5, TF0)
DL_TFC16	(TF1, TF0, TF0, TF5, TF0)
DL_TFC17	(TF2, TF1, TF1, TF5, TF0)
DL_TFC18	(TF0, TF0, TF0, TF0, TF1)
DL_TFC19	(TF1, TF0, TF0, TF0, TF1)
DL_TFC20	(TF2, TF1, TF1, TF0, TF1)
DL_TFC21	(TF0, TF0, TF0, TF1, TF1)
DL_TFC22	(TF1, TF0, TF0, TF1, TF1)
DL_TFC23	(TF2, TF1, TF1, TF1, TF1)
DL_TFC24	(TF0, TF0, TF0, TF2, TF1)
DL_TFC25	(TF1, TF0, TF0, TF2, TF1)
DL_TFC26	(TF2, TF1, TF1, TF2, TF1)
DL_TFC27	(TF0, TF0, TF0, TF3, TF1)
DL_TFC28	(TF1, TF0, TF0, TF3, TF1)
DL_TFC29	(TF2, TF1, TF1, TF3, TF1)
DL_TFC30	(TF0, TF0, TF0, TF4, TF1)
DL_TFC31	(TF1, TF0, TF0, TF4, TF1)
DL_TFC32	(TF2, TF1, TF1, TF4, TF1)
DL_TFC33	(TF0, TF0, TF0, TF5, TF1)
DL_TFC34	(TF1, TF0, TF0, TF5, TF1)
DL_TFC35	(TF2, TF1, TF1, TF5, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_TFC1, DL_TFC19	UL_TFC1, UL_TFC16	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2, DL_TFC20	UL_TFC2, UL_TFC17	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 312	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3, DL_TFC21	UL_TFC3, UL_TFC18	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 312 (note 2)	RB5: No data RB6: No data RB7: No data RB8: 312
4	DL_TFC4, DL_TFC22	UL_TFC4, UL_TFC19	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC15, UL_TFC16, UL_TFC18, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 312 (note 2)	RB5: 39 RB6: No data RB7: No data RB8: 312
5	DL_TFC5, DL_TFC23	UL_TFC5, UL_TFC20	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC5, UL_TFC17, UL_TFC18, UL_TFC15, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 312 (note 2)	RB5: 81 RB6: 103 RB7: 60 RB8: 312
6	DL_TFC6, DL_TFC24	UL_TFC6, UL_TFC21	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 312 (note 3)	RB5: No data RB6: No data RB7: No data RB8: 632
7	DL_TFC7, DL_TFC25	UL_TFC7, UL_TFC22	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7, UL_TFC15, UL_TFC16, UL_TFC21, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 312 (note 3)	RB5: 39 RB6: No data RB7: No data RB8: 632
8	DL_TFC8, DL_TFC26	UL_TFC8, UL_TFC23	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8, UL_TFC15, UL_TFC17, UL_TFC21, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 312 (note 3)	RB5: 81 RB6: 103 RB7: 60 RB8: 632
9	DL_TFC9, DL_TFC27	UL_TFC9, UL_TFC24	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 1272 (note 2)	RB5: No data RB6: No data RB7: No data RB8: 1272

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
10	DL_TFC10, DL_TFC28	UL_TFC10, UL_TFC25	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10, UL_TFC15, UL_TFC16, UL_TFC24, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 1272 (note 2)	RB5: 39 RB6: No data RB7: No data RB8: 1272
11	DL_TFC11, DL_TFC29	UL_TFC11, UL_TFC26	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11, UL_TFC15, UL_TFC17, UL_TFC24, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 1272 (note 2)	RB5: 81 RB6: 103 RB7: 60 RB8: 1272
12	DL_TFC12, DL_TFC30	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 632 (note 3)	RB5: No data RB6: No data RB7: No data RB8: 2552
13	DL_TFC13, DL_TFC31	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 632 (note 3)	RB5: 39 RB6: No data RB7: No data RB8: 2552
14	DL_TFC14, DL_TFC32	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 632 (note 3)	RB5: 81 RB6: 103 RB7: 60 RB8: 2552
15	DL_TFC15, DL_TFC33	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 632 (note 3)	RB5: No data RB6: No data RB7: No data RB8: 3832
16	DL_TFC16, DL_TFC34	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 632 (note 3)	RB5: 39 RB6: No data RB7: No data RB8: 3832
17	DL_TFC17, DL_TFC35	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC18, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 632 (note 3)	RB5: 81 RB6: 103 RB7: 60 RB8: 3832

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
<p>NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB8: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit).</p> <p>NOTE 2: RB8 (TF1/TF3): For sub-tests where uplink transport format TF1 (1x336) or TF3 (3x336) are used then no adaptation to the difference in downlink TTI (10 ms) and uplink TTI (20ms) is possible as this would require the UE to concatenate 2 SDUs into one PDU for TF1; or into three PDUs for TF3. For these sub-tests the UL RLC SDU size is set equal to the payload size of the UL TF under test minus 8 bits (the size of 7 bit length indicator and expansion bit).</p> <p>NOTE 3: RB8 (TF2/TF4): For sub-tests where uplink transport formats TF2 (2x336) or TF4 (4x336) is used then to adopt to the difference in downlink TTI (10 ms) and uplink TTI (20ms) the UL RLC SDU size has been chosen such that 2 SDUs will be returned per uplink TTI. I.e. the UL RLC SDU size is set equal to half the payload size of the UL TF under test minus 8 bits (the size of 7 bit length indicator and expansion bit).</p>						

#### 14.2.43.1.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15a and step 15b the UE shall return
  - for sub-test 1: RLC SDUs on RB5 having the same content as sent by the SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2: RLC SDUs on RB5, RB6 and RB7 having the same content as sent by the SS; and no data shall be received on RB8.
  - for sub-test 3: RLC SDUs on RB8 having the same content as sent by the SS; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 4: RLC SDUs on RB5 and RB8 having the same content as sent by the SS; and no data shall be received on RB6 and RB7.
  - for sub-test 5: RLC SDUs on RB5, RB6, RB7 and RB8 having the same content as sent by the SS.
  - for sub-test 6: RLC SDUs on RB8 having the first 312 bits equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 7: RLC SDUs on RB5 having the same content as sent by the SS; RLC SDUs on RB8 having the first 312 bits equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB6 and RB7.
  - for sub-test 8: RLC SDUs on RB5, RB6 and RB7 having the same content as sent by the SS; and RLC SDUs on RB8 having the first 312 bits equal to the content of the test data sent by the SS in downlink.
  - for sub-test 9: RLC SDUs on RB8 having the same content as sent by the SS; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 10: RLC SDUs on RB5 and RB8 having the same content as sent by the SS; and no data shall be received on RB6 and RB7.
  - for sub-test 11: RLC SDUs on RB5, RB6, RB7 and RB8 having the same content as sent by the SS.
  - for sub-test 12: RLC SDUs on RB8 having the first 632 bits equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.

- for sub-test 13: RLC SDUs on RB5 having the same content as sent by the SS; RLC SDUs on RB8 having the first 632 bits equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB6 and RB7.
- for sub-test 14: RLC SDUs on RB5, RB6 and RB7 having the same content as sent by the SS; and RLC SDUs on RB8 having the first 632 bits equal to the content of the test data sent by the SS in downlink.
- for sub-test 15: RLC SDUs on RB8 having the first 632 bits equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 16: RLC SDUs on RB5 having the same content as sent by the SS; RLC SDUs on RB8 having the first 632 bits equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB6 and RB7.
- for sub-test 17: RLC SDUs on RB5, RB6 and RB7 having the same content as sent by the the SS; and RLC SDUs on RB8 having the first 632 bits equal to the content of the test data sent by the SS in downlink.

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

#### 14.2.43.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB / 20 ms TTI

##### 14.2.43.2.1 Conformance requirement

See 14.2.4.1.

##### 14.2.43.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.43 for the downlink 20 ms TTI case.

##### 14.2.43.2.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	3x336	N/A
	TF4, bits	N/A	N/A	N/A	4x336	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		<b>RB5 (RAB subflow #1)</b>	<b>RB6 (RAB subflow #2)</b>	<b>RB7 (RAB subflow #3)</b>	<b>RB8 (384 kbps, 20 ms)</b>	<b>DCCH</b>
TFS	TF0, bits	1x0	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A
	TF5, bits	N/A	N/A	N/A	12x336	N/A
	TF6, bits	N/A	N/A	N/A	16x336	N/A
	TF7, bits	N/A	N/A	N/A	20x336	N/A
TF8, bits	N/A	N/A	N/A	24x336	N/A	

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF5, TF0)
DL_TFC16	(TF1, TF0, TF0, TF5, TF0)
DL_TFC17	(TF2, TF1, TF1, TF5, TF0)
DL_TFC18	(TF0, TF0, TF0, TF6, TF0)
DL_TFC19	(TF1, TF0, TF0, TF6, TF0)
DL_TFC20	(TF2, TF1, TF1, TF6, TF0)
DL_TFC21	(TF0, TF0, TF0, TF7, TF0)
DL_TFC22	(TF1, TF0, TF0, TF7, TF0)
DL_TFC23	(TF2, TF1, TF1, TF7, TF0)
DL_TFC24	(TF0, TF0, TF0, TF8, TF0)
DL_TFC25	(TF1, TF0, TF0, TF8, TF0)
DL_TFC26	(TF2, TF1, TF1, TF8, TF0)
DL_TFC27	(TF0, TF0, TF0, TF0, TF1)
DL_TFC28	(TF1, TF0, TF0, TF0, TF1)
DL_TFC29	(TF2, TF1, TF1, TF0, TF1)
DL_TFC30	(TF0, TF0, TF0, TF1, TF1)
DL_TFC31	(TF1, TF0, TF0, TF1, TF1)
DL_TFC32	(TF2, TF1, TF1, TF1, TF1)
DL_TFC33	(TF0, TF0, TF0, TF2, TF1)
DL_TFC34	(TF1, TF0, TF0, TF2, TF1)
DL_TFC35	(TF2, TF1, TF1, TF2, TF1)
DL_TFC36	(TF0, TF0, TF0, TF3, TF1)
DL_TFC37	(TF1, TF0, TF0, TF3, TF1)
DL_TFC38	(TF2, TF1, TF1, TF3, TF1)
DL_TFC39	(TF0, TF0, TF0, TF4, TF1)
DL_TFC40	(TF1, TF0, TF0, TF4, TF1)
DL_TFC41	(TF2, TF1, TF1, TF4, TF1)
DL_TFC42	(TF0, TF0, TF0, TF5, TF1)
DL_TFC43	(TF1, TF0, TF0, TF5, TF1)
DL_TFC44	(TF2, TF1, TF1, TF5, TF1)
DL_TFC45	(TF0, TF0, TF0, TF6, TF1)
DL_TFC46	(TF1, TF0, TF0, TF6, TF1)
DL_TFC47	(TF2, TF1, TF1, TF6, TF1)
DL_TFC48	(TF0, TF0, TF0, TF7, TF1)
DL_TFC49	(TF1, TF0, TF0, TF7, TF1)
DL_TFC50	(TF2, TF1, TF1, TF7, TF1)
DL_TFC51	(TF0, TF0, TF0, TF8, TF1)
DL_TFC52	(TF1, TF0, TF0, TF8, TF1)
DL_TFC53	(TF2, TF1, TF1, TF8, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCSs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC28	UL_TFC1,U L_TFC16	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2, DL_TFC29	UL_TFC2,U L_TFC17	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 312	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3, DL_TFC30	UL_TFC3,U L_TFC19	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: No data RB6: No data RB7: No data RB8: 312

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
4	DL_TFC4, DL_TFC31	UL_TFC4,U L_TFC19	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15,	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC15, UL_TFC16, UL_TFC18, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: 39 RB6: No data RB7: No data RB8: 312
5	DL_TFC5, DL_TFC32	UL_TFC5,U L_TFC20	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC15, UL_TFC17, UL_TFC18 UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 312	RB5: 81 RB6: 103 RB7: 60 RB8: 312
6	DL_TFC6, DL_TFC33	UL_TFC6,U L_TFC21	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: No data RB6: No data RB7: No data RB8: 632
7	DL_TFC7, DL_TFC34	UL_TFC7,U L_TFC22	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7, UL_TFC15, UL_TFC16, UL_TFC21, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: 39 RB6: No data RB7: No data RB8: 632
8	DL_TFC8, DL_TFC35	UL_TFC8,U L_TFC23	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8, UL_TFC15, UL_TFC17, UL_TFC21, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: 632
9	DL_TFC9, DL_TFC36	UL_TFC9,U L_TFC24	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 952	RB5: No data RB6: No data RB7: No data RB8: 1272
10	DL_TFC10, DL_TFC37	UL_TFC10, UL_TFC25	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10, UL_TFC15, UL_TFC16, UL_TFC24 UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 952	RB5: 39 RB6: No data RB7: No data RB8: 1272
11	DL_TFC11, DL_TFC38	UL_TFC11, UL_TFC26	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11, UL_TFC15, UL_TFC17, UL_TFC24, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 952	RB5: 81 RB6: 103 RB7: 60 RB8: 1272
12	DL_TFC12, DL_TFC39	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: No data RB6: No data RB7: No data RB8: 2552

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
13	DL_TFC13, DL_TFC40	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: 39 RB6: No data RB7: No data RB8: 2552
14	DL_TFC14, DL_TFC41	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1272	RB5: 81 RB6: 103 RB7: 60 RB8: 2552
15	DL_TFC15, DL_TFC42	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: No data RB6: No data RB7: No data RB8: 3832
16	DL_TFC16, DL_TFC43	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC27, , UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: 39 RB6: No data RB7: No data RB8: 3832
17	DL_TFC17, DL_TFC44	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1272	RB5: 81 RB6: 103 RB7: 60 RB8: 3832
18	DL_TFC18, DL_TFC45	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: No data RB6: No data RB7: No data RB8: 5112
19	DL_TFC19, DL_TFC46	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: 39 RB6: No data RB7: No data RB8: 5112
20	DL_TFC20, DL_TFC47	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1272	RB5: 81 RB6: 103 RB7: 60 RB8: 5112
21	DL_TFC21, DL_TFC48	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: No data RB6: No data RB7: No data RB8: 6392

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
22	DL_TFC22, DL_TFC49	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: 39 RB6: No data RB7: No data RB8: 6392
23	DL_TFC23, DL_TFC50	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1272	RB5: 81 RB6: 103 RB7: 60 RB8: 6392
24	DL_TFC24, DL_TFC51	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: No data RB6: No data RB7: No data RB8: 7672
25	DL_TFC25, DL_TFC52	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: 39 RB6: No data RB7: No data RB8: 7672
26	DL_TFC26, DL_TFC53	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC27, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 1272	RB5: 81 RB6: 103 RB7: 60 RB8: 7672
NOTE:	See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB8: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the TTI for RB8 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size has been set equal to the uplink TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit).					

#### 14.2.43.2.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
  - for sub-test 3: an RLC SDU on RB8 having the content equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.



- for sub-test 25: an RLC SDU on RB8 having the content equal to the first 1272 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 26: an RLC SDU on RB8 having the content equal to the first 1272 bits of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

#### 14.2.44 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:128 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

##### 14.2.44.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:128 DL:2048 kbps / PS RAB / 10 ms TTI

###### 14.2.44.1.1 Conformance requirement

See 14.2.4.1.

###### 14.2.44.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.44 for the downlink 10 ms TTI case.

###### 14.2.44.1.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (128 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		<b>RB5 (RAB subflow #1)</b>	<b>RB6 (RAB subflow #2)</b>	<b>RB7 (RAB subflow #3)</b>	<b>RB8 (2048 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	1x0	0x103	0x60	0x656	0x148
	TF1, bits	1x39	1x103	1x60	1x656	1x148
	TF2, bits	1x81	N/A	N/A	2x656	N/A
	TF3, bits	N/A	N/A	N/A	4x656	N/A
	TF4, bits	N/A	N/A	N/A	8x656	N/A
	TF5, bits	N/A	N/A	N/A	12x656	N/A
	TF6, bits	N/A	N/A	N/A	16x656	N/A
	TF7, bits	N/A	N/A	N/A	20x656	N/A
	TF8, bits	N/A	N/A	N/A	24x656	N/A
	TF9, bits	N/A	N/A	N/A	28x656	N/A
TF10, bits	N/A	N/A	N/A	32x656	N/A	

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF5, TF0)
DL_TFC16	(TF1, TF0, TF0, TF5, TF0)
DL_TFC17	(TF2, TF1, TF1, TF5, TF0)
DL_TFC18	(TF0, TF0, TF0, TF6, TF0)
DL_TFC19	(TF1, TF0, TF0, TF6, TF0)
DL_TFC20	(TF2, TF1, TF1, TF6, TF0)
DL_TFC21	(TF0, TF0, TF0, TF7, TF0)
DL_TFC22	(TF1, TF0, TF0, TF7, TF0)
DL_TFC23	(TF2, TF1, TF1, TF7, TF0)
DL_TFC24	(TF0, TF0, TF0, TF8, TF0)
DL_TFC25	(TF1, TF0, TF0, TF8, TF0)
DL_TFC26	(TF2, TF1, TF1, TF8, TF0)
DL_TFC27	(TF0, TF0, TF0, TF9, TF0)
DL_TFC28	(TF1, TF0, TF0, TF9, TF0)
DL_TFC29	(TF2, TF1, TF1, TF9, TF0)
DL_TFC30	(TF0, TF0, TF0, TF10, TF0)
DL_TFC31	(TF1, TF0, TF0, TF10, TF0)
DL_TFC32	(TF2, TF1, TF1, TF10, TF0)
DL_TFC33	(TF0, TF0, TF0, TF0, TF1)
DL_TFC34	(TF1, TF0, TF0, TF0, TF1)
DL_TFC35	(TF2, TF1, TF1, TF0, TF1)
DL_TFC36	(TF0, TF0, TF0, TF1, TF1)
DL_TFC37	(TF1, TF0, TF0, TF1, TF1)
DL_TFC38	(TF2, TF1, TF1, TF1, TF1)
DL_TFC39	(TF0, TF0, TF0, TF2, TF1)
DL_TFC40	(TF1, TF0, TF0, TF2, TF1)
DL_TFC41	(TF2, TF1, TF1, TF2, TF1)
DL_TFC42	(TF0, TF0, TF0, TF3, TF1)
DL_TFC43	(TF1, TF0, TF0, TF3, TF1)
DL_TFC44	(TF2, TF1, TF1, TF3, TF1)
DL_TFC45	(TF0, TF0, TF0, TF4, TF1)
DL_TFC46	(TF1, TF0, TF0, TF4, TF1)
DL_TFC47	(TF2, TF1, TF1, TF4, TF1)
DL_TFC48	(TF0, TF0, TF0, TF5, TF1)
DL_TFC49	(TF1, TF0, TF0, TF5, TF1)
DL_TFC50	(TF2, TF1, TF1, TF5, TF1)
DL_TFC51	(TF0, TF0, TF0, TF6, TF1)
DL_TFC52	(TF1, TF0, TF0, TF6, TF1)
DL_TFC53	(TF2, TF1, TF1, TF6, TF1)
DL_TFC54	(TF0, TF0, TF0, TF7, TF1)
DL_TFC55	(TF1, TF0, TF0, TF7, TF1)
DL_TFC56	(TF2, TF1, TF1, TF7, TF1)
DL_TFC57	(TF0, TF0, TF0, TF8, TF1)
DL_TFC58	(TF1, TF0, TF0, TF8, TF1)
DL_TFC59	(TF2, TF1, TF1, TF8, TF1)
DL_TFC60	(TF0, TF0, TF0, TF9, TF1)
DL_TFC61	(TF1, TF0, TF0, TF9, TF1)
DL_TFC62	(TF2, TF1, TF1, TF9, TF1)
DL_TFC63	(TF0, TF0, TF0, TF10, TF1)
DL_TFC64	(TF1, TF0, TF0, TF10, TF1)
DL_TFC65	(TF2, TF1, TF1, TF10, TF1)

Sub-tests:

<b>Sub-test</b>	<b>Downlink TFCs under test</b>	<b>Uplink TFCs Under test</b>	<b>Implicitely tested</b>	<b>Restricted UL TFCIs</b>	<b>UL RLC SDU size (bits) (note)</b>	<b>Test data size (bits) (note)</b>

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC34	UL_TFC1, UL_TFC16	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2, DL_TFC35	UL_TFC2, UL_TFC17	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3, DL_TFC36	UL_TFC3, UL_TFC18	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: No data RB6: No data RB7: No data RB8: 632
4	DL_TFC4, DL_TFC37	UL_TFC4, UL_TFC19	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC15, UL_TFC16, UL_TFC18, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: 39 RB6: No data RB7: No data RB8: 632
5	DL_TFC5, DL_TFC38	UL_TFC5, UL_TFC20	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC15, UL_TFC17, UL_TFC18, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: 632
6	DL_TFC6, DL_TFC39	UL_TFC6, UL_TFC21	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: No data RB6: No data RB7: No data RB8: 1272
7	DL_TFC7, DL_TFC40	UL_TFC7, UL_TFC22	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7, UL_TFC15, UL_TFC16, UL_TFC21, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: 39 RB6: No data RB7: No data RB8: 1272
8	DL_TFC8, DL_TFC41	UL_TFC8, UL_TFC23	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8, UL_TFC15, UL_TFC17, UL_TFC21, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: 1272
9	DL_TFC9, DL_TFC42	UL_TFC9, UL_TFC24	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: No data RB6: No data RB7: No data RB8: 2552
10	DL_TFC10, DL_TFC43	UL_TFC10, UL_TFC25	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10, UL_TFC15, UL_TFC16, UL_TFC24, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: 39 RB6: No data RB7: No data RB8: 2552

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
11	DL_TFC11, DL_TFC44	UL_TFC11, UL_TFC26	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11, UL_TFC15, UL_TFC17, UL_TFC24, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 1272	RB5: 81 RB6: 103 RB7: 60 RB8: 2552
12	DL_TFC12, DL_TFC45	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 5112
13	DL_TFC13, DL_TFC46	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 5112
14	DL_TFC14, DL_TFC47	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27 UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 5112
15	DL_TFC15, DL_TFC48	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 7672
16	DL_TFC16, DL_TFC49	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 7672
17	DL_TFC17, DL_TFC50	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 7672
18	DL_TFC18, DL_TFC51	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 10232
19	DL_TFC19, DL_TFC52	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 10232

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
20	DL_TFC20, DL_TFC53	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 10232
21	DL_TFC21, DL_TFC54	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 12792
22	DL_TFC22, DL_TFC55	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 12792
23	DL_TFC23, DL_TFC56	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 12792
24	DL_TFC24, DL_TFC57	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 15352
25	DL_TFC25, DL_TFC58	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 15352
26	DL_TFC26, DL_TFC59	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 15352
27	DL_TFC27, DL_TFC60	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 17912
28	DL_TFC28, DL_TFC61	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 17912

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
29	DL_TFC29, DL_TFC62	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27 UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 17912
30	DL_TFC30, DL_TFC63	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 20472
31	DL_TFC31, DL_TFC64	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 20472
32	DL_TFC32, DL_TFC65	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC33, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27 UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 20472
NOTE:	See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB8: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the uplink TTI for RB8 is 20 ms while the downlink TTI is 10 ms then, to achieve continous data transmission in uplink the size of the uplink RLC SDU has been set such that it will be transmitted over each TTI, ie the uplink TFS size minus 8 bits (size of 7 bit length indicator and expansion bit).					

#### 14.2.44.1.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
  - for sub-test 3: an RLC SDU on RB8 having the content equal to the first 312 bits of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 4: an RLC SDU on RB8 having the content equal to the first 312 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
  - for sub-test 5: an RLC SDU on RB8 having the content equal to the first 312 bits of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.



- for sub-test 26: an RLC SDU on RB8 having the content equal to the first 2552 bits of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.
- for sub-test 27: an RLC SDU on RB8 having the content equal to the first 2552 bits of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 28: an RLC SDU on RB8 having the content equal to the first 2552 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 29: an RLC SDU on RB8 having the content equal to the first 2552 bits of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.
- for sub-test 30: an RLC SDU on RB8 having the content equal to the first 2552 bits of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 31: an RLC SDU on RB8 having the content equal to the first 2552 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 32: an RLC SDU on RB8 having the content equal to the first 2552 bits of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

#### 14.2.44.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:128 DL:2048 kbps / PS RAB / 20 ms TTI

##### 14.2.44.2.1 Conformance requirement

See 14.2.4.1.

##### 14.2.44.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.44 for the downlink 20 ms TTI case.

##### 14.2.44.2.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (128 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x336	0x148
	TF1, bits	1x39	1x103	1x60	1x336	1x148
	TF2, bits	1x81	N/A	N/A	2x336	N/A
	TF3, bits	N/A	N/A	N/A	4x336	N/A
	TF4, bits	N/A	N/A	N/A	8x336	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		<b>RB5 (RAB subflow #1)</b>	<b>RB6 (RAB subflow #2)</b>	<b>RB7 (RAB subflow #3)</b>	<b>RB8 (2048 kbps)</b>	<b>DCCH</b>
<b>TFS</b>	TF0, bits	1x0	0x103	0x60	0x656	0x148
	TF1, bits	1x39	1x103	1x60	1x656	1x148
	TF2, bits	1x81	N/A	N/A	2x656	N/A
	TF3, bits	N/A	N/A	N/A	4x656	N/A
	TF4, bits	N/A	N/A	N/A	8x656	N/A
	TF5, bits	N/A	N/A	N/A	12x656	N/A
	TF6, bits	N/A	N/A	N/A	16x656	N/A
	TF7, bits	N/A	N/A	N/A	20x656	N/A
	TF8, bits	N/A	N/A	N/A	24x656	N/A
	TF9, bits	N/A	N/A	N/A	28x656	N/A
	TF10, bits	N/A	N/A	N/A	32x656	N/A
	TF11, bits	N/A	N/A	N/A	36x656	N/A
	TF12, bits	N/A	N/A	N/A	40x656	N/A
	TF13, bits	N/A	N/A	N/A	44x656	N/A
	TF14, bits	N/A	N/A	N/A	48x656	N/A
	TF15, bits	N/A	N/A	N/A	52x656	N/A
	TF16, bits	N/A	N/A	N/A	56x656	N/A
	TF17, bits	N/A	N/A	N/A	60x656	N/A
TF18, bits	N/A	N/A	N/A	64x656	N/A	

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF5, TF0)
DL_TFC16	(TF1, TF0, TF0, TF5, TF0)
DL_TFC17	(TF2, TF1, TF1, TF5, TF0)
DL_TFC18	(TF0, TF0, TF0, TF6, TF0)
DL_TFC19	(TF1, TF0, TF0, TF6, TF0)
DL_TFC20	(TF2, TF1, TF1, TF6, TF0)
DL_TFC21	(TF0, TF0, TF0, TF7, TF0)
DL_TFC22	(TF1, TF0, TF0, TF7, TF0)
DL_TFC23	(TF2, TF1, TF1, TF7, TF0)
DL_TFC24	(TF0, TF0, TF0, TF8, TF0)
DL_TFC25	(TF1, TF0, TF0, TF8, TF0)
DL_TFC26	(TF2, TF1, TF1, TF8, TF0)
DL_TFC27	(TF0, TF0, TF0, TF9, TF0)
DL_TFC28	(TF1, TF0, TF0, TF9, TF0)
DL_TFC29	(TF2, TF1, TF1, TF9, TF0)
DL_TFC30	(TF0, TF0, TF0, TF10, TF0)
DL_TFC31	(TF1, TF0, TF0, TF10, TF0)
DL_TFC32	(TF2, TF1, TF1, TF10, TF0)
DL_TFC33	(TF0, TF0, TF0, TF11, TF0)
DL_TFC34	(TF1, TF0, TF0, TF11, TF0)
DL_TFC35	(TF2, TF1, TF1, TF11, TF0)
DL_TFC36	(TF0, TF0, TF0, TF12, TF0)
DL_TFC37	(TF1, TF0, TF0, TF12, TF0)
DL_TFC38	(TF2, TF1, TF1, TF12, TF0)
DL_TFC39	(TF0, TF0, TF0, TF13, TF0)
DL_TFC40	(TF1, TF0, TF0, TF13, TF0)
DL_TFC41	(TF2, TF1, TF1, TF13, TF0)
DL_TFC42	(TF0, TF0, TF0, TF14, TF0)
DL_TFC43	(TF1, TF0, TF0, TF14, TF0)
DL_TFC44	(TF2, TF1, TF1, TF14, TF0)
DL_TFC45	(TF0, TF0, TF0, TF15, TF0)
DL_TFC46	(TF1, TF0, TF0, TF15, TF0)
DL_TFC47	(TF2, TF1, TF1, TF15, TF0)
DL_TFC48	(TF0, TF0, TF0, TF16, TF0)
DL_TFC49	(TF1, TF0, TF0, TF16, TF0)
DL_TFC50	(TF2, TF1, TF1, TF16, TF0)
DL_TFC51	(TF0, TF0, TF0, TF17, TF0)
DL_TFC52	(TF1, TF0, TF0, TF17, TF0)
DL_TFC53	(TF2, TF1, TF1, TF17, TF0)
DL_TFC54	(TF0, TF0, TF0, TF18, TF0)
DL_TFC55	(TF1, TF0, TF0, TF18, TF0)
DL_TFC56	(TF2, TF1, TF1, TF18, TF0)
DL_TFC57	(TF0, TF0, TF0, TF0, TF1)
DL_TFC58	(TF1, TF0, TF0, TF0, TF1)
DL_TFC59	(TF2, TF1, TF1, TF0, TF1)
DL_TFC60	(TF0, TF0, TF0, TF1, TF1)

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
DL_TFC61	(TF1, TF0, TF0, TF1, TF1)
DL_TFC61	(TF2, TF1, TF1, TF1, TF1)
DL_TFC63	(TF0, TF0, TF0, TF2, TF1)
DL_TFC64	(TF1, TF0, TF0, TF2, TF1)
DL_TFC65	(TF2, TF1, TF1, TF2, TF1)
DL_TFC66	(TF0, TF0, TF0, TF3, TF1)
DL_TFC67	(TF1, TF0, TF0, TF3, TF1)
DL_TFC68	(TF2, TF1, TF1, TF3, TF1)
DL_TFC69	(TF0, TF0, TF0, TF4, TF1)
DL_TFC70	(TF1, TF0, TF0, TF4, TF1)
DL_TFC71	(TF2, TF1, TF1, TF4, TF1)
DL_TFC72	(TF0, TF0, TF0, TF5, TF1)
DL_TFC73	(TF1, TF0, TF0, TF5, TF1)
DL_TFC74	(TF2, TF1, TF1, TF5, TF1)
DL_TFC75	(TF0, TF0, TF0, TF6, TF1)
DL_TFC76	(TF1, TF0, TF0, TF6, TF1)
DL_TFC77	(TF2, TF1, TF1, TF6, TF1)
DL_TFC78	(TF0, TF0, TF0, TF7, TF1)
DL_TFC79	(TF1, TF0, TF0, TF7, TF1)
DL_TFC80	(TF2, TF1, TF1, TF7, TF1)
DL_TFC81	(TF0, TF0, TF0, TF8, TF1)
DL_TFC82	(TF1, TF0, TF0, TF8, TF1)
DL_TFC83	(TF2, TF1, TF1, TF8, TF1)
DL_TFC84	(TF0, TF0, TF0, TF9, TF1)
DL_TFC85	(TF1, TF0, TF0, TF9, TF1)
DL_TFC86	(TF2, TF1, TF1, TF9, TF1)
DL_TFC87	(TF0, TF0, TF0, TF10, TF1)
DL_TFC88	(TF1, TF0, TF0, TF10, TF1)
DL_TFC89	(TF2, TF1, TF1, TF10, TF1)
DL_TFC90	(TF0, TF0, TF0, TF11, TF1)
DL_TFC91	(TF1, TF0, TF0, TF11, TF1)
DL_TFC92	(TF2, TF1, TF1, TF11, TF1)
DL_TFC93	(TF0, TF0, TF0, TF12, TF1)
DL_TFC94	(TF1, TF0, TF0, TF12, TF1)
DL_TFC95	(TF2, TF1, TF1, TF12, TF1)
DL_TFC96	(TF0, TF0, TF0, TF13, TF1)
DL_TFC97	(TF1, TF0, TF0, TF13, TF1)
DL_TFC98	(TF2, TF1, TF1, TF13, TF1)
DL_TFC99	(TF0, TF0, TF0, TF14, TF1)
DL_TFC100	(TF1, TF0, TF0, TF14, TF1)
DL_TFC101	(TF2, TF1, TF1, TF14, TF1)
DL_TFC102	(TF0, TF0, TF0, TF15, TF1)
DL_TFC103	(TF1, TF0, TF0, TF15, TF1)
DL_TFC104	(TF2, TF1, TF1, TF15, TF1)
DL_TFC105	(TF0, TF0, TF0, TF16, TF1)
DL_TFC106	(TF1, TF0, TF0, TF16, TF1)
DL_TFC107	(TF2, TF1, TF1, TF16, TF1)
DL_TFC108	(TF0, TF0, TF0, TF17, TF1)
DL_TFC109	(TF1, TF0, TF0, TF17, TF1)
DL_TFC110	(TF2, TF1, TF1, TF17, TF1)
DL_TFC111	(TF0, TF0, TF0, TF18, TF1)
DL_TFC112	(TF1, TF0, TF0, TF18, TF1)
DL_TFC113	(TF2, TF1, TF1, TF18, TF1)

Sub-tests:

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC58	UL_TFC1, UL_TFC16	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2, DL_TFC59	UL_TFC2, UL_TFC17	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3, DL_TFC60	UL_TFC3, UL_TFC18	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: No data RB6: No data RB7: No data RB8: 632
4	DL_TFC4, DL_TFC61	UL_TFC4, UL_TFC19	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC15, UL_TFC16, UL_TFC18 UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 312	RB5: 39 RB6: No data RB7: No data RB8: 632
5	DL_TFC5, DL_TFC62	UL_TFC5, UL_TFC20	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC15, UL_TFC17, UL_TFC18, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 312	RB5: 81 RB6: 103 RB7: 60 RB8: 632
6	DL_TFC6, DL_TFC63	UL_TFC6, UL_TFC21	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: No data RB6: No data RB7: No data RB8: 1272
7	DL_TFC7, DL_TFC64	UL_TFC7, UL_TFC22	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7, UL_TFC15, UL_TFC16, UL_TFC21, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 632	RB5: 39 RB6: No data RB7: No data RB8: 1272
8	DL_TFC8, DL_TFC65	UL_TFC8, UL_TFC23	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8, UL_TFC15, UL_TFC17, UL_TFC21, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 632	RB5: 81 RB6: 103 RB7: 60 RB8: 1272
9	DL_TFC9, DL_TFC66	UL_TFC9, UL_TFC24	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: No data RB6: No data RB7: No data RB8: 2552
10	DL_TFC10, DL_TFC67	UL_TFC10, UL_TFC25	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10, UL_TFC15, UL_TFC16, UL_TFC24, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 1272	RB5: 39 RB6: No data RB7: No data RB8: 2552

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
11	DL_TFC11, DL_TFC68	UL_TFC11, UL_TFC26	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC9 UL_TFC11, UL_TFC15, UL_TFC17, UL_TFC24, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 1272	RB5: 81 RB6: 103 RB7: 60 RB8: 2552
12	DL_TFC12, DL_TFC69	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 5112
13	DL_TFC13, DL_TFC70	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 5112
14	DL_TFC14, DL_TFC71	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 5112
15	DL_TFC15, DL_TFC72	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 7672
16	DL_TFC16, DL_TFC73	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 7672
17	DL_TFC17, DL_TFC74	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27 UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 7672
18	DL_TFC18, DL_TFC75	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 10232
19	DL_TFC19, DL_TFC76	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 10232

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
20	DL_TFC20, DL_TFC77	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 10232
21	DL_TFC21, DL_TFC78	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 12792
22	DL_TFC22, DL_TFC79	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 12792
23	DL_TFC23, DL_TFC80	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 12792
24	DL_TFC24, DL_TFC81	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 15352
25	DL_TFC25, DL_TFC82	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 15352
26	DL_TFC26, DL_TFC83	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 15352
27	DL_TFC27, DL_TFC84	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 17912
28	DL_TFC28, DL_TFC85	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 17912

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
29	DL_TFC29, DL_TFC86	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 17912
30	DL_TFC30, DL_TFC87	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 20472
31	DL_TFC31, DL_TFC88	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 20472
32	DL_TFC32, DL_TFC89	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 20472
33	DL_TFC33, DL_TFC90	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 23032
34	DL_TFC34, DL_TFC91	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 23032
35	DL_TFC35, DL_TFC92	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 23032
36	DL_TFC36, DL_TFC93	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 25592
37	DL_TFC37, DL_TFC94	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 25592

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
38	DL_TFC38, DL_TFC95	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 25592
39	DL_TFC39, DL_TFC96	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 28152
40	DL_TFC40, DL_TFC97	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 28152
41	DL_TFC41, DL_TFC98	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 28152
42	DL_TFC42, DL_TFC99	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 30712
43	DL_TFC43, DL_TFC100	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 30712
44	DL_TFC44, DL_TFC101	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 30712
45	DL_TFC45, DL_TFC102	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 33272
46	DL_TFC46, DL_TFC103	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 33272

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
47	DL_TFC47, DL_TFC104	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 33272
48	DL_TFC48, DL_TFC105	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 35832
49	DL_TFC49, DL_TFC106	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 35832
50	DL_TFC50, DL_TFC107	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 35832
51	DL_TFC51, DL_TFC108	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 38392
52	DL_TFC52, DL_TFC109	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 38392
53	DL_TFC53, DL_TFC110	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 38392
54	DL_TFC54, DL_TFC111	UL_TFC12, UL_TFC27	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC27	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: No data RB6: No data RB7: No data RB8: 40952
55	DL_TFC55, DL_TFC112	UL_TFC13, UL_TFC28	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2552	RB5: 39 RB6: No data RB7: No data RB8: 40952

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
56	DL_TFC56, DL_TFC113	UL_TFC14, UL_TFC29	DL_TFC0, DL_TFC57, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2552	RB5: 81 RB6: 103 RB7: 60 RB8: 40952
NOTE:	See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB8: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the TTI for RB8 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size has been set equal to the uplink TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit).					

#### 14.2.44.2.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
  - for sub-test 3: an RLC SDU on RB8 having the content equal to the first 312 bits of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 4: an RLC SDU on RB8 having the content equal to the first 312 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
  - for sub-test 5: an RLC SDU on RB8 having the content equal to the first 312 bits of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.
  - for sub-test 6: an RLC SDU on RB8 having the content equal to the first 632 bits of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 7: an RLC SDU on RB8 having the content equal to the first 632 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
  - for sub-test 8: an RLC SDU on RB8 having the content equal to the first 632 bits of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.
  - for sub-test 9: an RLC SDU on RB8 having the content equal to the first 1272 bits of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 10: an RLC SDU on RB8 having the content equal to the first 1272 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
  - for sub-test 11: an RLC SDU on RB8 having the content equal to the first 1272 bits of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.





- for sub-test 52: an RLC SDU on RB8 having the content equal to the first 2552 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 53: an RLC SDU on RB8 having the content equal to the first 2552 bits of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.
- for sub-test 54: an RLC SDU on RB8 having the content equal to the first 2552 bits of the test data sent by the SS in downlink; and no data shall be received on RB5, RB6 and RB7.
- for sub-test 55: an RLC SDU on RB8 having the content equal to the first 2552 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
- for sub-test 56: an RLC SDU on RB8 having the content equal to the first 2552 bits of the test data sent by the SS in downlink; an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS.

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

#### 14.2.45 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Streaming / unknown / UL:57.6 DL:57.6 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

14.2.45.1 Conformance requirement

See 14.2.4.1.

14.2.45.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.45.

14.2.45.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (57.6 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x576	0x148
	TF1, bits	1x39	1x103	1x60	1x576	1x148
	TF2, bits	1x81	N/A	N/A	2x576	N/A
	TF3, bits	N/A	N/A	N/A	3x576	N/A
	TF4, bits	N/A	N/A	N/A	4x576	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF2, TF0)
UL_TFC7	(TF1, TF0, TF0, TF2, TF0)
UL_TFC8	(TF2, TF1, TF1, TF2, TF0)
UL_TFC9	(TF0, TF0, TF0, TF3, TF0)
UL_TFC10	(TF1, TF0, TF0, TF3, TF0)
UL_TFC11	(TF2, TF1, TF1, TF3, TF0)
UL_TFC12	(TF0, TF0, TF0, TF4, TF0)
UL_TFC13	(TF1, TF0, TF0, TF4, TF0)
UL_TFC14	(TF2, TF1, TF1, TF4, TF0)
UL_TFC15	(TF0, TF0, TF0, TF0, TF1)
UL_TFC16	(TF1, TF0, TF0, TF0, TF1)
UL_TFC17	(TF2, TF1, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF1, TF1, TF1)
UL_TFC21	(TF0, TF0, TF0, TF2, TF1)
UL_TFC22	(TF1, TF0, TF0, TF2, TF1)
UL_TFC23	(TF2, TF1, TF1, TF2, TF1)
UL_TFC24	(TF0, TF0, TF0, TF3, TF1)
UL_TFC25	(TF1, TF0, TF0, TF3, TF1)
UL_TFC26	(TF2, TF1, TF1, TF3, TF1)
UL_TFC27	(TF0, TF0, TF0, TF4, TF1)
UL_TFC28	(TF1, TF0, TF0, TF4, TF1)
UL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Downlink TFS:

		<b>RB5 (RAB subflow #1)</b>	<b>RB6 (RAB subflow #2)</b>	<b>RB7 (RAB subflow #3)</b>	<b>RB8 (57.6 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	1x0	0x103	0x60	0x576	0x148
	TF1, bits	1x39	1x103	1x60	1x576	1x148
	TF2, bits	1x81	N/A	N/A	2x576	N/A
	TF3, bits	N/A	N/A	N/A	3x576	N/A
	TF4, bits	N/A	N/A	N/A	4x576	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC16	UL_TFC1, DL_TFC16	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC15, UL_TFC16	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2, DL_TFC17	UL_TFC2, DL_TFC17	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC15, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3, DL_TFC18	UL_TFC3, UL_TFC18	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC3, UL_TFC15, UL_TFC18	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: No data RB6: No data RB7: No data RB8: 576
4	DL_TFC4, DL_TFC19	UL_TFC4, DL_TFC19	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC15, UL_TFC16, UL_TFC18, UL_TFC19	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: 576
5	DL_TFC5, DL_TFC20	UL_TFC5, DL_TFC20	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC15, UL_TFC17, UL_TFC18, UL_TFC20	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: 576
6	DL_TFC6, DL_TFC21	UL_TFC6, DL_TFC21	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC6, UL_TFC15, UL_TFC21	RB5: 39 RB6: 103 RB7: 60 RB8: 1152	RB5: No data RB6: No data RB7: No data RB8: 1152
7	DL_TFC7, DL_TFC22	UL_TFC7, DL_TFC22	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7, UL_TFC15, UL_TFC16, UL_TFC21, UL_TFC22	RB5: 39 RB6: 103 RB7: 60 RB8: 1152	RB5: 39 RB6: No data RB7: No data RB8: 1152
8	DL_TFC8, DL_TFC23	UL_TFC8, DL_TFC23	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8, UL_TFC15, UL_TFC17, UL_TFC21, UL_TFC23	RB5: 81 RB6: 103 RB7: 60 RB8: 1152	RB5: 81 RB6: 103 RB7: 60 RB8: 1152
9	DL_TFC9, DL_TFC24	UL_TFC9, DL_TFC24	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC9, UL_TFC15, UL_TFC24	RB5: 39 RB6: 103 RB7: 60 RB8: 1728	RB5: No data RB6: No data RB7: No data RB8: 1728
10	DL_TFC10, DL_TFC25	UL_TFC10, UL_TFC25	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC9, UL_TFC10, UL_TFC15, UL_TFC16, UL_TFC24, UL_TFC25	RB5: 39 RB6: 103 RB7: 60 RB8: 1728	RB5: 39 RB6: No data RB7: No data RB8: 1728

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
11	DL_TFC11, DL_TFC26	UL_TFC11, DL_TFC26	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC9, UL_TFC11, UL_TFC15, UL_TFC17, UL_TFC24, UL_TFC26	RB5: 81 RB6: 103 RB7: 60 RB8: 1728	RB5: 81 RB6: 103 RB7: 60 RB8: 1728
12	DL_TFC12, DL_TFC27	UL_TFC12, DL_TFC27	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC12, UL_TFC15, UL_TFC26	RB5: 39 RB6: 103 RB7: 60 RB8: 2304	RB5: No data RB6: No data RB7: No data RB8: 2304
13	DL_TFC13, DL_TFC28	UL_TFC13, DL_TFC28	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13, UL_TFC15, UL_TFC16, UL_TFC27, UL_TFC28	RB5: 39 RB6: 103 RB7: 60 RB8: 2304	RB5: 39 RB6: No data RB7: No data RB8: 2304
14	DL_TFC14, DL_TFC29	UL_TFC14, DL_TFC29	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC15	UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14, UL_TFC15, UL_TFC17, UL_TFC27, UL_TFC29	RB5: 81 RB6: 103 RB7: 60 RB8: 2304	RB5: 81 RB6: 103 RB7: 60 RB8: 2304
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. As the TTI for RB8 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size has been set equal to the uplink TFS size under test .						

#### 14.2.45.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified in the actual sub test.
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
  - for sub-test 3, 6, 9 and 12: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 4, 7, 10 and 13: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
  - for sub-test 5, 8, 11 and 14: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

## 14.2.46 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Streaming / unknown / UL:0 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

### 14.2.46.1 Conformance requirement

See 14.2.4.1.

### 14.2.46.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.46.

To be able to test the downlink radio bearer using the UE loopback function for the reference radio bearer UL:0 DL: 64 kbps., the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.1 (Streaming/unknown/UL:14.4 kbps) is used in uplink.

### 14.2.46.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (14.4 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x576	0x148
	TF1, bits	1x39	1x103	1x60	1x576	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF1, TF0, TF1)
UL_TFC9	(TF0, TF0, TF0, TF1, TF1)
UL_TFC10	(TF1, TF0, TF0, TF1, TF1)
UL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x320	0x148
	TF1, bits	1x39	1x103	1x60	1x320	1x148
	TF2, bits	1x81	N/A	N/A	2x320	N/A
	TF3, bits	N/A	N/A	N/A	4x320	N/A
	TF4, bits	N/A	N/A	N/A	8x320	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, RB8, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF2, TF0)
DL_TFC7	(TF1, TF0, TF0, TF2, TF0)
DL_TFC8	(TF2, TF1, TF1, TF2, TF0)
DL_TFC9	(TF0, TF0, TF0, TF3, TF0)
DL_TFC10	(TF1, TF0, TF0, TF3, TF0)
DL_TFC11	(TF2, TF1, TF1, TF3, TF0)
DL_TFC12	(TF0, TF0, TF0, TF4, TF0)
DL_TFC13	(TF1, TF0, TF0, TF4, TF0)
DL_TFC14	(TF2, TF1, TF1, TF4, TF0)
DL_TFC15	(TF0, TF0, TF0, TF0, TF1)
DL_TFC16	(TF1, TF0, TF0, TF0, TF1)
DL_TFC17	(TF2, TF1, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF1, TF1, TF1)
DL_TFC21	(TF0, TF0, TF0, TF2, TF1)
DL_TFC22	(TF1, TF0, TF0, TF2, TF1)
DL_TFC23	(TF2, TF1, TF1, TF2, TF1)
DL_TFC24	(TF0, TF0, TF0, TF3, TF1)
DL_TFC25	(TF1, TF0, TF0, TF3, TF1)
DL_TFC26	(TF2, TF1, TF1, TF3, TF1)
DL_TFC27	(TF0, TF0, TF0, TF4, TF1)
DL_TFC28	(TF1, TF0, TF0, TF4, TF1)
DL_TFC29	(TF2, TF1, TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_TFC1, DL_TFC16	UL_TFC1, UL_TFC7	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2, DL_TFC17	UL_TFC2, UL_TFC8	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3, DL_TFC18	UL_TFC3, UL_TFC9	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: No data RB6: No data RB7: No data RB8: 320 (note 2)
4	DL_TFC4, DL_TFC19	UL_TFC4, UL_TFC10	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC6, UL_TFC7, UL_TFC9, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: 320 (note 2)
5	DL_TFC5, DL_TFC20	UL_TFC5, UL_TFC11	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: 320 (note 2)
6	DL_TFC6, DL_TFC21	UL_TFC3, UL_TFC9	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: No data RB6: No data RB7: No data RB8: 640 (note 3)
7	DL_TFC7, DL_TFC22	UL_TFC4, UL_TFC10	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC6, UL_TFC7, UL_TFC9, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: 640 (note 3)
8	DL_TFC8, DL_TFC23	UL_TFC5, UL_TFC11	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: 640 (note 3)
9	DL_TFC9, DL_TFC24	UL_TFC3, UL_TFC9	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: No data RB6: No data RB7: No data RB8: 1280 (note 4)

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
10	DL_TFC10, DL_TFC25	UL_TFC4, UL_TFC10	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC6, UL_TFC7, UL_TFC9, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: 1280 (note 4)
11	DL_TFC11, DL_TFC26	UL_TFC5, UL_TFC11	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: 1280 (note 4)
12	DL_TFC12, DL_TFC27	UL_TFC3, UL_TFC9	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: No data RB6: No data RB7: No data RB8: 2560 (note 5)
13	DL_TFC13, DL_TFC28	UL_TFC4, UL_TFC10	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC6, UL_TFC7, UL_TFC9, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 576	RB5: 39 RB6: No data RB7: No data RB8: 2560 (note 5)
14	DL_TFC14, DL_TFC29	UL_TFC5, UL_TFC11	DL_TFC0, DL_TFC15, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 576	RB5: 81 RB6: 103 RB7: 60 RB8: 2560 (note 5)
<p>NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.</p> <p>NOTE 2: RB8: SS is using a DL RLC SDU with 320 bits as test data (=DL RLC PDU size for DL/TF1). UE will return one RLC PDU. SS creates an UL RLC SDU from the first 320 bits of the received RLC PDU.</p> <p>NOTE 3: RB8: SS is using a DL RLC SDU size of 640 bits as test data (=DL RLC PDU size for DL/TF2). UE will return one RLC PDU. SS creates an UL RLC SDU from the received RLC PDU.</p> <p>NOTE 4: RB8: SS is using a DL RLC SDU size of 1280 bits as test data (=DL RLC PDU size for DL/TF3). UE will return one RLC PDU. SS creates an UL RLC SDU from the received RLC PDU.</p> <p>NOTE 5: RB8: SS is using a DL RLC SDU size of 2560 bits as test data (=DL RLC PDU size for DL/TF4). UE will return one RLC PDU. SS creates an UL RLC SDU from the received RLC PDU.</p> <p>As the TTI for RB8 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size has been set equal to the uplink TFS size under test</p>						

#### 14.2.46.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified in the actual sub test.
3. At step 15 the UE shall return
  - for sub-test 3, 6, 9 and 12: no data on RB5, RB6 and RB7.

- for sub-test 1, 4, 7, 10 and 13: an RLC SDU on RB5 having the same content as sent by the SS; and no data shall be received on RB6 or RB7.
- for sub-test 2, 5, 8, 11 and 14: an RLC SDU on each of RB5, RB6 and RB7 having the same content as sent by the SS.
- for sub-test 1 to 2: no data on RB8.
- for sub-test 3 to 5: an RLC SDU on RB8 having the same content as sent by the SS.
- for sub-test 6 to 14: an RLC SDU on RB5 having the same content as the first 576 bits of the RLC SDU sent by the SS.

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

#### 14.2.47 Void

#### 14.2.48 Void

#### 14.2.49 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

##### 14.2.49.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI

###### 14.2.49.1.1 Conformance requirement

See 14.2.4.1.

###### 14.2.49.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.49 for the 20 ms TTI case.

###### 14.2.49.1.3 Method of test

See 14.1.2 for test procedure.

#### Initial Conditions

The following RLC Info parameter values shall be set by the SS for the Conversational / unknown / UL:64 DL:64 kbps / CS RAB (RB8):

Uplink RLC TM RLC Transmission RLC discard CHOICE <i>SDU Discard Mode</i> Timer based no explicit Timer_discard Segmentation indication	100ms FALSE
Downlink RLC TM RLC Segmentation indication	FALSE
NOTE: Timer based discard without explicit signalling is used in uplink to secure that the UE will be able to return data for the case when the UE test loop function will not deliver all the SDUs in one and the same TTI .	

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps, 20 ms TTI)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x640	0x148
	TF1, bits	1x39	1x103	1x60	2x640	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF1, TF0, TF1)
UL_TFC9	(TF0, TF0, TF0, TF1, TF1)
UL_TFC10	(TF1, TF0, TF0, TF1, TF1)
UL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps, 20 ms TTI)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x640	0x148
	TF1, bits	1x39	1x103	1x60	2x640	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF0, TF1)
DL_TFC7	(TF1, TF0, TF0, TF0, TF1)
DL_TFC8	(TF2, TF1, TF1, TF0, TF1)
DL_TFC9	(TF0, TF0, TF0, TF1, TF1)
DL_TFC10	(TF1, TF0, TF0, TF1, TF1)
DL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC7	UL_TFC1, UL_TFC7	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 39 RB6: 103 RB7: 60 RB8: 640	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2, DL_TFC8	UL_TFC2, UL_TFC8	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 81 RB6: 103 RB7: 60 RB8: 640	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3, DL_TFC9	UL_TFC3, UL_TFC9	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 640	RB5: No data RB6: No data RB7: No data RB8: 2x640
4	DL_TFC4, DL_TFC10	UL_TFC4, UL_TFC10	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC6, UL_TFC7, UL_TFC9, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 640	RB5: 39 RB6: No data RB7: No data RB8: 2x640
5	DL_TFC5, DL_TFC11	UL_TFC5, UL_TFC11	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 640	RB5: 81 RB6: 103 RB7: 60 RB8: 2x640
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

#### 14.2.49.1.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCs as specified for the actual sub-test.
3. At step 15a and step 15b the UE shall return
  - for sub-test 1: RLC SDUs on RB5 having the same content as sent by the SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2: RLC SDUs on RB5, RB6 and RB7 having the same content as sent by the SS; and no data shall be received on RB8.
  - for sub-test 3: RLC SDUs on RB8 having the same content as sent by the SS; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 4: RLC SDUs on RB5 and RB8 having the same content as sent by the SS; and no data shall be received on RB6 and RB7.
  - for sub-test 5: RLC SDUs on RB5, RB6, RB7 and RB8 having the same content as sent by the SS.
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

## 14.2.49.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI

### 14.2.49.2.1 Conformance requirement

See 14.2.4.1.

### 14.2.49.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.49 for the 40 ms TTI case.

### 14.2.49.2.3 Method of test

#### Initial Conditions

The following RLC Info parameter values shall be set by the SS for the Conversational / unknown / UL:64 DL:64 kbps / CS RAB (RB8):

Uplink RLC TM RLC Segmentation indication Transmission RLC discard CHOICE <i>SDU Discard Mode</i> Timer based no explicit Timer_discard	FALSE    100ms
Downlink RLC TM RLC Segmentation indication	FALSE
NOTE: Timer based discard without explicit signalling is used in uplink to secure that the UE will be able to return data for the case when the UE test loop function will not deliver all the SDUs in one and the same TTI .	

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x640	0x148
	TF1, bits	1x39	1x103	1x60	4x640	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1, TF0)
UL_TFC4	(TF1, TF0, TF0, TF1, TF0)
UL_TFC5	(TF2, TF1, TF1, TF1, TF0)
UL_TFC6	(TF0, TF0, TF0, TF0, TF1)
UL_TFC7	(TF1, TF0, TF0, TF0, TF1)
UL_TFC8	(TF2, TF1, TF1, TF0, TF1)
UL_TFC9	(TF0, TF0, TF0, TF1, TF1)
UL_TFC10	(TF1, TF0, TF0, TF1, TF1)
UL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x640	0x148
	TF1, bits	1x39	1x103	1x60	4x640	1x148
	TF2, bits	1x81	N/A	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, RB8, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1, TF0)
DL_TFC4	(TF1, TF0, TF0, TF1, TF0)
DL_TFC5	(TF2, TF1, TF1, TF1, TF0)
DL_TFC6	(TF0, TF0, TF0, TF0, TF1)
DL_TFC7	(TF1, TF0, TF0, TF0, TF1)
DL_TFC8	(TF2, TF1, TF1, TF0, TF1)
DL_TFC9	(TF0, TF0, TF0, TF1, TF1)
DL_TFC10	(TF1, TF0, TF0, TF1, TF1)
DL_TFC11	(TF2, TF1, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC7	UL_TFC1, DL_TFC7	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 39 RB6: 103 RB7: 60 RB8: 640	RB5: 39 RB6: No data RB7: No data RB8: No data
2	DL_TFC2, DL_TFC8	UL_TFC2, DL_TFC8	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 81 RB6: 103 RB7: 60 RB8: 640	RB5: 81 RB6: 103 RB7: 60 RB8: No data
3	DL_TFC3, DL_TFC9	UL_TFC3, DL_TFC9	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 39 RB6: 103 RB7: 60 RB8: 640	RB5: No data RB6: No data RB7: No data RB8: 4x640
4	DL_TFC4, DL_TFC10	UL_TFC4, DL_TFC10	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC6, UL_TFC7, UL_TFC9, UL_TFC10	RB5: 39 RB6: 103 RB7: 60 RB8: 640	RB5: 39 RB6: No data RB7: No data RB8: 4x640
5	DL_TFC5, DL_TFC11	UL_TFC5, DL_TFC11	DL_TFC0, DL_TFC6, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11	RB5: 81 RB6: 103 RB7: 60 RB8: 640	RB5: 81 RB6: 103 RB7: 60 RB8: 4x640
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. As the TTI for RB8 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size has been set equal to the uplink TB size.						

## 14.2.49.2.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual subtest.
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
  - for sub-test 3: four RLC SDUs on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 4: an RLC SDU on RB5 and four RLC SDUs on RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
  - - for sub-test 5: an RLC SDU on RB5, RB6 and RB7; and four RLC SDUs on RB8 having the same content as sent by SS.
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

### 14.2.49a Conversational / speech / UL:(12.2 7.95 5.9 4.75) DL(12.2 7.95 5.9 4.75) kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB+ UL:3.4 DL: 3.4 kbps SRBs for DCCH

## 14.2.49a.1 Conformance requirement

See 14.2.4.1.

## 14.2.49a.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.49a.

## 14.2.49a.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	RB8 (64 kbps)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x640	0x148 (alt. 1x0)
	TF1, bits	1x39	1x53	1x60	2x640 (alt. 4x640)	1x148
	TF2, bits	1x42	1x63	N/A	N/A	N/A
	TF3, bits	1x55	1x84	N/A	N/A	N/A
	TF4, bits	1x75	1x103	N/A	N/A	N/A
	TF5, bits	1x81	N/A	N/A	N/A	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, RB7, 64 kbps RAB, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0, TF0, TF0)
UL_TFC3	(TF3, TF2, TF0, TF0, TF0)
UL_TFC4	(TF4, TF3, TF0, TF0, TF0)
UL_TFC5	(TF5, TF4, TF1, TF0, TF0)
UL_TFC6	(TF0, TF0, TF0, TF1, TF0)
UL_TFC7	(TF1, TF0, TF0, TF1, TF0)
UL_TFC8	(TF2, TF1, TF0, TF1, TF0)
UL_TFC9	(TF3, TF2, TF0, TF1, TF0)
UL_TFC10	(TF4, TF3, TF0, TF1, TF0)
UL_TFC11	(TF5, TF4, TF1, TF1, TF0)
UL_TFC12	(TF0, TF0, TF0, TF0, TF1)
UL_TFC13	(TF1, TF0, TF0, TF0, TF1)
UL_TFC14	(TF2, TF1, TF0, TF0, TF1)
UL_TFC15	(TF3, TF2, TF0, TF0, TF1)
UL_TFC16	(TF4, TF3, TF0, TF0, TF1)
UL_TFC17	(TF5, TF4, TF1, TF0, TF1)
UL_TFC18	(TF0, TF0, TF0, TF1, TF1)
UL_TFC19	(TF1, TF0, TF0, TF1, TF1)
UL_TFC20	(TF2, TF1, TF0, TF1, TF1)
UL_TFC21	(TF3, TF2, TF0, TF1, TF1)
UL_TFC22	(TF4, TF3, TF0, TF1, TF1)
UL_TFC23	(TF5, TF4, TF1, TF1, TF1)

Downlink TFS:

	<b>TFI</b>	<b>RB5 (RAB subflow #1)</b>	<b>RB6 (RAB subflow #2)</b>	<b>RB7 (RAB subflow #3)</b>	<b>RB8 (64 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	0x81 (alt. 1x0)	0x103	0x60	0x640	0x148 (alt. 1x0)
	TF1, bits	1x39	1x53	1x60	2x640 (alt. 4x640)	1x148
	TF2, bits	1x42	1x63	N/A	N/A	N/A
	TF3, bits	1x55	1x84	N/A	N/A	N/A
	TF4, bits	1x75	1x103	N/A	N/A	N/A
	TF5, bits	1x81	N/A	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB2, RB3, RB4, 64 kbps RAB, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0, TF0, TF0)
DL_TFC3	(TF3, TF2, TF0, TF0, TF0)
DL_TFC4	(TF4, TF3, TF0, TF0, TF0)
DL_TFC5	(TF5, TF4, TF1, TF0, TF0)
DL_TFC6	(TF0, TF0, TF0, TF1, TF0)
DL_TFC7	(TF1, TF0, TF0, TF1, TF0)
DL_TFC8	(TF2, TF1, TF0, TF1, TF0)
DL_TFC9	(TF3, TF2, TF0, TF1, TF0)
DL_TFC10	(TF4, TF3, TF0, TF1, TF0)
DL_TFC11	(TF5, TF4, TF1, TF1, TF0)
DL_TFC12	(TF0, TF0, TF0, TF0, TF1)
DL_TFC13	(TF1, TF0, TF0, TF0, TF1)
DL_TFC14	(TF2, TF1, TF0, TF0, TF1)
DL_TFC15	(TF3, TF2, TF0, TF0, TF1)
DL_TFC16	(TF4, TF3, TF0, TF0, TF1)
DL_TFC17	(TF5, TF4, TF1, TF0, TF1)
DL_TFC18	(TF0, TF0, TF0, TF1, TF1)
DL_TFC19	(TF1, TF0, TF0, TF1, TF1)
DL_TFC20	(TF2, TF1, TF0, TF1, TF1)
DL_TFC21	(TF3, TF2, TF0, TF1, TF1)
DL_TFC22	(TF4, TF3, TF0, TF1, TF1)
DL_TFC23	(TF5, TF4, TF1, TF1, TF1)

## Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC0, DL_TFC12	UL_TFC0, UL_TFC12		UL_TFC0, UL_TFC12	RB5: 81 RB6: 103 RB7: 60 RB8: 640	RB5: No data RB6: No data RB7: No data RB8: No data
2	DL_TFC1, DL_TFC13	UL_TFC1, UL_TFC13		UL_TFC0, UL_TFC1, UL_TFC12, UL_TFC13	RB5: 39 RB6: 103 RB7: 60 RB8: 640	RB5: 39 RB6: No data RB7: No data RB8: No data
3	DL_TFC2, DL_TFC14	UL_TFC2, UL_TFC14		UL_TFC0, UL_TFC2, UL_TFC12, UL_TFC14	RB5: 42 RB6: 53 RB7: 60 RB8: 640	RB5: 42 RB6: 53 RB7: No data RB8: No data
4	DL_TFC3, DL_TFC15	UL_TFC3, UL_TFC15		UL_TFC0, UL_TFC3, UL_TFC12, UL_TFC15	RB5: 55 RB6: 63 RB7: 60 RB8: 640	RB5: 55 RB6: 63 RB7: No data RB8: No data
5	DL_TFC4, DL_TFC16	UL_TFC4, UL_TFC16		UL_TFC0, UL_TFC4, UL_TFC12, UL_TFC16	RB5: 75 RB6: 84 RB7: 60 RB8: 640	RB5: 75 RB6: 84 RB7: No data RB8: No data
6	DL_TFC5, DL_TFC17	UL_TFC5, UL_TFC17		UL_TFC0, UL_TFC5, UL_TFC12, UL_TFC17	RB5: 81 RB6: 103 RB7: 60 RB8: 640	RB5: 81 RB6: 103 RB7: 60 RB8: No data
7	DL_TFC6, DL_TFC18	UL_TFC6, UL_TFC18		UL_TFC0, UL_TFC6, UL_TFC12, UL_TFC18	RB5: 81 RB6: 103 RB7: 60 RB8: 1280 (alt. 2560)	RB5: No data RB6: No data RB7: No data RB8: 1280 (alt. 2560)
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

## 14.2.49a.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15a and step 15b the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6, RB7 and RB8.
  - for sub-test 2: an RLC SDU on RB5, RB6 and RB7 having the same content as sent by SS; and no data shall be received on RB8.
  - for sub-test 3, 6, 9 and 12: an RLC SDU on RB8 having the same content as sent by SS; and no data shall be received on RB5, RB6 and RB7.
  - for sub-test 4, 7, 10 and 13: an RLC SDU on RB5 and RB8 having the same content as sent by SS; and no data shall be received on RB6 and RB7.
  - for sub-test 5, 8, 11 and 14: an RLC SDU on RB5, RB6, RB7 and RB8 having the same content as sent by SS.
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

### 14.2.50 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

#### 14.2.50.1 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 20 ms TTI

##### 14.2.50.1.1 Conformance requirement

See 14.2.4.1.

##### 14.2.50.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.50 for the 20 ms TTI case.

## 14.2.50.1.3 Method of test

## Initial Conditions

The following RLC Info parameter values shall be set by the SS for the Conversational / unknown / UL:64 DL:64 kbps / CS RAB (RB5 and RB6):

	RB5 (64 kbps)	RB6 (64 kbps)
Uplink RLC TM RLC Segmentation indication Transmission RLC discard CHOICE <i>SDU Discard Mode</i> Timer based no explicit Timer_discard	FALSE    100ms	FALSE    100ms
Downlink RLC TM RLC Segmentation indication	FALSE	FALSE
NOTE: Timer based discard without explicit signalling is used in uplink to secure that the UE will be able to return data for the case when the UE test loop function will not deliver all the SDUs in one and the same TTI .		

See 14.1.2 for test procedure.

## Uplink TFS:

	TFI	RB5 (64 kbps)	RB6 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x640	0x148
	TF1, bits	2x640	2x640	1x148
	TF2, bits	N/A	N/A	N/A

## Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF0, TF1, TF0)
UL_TFC3	(TF1, TF1, TF0)
UL_TFC4	(TF0, TF0, TF1)
UL_TFC5	(TF1, TF0, TF1)
UL_TFC6	(TF0, TF1, TF1)
UL_TFC7	(TF1, TF1, TF1)

## Downlink TFS:

	TFI	RB5 (64 kbps)	RB6 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x640	0x148
	TF1, bits	2x640	2x640	1x148
	TF2, bits	N/A	N/A	N/A

## Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF0, TF1, TF0)
DL_TFC3	(TF1, TF1, TF0)
DL_TFC4	(TF0, TF0, TF1)
DL_TFC5	(TF1, TF0, TF1)
DL_TFC6	(TF0, TF1, TF1)
DL_TFC7	(TF1, TF1, TF1)

Sub-tests:

<b>Sub-test</b>	<b>Downlink TFCs Under Test</b>	<b>Uplink TFCs Under test</b>	<b>Implicitely tested</b>	<b>Restricted UL TFCIs</b>	<b>UL RLC SDU size (bits) (note)</b>	<b>Test data size (bits) (note)</b>
1	DL_TFC1, DL_TFC5	UL_TFC1, DL_TFC5	DL_TFC0, DL_TFC4, UL_TFC0, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC4, UL_TFC5	RB5: 640 RB6: 640	RB5: 2x640 RB6: No data
2	DL_TFC2, DL_TFC6	UL_TFC2, DL_TFC6	DL_TFC0, DL_TFC4, UL_TFC0, UL_TFC4	UL_TFC0, UL_TFC2, UL_TFC4, UL_TFC6	RB5: 640 RB6: 640	RB5: No data RB6: 2x640
3	DL_TFC3, DL_TFC7	UL_TFC3, DL_TFC7	DL_TFC0, DL_TFC4, UL_TFC0, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3, UL_TFC4, UL_TFC5, UL_TFC6, UL_TFC7	RB5: 640 RB6: 640	RB5: 2x640 RB6: 2x640
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. As the TTI for RB5 and RB6 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size has been set equal to the uplink TB size.						

#### 14.2.50.1.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual subtest.
3. At step 15 the UE shall return
  - for sub-test 1: two RLC SDUs on RB5 having the same content as sent by SS; and no data shall be received on RB6.
  - for sub-test 2: two RLC SDUs on RB6 having the same content as sent by SS; and no data shall be received on RB5.
  - for sub-test 3: two RLC SDUs on RB5 and RB6 having the same content as sent by SS.
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

## 14.2.50.2 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Conversational / unknown / UL:64 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 40 ms TTI

### 14.2.50.2.1 Conformance requirement

See 14.2.4.1.

### 14.2.50.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.50 for the 40 ms TTI case.

### 14.2.50.2.3 Method of test

#### Initial Conditions

The following RLC Info parameter values shall be set by the SS for the Conversational / unknown / UL:64 DL:64 kbps / CS RAB (RB5 and RB6):

	<b>RB5 (64 kbps)</b>	<b>RB6 (64 kbps)</b>
Uplink RLC TM RLC Segmentation indication Transmission RLC discard CHOICE <i>SDU Discard Mode</i> Timer based no explicit Timer_discard	FALSE    100ms	FALSE    100ms
Downlink RLC TM RLC Segmentation indication	FALSE	FALSE
NOTE: Timer based discard without explicit signalling is used in uplink to secure that the UE will be able to return data for the case when the UE test loop function will not deliver all the SDUs in one and the same TTI .		

See 14.1.2 for test procedure.

Uplink TFS:

	<b>TFI</b>	<b>RB5 (64 kbps)</b>	<b>RB6 (64 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	0x640	0x640	0x148
	TF1, bits	4x640	4x640	1x148
	TF2, bits	N/A	N/A	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF0, TF1, TF0)
UL_TFC3	(TF1, TF1, TF0)
UL_TFC4	(TF0, TF0, TF1)
UL_TFC5	(TF1, TF0, TF1)
UL_TFC6	(TF0, TF1, TF1)
UL_TFC7	(TF1, TF1, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps)	RB6 (64 kbps)	DCCH
TFS	TF0, bits	0x640	0x640	0x148
	TF1, bits	4x640	4x640	1x148
	TF2, bits	N/A	N/A	N/A

Downlink TFCs:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF0, TF1, TF0)
DL_TFC3	(TF1, TF1, TF0)
DL_TFC4	(TF0, TF0, TF1)
DL_TFC5	(TF1, TF0, TF1)
DL_TFC6	(TF0, TF1, TF1)
DL_TFC7	(TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC5	UL_TFC1, DL_TFC5	DL_TFC0, DL_TFC4, UL_TFC0, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC4, UL_TFC5	RB5: 640 RB6: 640	RB5: 4x640 RB6: No data
2	DL_TFC2, DL_TFC6	UL_TFC2, DL_TFC6	DL_TFC0, DL_TFC4, UL_TFC0, UL_TFC4	UL_TFC0, UL_TFC2, UL_TFC4, UL_TFC6	RB5: 640 RB6: 640	RB5: No data RB6: 4x640
3	DL_TFC3, DL_TFC7	UL_TFC3, DL_TFC7	DL_TFC0, DL_TFC4, UL_TFC0, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3, UL_TFC4, UL_TFC5, UL_TFC6, UL_TFC7	RB5: 640 RB6: 640	RB5: 4x640 RB6: 4x640
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. As the TTI for RB5 and RB6 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size has been set equal to the uplink TB size.						

#### 14.2.50.2.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual subtest.
3. At step 15 the UE shall return
  - for sub-test 1: four RLC SDUs on RB5 having the same content as sent by SS; and no data shall be received on RB6.
  - for sub-test 2: four RLC SDUs on RB6 having the same content as sent by SS; and no data shall be received on RB5.
  - for sub-test 3: four RLC SDUs on RB5 and RB6 having the same content as sent by SS.

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

### 14.2.51 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Interactive or background / UL:64 DL:64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

#### 14.2.51.1 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI + Interactive or background / UL:64 DL:64 kbps / PS RAB

14.2.51.1.1 Conformance requirement

See 14.2.4.1.

14.2.51.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.51 for the 20 ms TTI case.

14.2.51.1.3 Method of test

See 14.1.2 for test procedure.

#### Initial Conditions

The following RLC Info parameter values shall be set by the SS for the Conversational / unknown / UL:64 DL:64 kbps / CS RAB (RB5):

	<b>RB5 (Conv. 64 kbps)</b>
Uplink RLC TM RLC Segmentation indication Transmission RLC discard CHOICE <i>SDU Discard Mode</i> Timer based no explicit Timer_discard	FALSE  100ms
Downlink RLC TM RLC Segmentation indication	FALSE
NOTE: Timer based discard without explicit signalling is used in uplink to secure that the UE will be able to return data for the case when the UE test loop function will not deliver all the SDUs in one and the same TTI .	

Uplink TFS:

	TFI	RB5 (Conv. 64 kbps, 20 ms TTI)	RB6 (I/B 64 kbps, 20 ms TTI)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	3x336	N/A
	TF4, bits	N/A	4x336	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF0, TF2, TF0)
UL_TFC3	(TF0, TF3, TF0)
UL_TFC4	(TF0, TF4, TF0)
UL_TFC5	(TF1, TF0, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF1, TF2, TF0)
UL_TFC8	(TF1, TF3, TF0)
UL_TFC9	(TF1, TF4, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF0, TF1, TF1)
UL_TFC12	(TF0, TF2, TF1)
UL_TFC13	(TF0, TF3, TF1)
UL_TFC14	(TF0, TF4, TF1)
UL_TFC15	(TF1, TF0, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF1, TF2, TF1)
UL_TFC18	(TF1, TF3, TF1)
UL_TFC19	(TF1, TF4, TF1)

Downlink TFS:

	<b>TFI</b>	<b>RB5 (Conv. 64 kbps, 20 ms TTI)</b>	<b>RB6 (I/B 64 kbps, 20 ms TTI)</b>	<b>DCCH</b>
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	3x336	N/A
	TF4, bits	N/A	4x336	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF0, TF2, TF0)
DL_TFC3	(TF0, TF3, TF0)
DL_TFC4	(TF0, TF4, TF0)
DL_TFC5	(TF1, TF0, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF1, TF2, TF0)
DL_TFC8	(TF1, TF3, TF0)
DL_TFC9	(TF1, TF4, TF0)
DL_TFC10	(TF0, TF0, TF1)
DL_TFC11	(TF0, TF1, TF1)
DL_TFC12	(TF0, TF2, TF1)
DL_TFC13	(TF0, TF3, TF1)
DL_TFC14	(TF0, TF4, TF1)
DL_TFC15	(TF1, TF0, TF1)
DL_TFC16	(TF1, TF1, TF1)
DL_TFC17	(TF1, TF2, TF1)
DL_TFC18	(TF1, TF3, TF1)
DL_TFC19	(TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC11	UL_TFC1, UL_TFC11	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 640 RB6: 312	RB5: No data RB6: 312
2	DL_TFC2, DL_TFC12	UL_TFC2, UL_TFC12	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 640 RB6: 632	RB5: No data RB6: 632
3	DL_TFC3, DL_TFC13	UL_TFC3, UL_TFC13	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 640 RB6: 952	RB5: No data RB6: 952
4	DL_TFC4, DL_TFC14	UL_TFC4, UL_TFC14	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC10, UL_TFC14	RB5: 640 RB6: 1272	RB5: No data RB6: 1272
5	DL_TFC5, DL_TFC15	UL_TFC5, UL_TFC15	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC5, UL_TFC10, UL_TFC15	RB5: 640 RB6: 312	RB5: 2x640 RB6: No data
6	DL_TFC6, DL_TFC16	UL_TFC6, UL_TFC16	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6, UL_TFC10, UL_TFC11, UL_TFC15, UL_TFC16	RB5: 640 RB6: 312	RB5: 2x640 RB6: 312
7	DL_TFC7, DL_TFC17	UL_TFC7, UL_TFC17	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7, UL_TFC10, UL_TFC12, UL_TFC15, UL_TFC17	RB5: 640 RB6: 632	RB5: 2x640 RB6: 632
8	DL_TFC8, DL_TFC18	UL_TFC8, UL_TFC18	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8, UL_TFC10, UL_TFC13, UL_TFC15, UL_TFC18	RB5: 640 RB6: 952	RB5: 2x640 RB6: 952
9	DL_TFC9, DL_TFC19	UL_TFC9, UL_TFC19	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9, UL_TFC10, UL_TFC14, UL_TFC15, UL_TFC19	RB5: 640 RB6: 1272	RB5: 2x640 RB6: 1272
NOTE:	See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB8: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size parameter has been set equal to the size of the payload size of the UL TF under test minus 8 bits (the size of 7 bit length indicator and expansion bit).					

## 14.2.51.1.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15a and step 15b the UE shall return
  - for sub-test 1, 2, 3, 4: RLC SDUs on RB6 having the same content as sent by the SS; and no data shall be received on RB5.
  - for sub-test 5: RLC SDUs on RB5 having the same content as sent by the SS; and no data shall be received on RB6.
  - for sub-test 6, 7, 8 and 9: RLC SDUs on RB5 and RB6 having the same content as sent by the SS.
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

**14.2.51.2 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI + Interactive or background / UL:64 DL:64 kbps / PS RAB**

**14.2.51.2.1 Conformance requirement**

See 14.2.4.1.

**14.2.51.2.2 Test purpose**

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.51 for the 40 ms TTI case.

**14.2.51.2.3 Method of test**

**Initial Conditions**

The following RLC Info parameter values shall be set by the SS for the Conversational / unknown / UL:64 DL:64 kbps / CS RAB (RB5):

	<b>RB5 (Conv. 64 kbps)</b>
Uplink RLC TM RLC Segmentation indication Transmission RLC discard CHOICE <i>SDU Discard Mode</i> Timer based no explicit Timer_discard	FALSE     100ms
Downlink RLC TM RLC Segmentation indication	FALSE
NOTE: Timer based discard without explicit signalling is used in uplink to secure that the UE will be able to return data for the case when the UE test loop function will not deliver all the SDUs in one and the same TTI .	

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 64 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	4x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	3x336	N/A
	TF4, bits	N/A	4x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF0, TF2, TF0)
UL_TFC3	(TF0, TF3, TF0)
UL_TFC4	(TF0, TF4, TF0)
UL_TFC5	(TF1, TF0, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF1, TF2, TF0)
UL_TFC8	(TF1, TF3, TF0)
UL_TFC9	(TF1, TF4, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF0, TF1, TF1)
UL_TFC12	(TF0, TF2, TF1)
UL_TFC13	(TF0, TF3, TF1)
UL_TFC14	(TF0, TF4, TF1)
UL_TFC15	(TF1, TF0, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF1, TF2, TF1)
UL_TFC18	(TF1, TF3, TF1)
UL_TFC19	(TF1, TF4, TF1)

Downlink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 64 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	4x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	3x336	N/A
	TF4, bits	N/A	4x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF0, TF2, TF0)
DL_TFC3	(TF0, TF3, TF0)
DL_TFC4	(TF0, TF4, TF0)
DL_TFC5	(TF1, TF0, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF1, TF2, TF0)
DL_TFC8	(TF1, TF3, TF0)
DL_TFC9	(TF1, TF4, TF0)
DL_TFC10	(TF0, TF0, TF1)
DL_TFC11	(TF0, TF1, TF1)
DL_TFC12	(TF0, TF2, TF1)

<b>TFCI</b>	<b>(RB5, RB6, DCCH)</b>
DL_TFC13	(TF0, TF3, TF1)
DL_TFC14	(TF0, TF4, TF1)
DL_TFC15	(TF1, TF0, TF1)
DL_TFC16	(TF1, TF1, TF1)
DL_TFC17	(TF1, TF2, TF1)
DL_TFC18	(TF1, TF3, TF1)
DL_TFC19	(TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC11	UL_TFC1, UL_TFC11	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 640 RB6: 312	RB5: No data RB6: 312
2	DL_TFC2, DL_TFC12	UL_TFC2, UL_TFC12	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 640 RB6: 632	RB5: No data RB6: 632
3	DL_TFC3, DL_TFC13	UL_TFC3, UL_TFC13	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 640 RB6: 952	RB5: No data RB6: 952
4	DL_TFC4, DL_TFC14	UL_TFC4, UL_TFC14	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC10, UL_TFC14	RB5: 640 RB6: 1272	RB5: No data RB6: 1272
5	DL_TFC5, DL_TFC15	UL_TFC5, UL_TFC15	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC5, UL_TFC10, UL_TFC11, UL_TFC15, UL_TFC15	RB5: 640 RB6: 312	RB5: 4x640 RB6: No data
6	DL_TFC6, DL_TFC16	UL_TFC6, UL_TFC16	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC6, UL_TFC10, UL_TFC16	RB5: 640 RB6: 312	RB5: 4x640 RB6: 312
7	DL_TFC7, DL_TFC17	UL_TFC7, UL_TFC17	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7, UL_TFC10, UL_TFC12, UL_TFC15, UL_TFC17	RB5: 640 RB6: 632	RB5: 4x640 RB6: 632
8	DL_TFC8, DL_TFC18	UL_TFC8, UL_TFC18	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8, UL_TFC10, UL_TFC13, UL_TFC15, UL_TFC18	RB5: 640 RB6: 952	RB5: 4x640 RB6: 952
9	DL_TFC9, DL_TFC19	UL_TFC9, UL_TFC19	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9, UL_TFC10, UL_TFC14, UL_TFC15, UL_TFC19	RB5: 640 RB6: 1272	RB5: 4x640 RB6: 1272
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  RB6: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the TTI for RB5 and RB6 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size for RB6 has been set equal to the uplink TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit), and the UL RLC SDU size for RB5 has been set equal to the uplink TB size .</p>						

## 14.2.51.2.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual subtest.
3. At step 15 the UE shall return
  - for sub-test 1, 2, 3, 4: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.
  - for sub-test 5: two RLC SDUs on RB5 having the same content as sent by SS; and no data shall be received on RB6.
  - for sub-test 6, 7, 8 and 9: two RLC SDUs on RB5 and one RLC SDU on RB6 having the same content as sent by SS.
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

### 14.2.51a Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Interactive or Background / UL:8 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.

#### 14.2.51a.1 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI + Interactive or background / UL:8 DL:8 kbps / PS RAB

##### 14.2.51a.1.1 Conformance requirement

See 14.2.4.1.

##### 14.2.51a.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.51a for the 20 ms TTI case.

##### 14.2.51a.1.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 8 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF1, TF0, TF0)
UL_TFC3	(TF1, TF1, TF0)
UL_TFC4	(TF0, TF0, TF1)
UL_TFC5	(TF0, TF1, TF1)
UL_TFC6	(TF1, TF0, TF1)
UL_TFC7	(TF1, TF1, TF1)

Downlink TFS:

	<b>TFI</b>	<b>RB5 (Conv. 64 kbps)</b>	<b>RB6 (I/B 8kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF1, TF0, TF0)
DL_TFC3	(TF1, TF1, TF0)
DL_TFC4	(TF0, TF0, TF1)
DL_TFC5	(TF0, TF1, TF1)
DL_TFC6	(TF1, TF0, TF1)
DL_TFC7	(TF1, TF1, TF1)

Sub-tests:

<b>Sub-test</b>	<b>Downlink TFCS Under Test</b>	<b>Uplink TFCS Under test</b>	<b>Implicitely tested</b>	<b>Restricted UL TFCIs</b>	<b>UL RLC SDU size (bits) Note 1</b>	<b>Test data size (bits) Note 1</b>
1	DL_TFC1 DL_TFC5	UL_TFC1 UL_TFC5	DL_TFC0, DL_TFC4, UL_TFC0, UL_TFC4,	UL_TFC0, UL_TFC1, UL_TFC4, UL_TFC5	RB5: 1280 RB6: 312	RB5: No data RB6: 312
2	DL_TFC2 DL_TFC6	UL_TFC2 UL_TFC6	DL_TFC0, DL_TFC4, UL_TFC0, UL_TFC4,	UL_TFC0, UL_TFC2, UL_TFC4, UL_TFC6	RB5: 1280 RB6: 312	RB5: 1280 RB6: No data
3	DL_TFC3 DL_TFC7	UL_TFC3 UL_TFC7	DL_TFC0, DL_TFC4, UL_TFC0, UL_TFC4,	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3, UL_TFC4, UL_TFC5, UL_TFC6, UL_TFC7	RB5: 1280 RB6: 312	RB5: 1280 RB6: 312

NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

RB6: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the TTI for RB8 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size has been set equal to the uplink TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit).

#### 14.2.51a.1.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15a and step 15b the UE shall return
  - for sub-test 1: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.
  - for sub-test 2: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
  - for sub-test 3: an RLC SDU on RB5 and RB6 having the same content as sent by SS.
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

#### 14.2.51a.2 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI + Interactive or background / UL:8 DL:8 kbps / PS RAB

##### 14.2.51a.2.1 Conformance requirement

See 14.2.4.1.

##### 14.2.51a.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.51a for the 40 ms TTI case.

##### 14.2.51a.2.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 8 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	4x640	1x336	1x148

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF1, TF0, TF0)
UL_TFC3	(TF1, TF1, TF0)
UL_TFC4	(TF0, TF0, TF1)
UL_TFC5	(TF0, TF1, TF1)
UL_TFC6	(TF1, TF0, TF1)
UL_TFC7	(TF1, TF1, TF1)

Downlink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 64 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	4x640	1x336	1x148

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF1, TF0, TF0)
DL_TFC3	(TF1, TF1, TF0)
DL_TFC4	(TF0, TF0, TF1)
DL_TFC5	(TF0, TF1, TF1)
DL_TFC6	(TF1, TF0, TF1)
DL_TFC7	(TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1 DL_TFC5,	UL_TFC1 UL_TFC5	DL_TFC0, DL_TFC4, UL_TFC0, UL_TFC4,	UL_TFC0, UL_TFC1, UL_TFC4, UL_TFC5	RB5: 2560 RB6: 312	RB5: No data RB6: 312
2	DL_TFC2 DL_TFC5,	UL_TFC2 UL_TFC6	DL_TFC0, DL_TFC4, UL_TFC0, UL_TFC4,	UL_TFC0, UL_TFC2, UL_TFC4, UL_TFC6	RB5: 2560 RB6: 312	RB5: 2560 RB6: No data
3	DL_TFC3 DL_TFC5,	UL_TFC3 UL_TFC7	DL_TFC0, DL_TFC4, UL_TFC0, UL_TFC4,	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3, UL_TFC4, UL_TFC5, UL_TFC6, UL_TFC7	RB5: 2560 RB6: 312	RB5: 2560 RB6: 312

NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

RB6: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the TTI for RB8 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size has been set equal to the uplink TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit).

#### 14.2.51a.2.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15a and step 15b the UE shall return
  - for sub-test 1: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.
  - for sub-test 2: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
  - for sub-test 3: an RLC SDU on RB5 and RB6 having the same content as sent by SS.
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

### 14.2.51b Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Interactive or Background / UL:16 DL:64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.

#### 14.2.51b.1 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI + Interactive or background / UL:16 DL:64 kbps / PS RAB

##### 14.2.51b.1.1 Conformance requirement

See 14.2.4.1.

##### 14.2.51b.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.51b for the 20 ms TTI case.

##### 14.2.51b.1.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 16 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF0, TF2, TF0)
UL_TFC3	(TF1, TF0, TF0)
UL_TFC4	(TF1, TF1, TF0)
UL_TFC5	(TF1, TF2, TF0)
UL_TFC6	(TF0, TF0, TF1)
UL_TFC7	(TF0, TF1, TF1)
UL_TFC8	(TF0, TF2, TF1)
UL_TFC9	(TF1, TF0, TF1)
UL_TFC10	(TF1, TF1, TF1)
UL_TFC11	(TF1, TF2, TF1)

Downlink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 64 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	3x336	N/A
	TF4, bits	N/A	4x336	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF0, TF2, TF0)
DL_TFC3	(TF0, TF3, TF0)
DL_TFC4	(TF0, TF4, TF0)
DL_TFC5	(TF1, TF0, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF1, TF2, TF0)
DL_TFC8	(TF1, TF3, TF0)
DL_TFC9	(TF1, TF4, TF0)
DL_TFC10	(TF0, TF0, TF1)
DL_TFC11	(TF0, TF1, TF1)
DL_TFC12	(TF0, TF2, TF1)
DL_TFC13	(TF0, TF3, TF1)
DL_TFC14	(TF0, TF4, TF1)
DL_TFC15	(TF1, TF0, TF1)
DL_TFC16	(TF1, TF1, TF1)
DL_TFC17	(TF1, TF2, TF1)
DL_TFC18	(TF1, TF3, TF1)
DL_TFC19	(TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1, DL_TFC11	UL_TFC1, UL_TFC7	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 1280 RB6: 312	RB5: No data RB6: 312
2	DL_TFC2, DL_TFC12	UL_TFC2, ,UL_TFC8	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 1280 RB6: 632	RB5: No data RB6: 632
3	DL_TFC3, DL_TFC13	UL_TFC2, UL_TFC8	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 1280 RB6: 632	RB5: No data RB6: 952
4	DL_TFC4, DL_TFC14	UL_TFC2, ,UL_TFC8	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 1280 RB6: 632	RB5: No data RB6: 1272
5	DL_TFC5, DL_TFC15	UL_TFC3, ,UL_TFC9	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 1280 RB6: 312	RB5: 1280 RB6: No data
6	DL_TFC6, DL_TFC16	UL_TFC4, UL_TFC10	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC6, UL_TFC7, UL_TFC9, UL_TFC10	RB5: 1280 RB6: 312	RB5: 1280 RB6: 312
7	DL_TFC7, DL_TFC17	UL_TFC5, UL_TFC11	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11	RB5: 1280 RB6: 632	RB5: 1280 RB6: 632
8	DL_TFC8, DL_TFC18	UL_TFC5, UL_TFC11	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11	RB5: 1280 RB6: 632	RB5: 1280 RB6: 952
9	DL_TFC9, DL_TFC19	UL_TFC5, UL_TFC11	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11	RB5: 1280 RB6: 632	RB5: 1280 RB6: 1272

NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.

RB6: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit).  
As the TTI for RB5 and RB6 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size for RB6 has been set equal to the uplink TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit).and .the UL RLC SDU size for RB5 has been set equal to the uplink TB size .

## 14.2.51b.1.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15a and step 15b the UE shall return
  - for sub-test 1, 2: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.
  - for sub-test 3, 4: an RLC SDU on RB5 having the same content as sent by SS and on RB6 having the content equal to the first 632 bits of the test data sent by the SS in downlink
  - for sub-test 5: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
  - for sub-test 6, 7 : an RLC SDU on RB5 and RB6 having the same content as sent by SS
  - for sub-test 8, 9 : on RB5 an RLC SDU having the same content as sent by SS and RB6 having the content equal to the first 632 bits of the test data sent by the SS in downlink
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

#### 14.2.51b.2 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI + Interactive or background / UL:16 DL:64 kbps / PS RAB

## 14.2.51b.2.1 Conformance requirement

See 14.2.4.1.

## 14.2.51b.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.51b for the 40 ms TTI case.

## 14.2.51b.2.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 16 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	4x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF0, TF2, TF0)
UL_TFC3	(TF1, TF0, TF0)
UL_TFC4	(TF1, TF1, TF0)
UL_TFC5	(TF1, TF2, TF0)
UL_TFC6	(TF0, TF0, TF1)
UL_TFC7	(TF0, TF1, TF1)
UL_TFC8	(TF0, TF2, TF1)
UL_TFC9	(TF1, TF0, TF1)
UL_TFC10	(TF1, TF1, TF1)
UL_TFC11	(TF1, TF2, TF1)

Downlink TFS:

	<b>TFI</b>	<b>RB5 (Conv. 64 kbps)</b>	<b>RB6 (I/B 64 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	4x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	3x336	N/A
	TF4, bits	N/A	4x336	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF0, TF2, TF0)
DL_TFC3	(TF0, TF3, TF0)
DL_TFC4	(TF0, TF4, TF0)
DL_TFC5	(TF1, TF0, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF1, TF2, TF0)
DL_TFC8	(TF1, TF3, TF0)
DL_TFC9	(TF1, TF4, TF0)
DL_TFC10	(TF0, TF0, TF1)
DL_TFC11	(TF0, TF1, TF1)
DL_TFC12	(TF0, TF2, TF1)
DL_TFC13	(TF0, TF3, TF1)
DL_TFC14	(TF0, TF4, TF1)
DL_TFC15	(TF1, TF0, TF1)
DL_TFC16	(TF1, TF1, TF1)
DL_TFC17	(TF1, TF2, TF1)
DL_TFC18	(TF1, TF3, TF1)
DL_TFC19	(TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1, DL_TFC11	UL_TFC1, UL_TFC7	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC6, UL_TFC7	RB5: 2560 RB6: 312	RB5: No data RB6: 312
2	DL_TFC2, DL_TFC12	UL_TFC2, UL_TFC8	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 2560 RB6: 632	RB5: No data RB6: 632
3	DL_TFC3, DL_TFC13	UL_TFC2, UL_TFC8	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 2560 RB6: 632	RB5: No data RB6: 952
4	DL_TFC4, DL_TFC14	UL_TFC2, UL_TFC8	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC6, UL_TFC8	RB5: 2560 RB6: 632	RB5: No data RB6: 1272
5	DL_TFC5, DL_TFC15	UL_TFC3, UL_TFC9	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC3, UL_TFC6, UL_TFC9	RB5: 2560 RB6: 312	RB5: 2560 RB6: No data
6	DL_TFC6, DL_TFC16	UL_TFC4, UL_TFC10	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4, UL_TFC6, UL_TFC7, UL_TFC9, UL_TFC10	RB5: 2560 RB6: 312	RB5: 2560 RB6: 312
7	DL_TFC7, DL_TFC17	UL_TFC5, UL_TFC11	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11	RB5: 2560 RB6: 632	RB5: 2560 RB6: 632
8	DL_TFC8, DL_TFC18	UL_TFC5, UL_TFC11	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11	RB5: 2560 RB6: 632	RB5: 2560 RB6: 952
9	DL_TFC9, DL_TFC19	UL_TFC5, UL_TFC11	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC6	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5, UL_TFC6, UL_TFC8, UL_TFC9, UL_TFC11	RB5: 2560 RB6: 632	RB5: 2560 RB6: 1272

NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  
RB6: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the TTI for RB5 and RB6 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size for RB6 has been set equal to the uplink TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit).and .the UL RLC SDU size for RB5 has been set equal to the uplink TB size .

#### 14.2.51b.2.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15a and step 15b the UE shall return
  - for sub-test 1, 2: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.
  - for sub-test 3, 4: an RLC SDU on RB5 having the same content as sent by SS and on RB6 having the content equal to the first 632 bits of the test data sent by the SS in downlink
  - for sub-test 5: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
  - for sub-test 6, 7 : an RLC SDU on RB5 and RB6 having the same content as sent by SS
  - for sub-test 8, 9 : on RB5 an RLC SDU having the same content as sent by SS and RB6 having the content equal to the first 632 bits of the test data sent by the SS in downlink
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

#### 14.2.52 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Interactive or background / UL:64 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

##### 14.2.52.1 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI + Interactive or background / UL:64 DL:128 kbps / PS RAB

###### 14.2.52.1.1 Conformance requirement

See 14.2.4.1.

###### 14.2.52.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.52 for the 20 ms TTI case.

14.2.52.1.3 Method of test

Initial Conditions

The following RLC Info parameter values shall be set by the SS for the Conversational / unknown / UL:64 DL:64 kbps / CS RAB (RB5):

		<b>RB5 (Conv. 64 kbps)</b>
Uplink RLC TM RLC Segmentation indication Transmission RLC discard CHOICE <i>SDU Discard Mode</i> Timer based no explicit Timer_discard		FALSE  100ms
Downlink RLC TM RLC Segmentation indication		FALSE
NOTE: Timer based discard without explicit signalling is used in uplink to secure that the UE will be able to return data for the case when the UE test loop function will not deliver all the SDUs in one and the same TTI .		

See 14.1.2 for test procedure.

Uplink TFS:

	<b>TFI</b>	<b>RB5 (Conv. 64 kbps)</b>	<b>RB6 (I/B 64 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	3x336	N/A
	TF4, bits	N/A	4x336	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF0, TF2, TF0)
UL_TFC3	(TF0, TF3, TF0)
UL_TFC4	(TF0, TF4, TF0)
UL_TFC5	(TF1, TF0, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF1, TF2, TF0)
UL_TFC8	(TF1, TF3, TF0)
UL_TFC9	(TF1, TF4, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF0, TF1, TF1)
UL_TFC12	(TF0, TF2, TF1)
UL_TFC13	(TF0, TF3, TF1)
UL_TFC14	(TF0, TF4, TF1)
UL_TFC15	(TF1, TF0, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF1, TF2, TF1)
UL_TFC18	(TF1, TF3, TF1)
UL_TFC19	(TF1, TF4, TF1)

Downlink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 128 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	4x336	N/A
	TF4, bits	N/A	8x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF0, TF2, TF0)
DL_TFC3	(TF0, TF3, TF0)
DL_TFC4	(TF0, TF4, TF0)
DL_TFC5	(TF1, TF0, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF1, TF2, TF0)
DL_TFC8	(TF1, TF3, TF0)
DL_TFC9	(TF1, TF4, TF0)
DL_TFC10	(TF0, TF0, TF1)
DL_TFC11	(TF0, TF1, TF1)
DL_TFC12	(TF0, TF2, TF1)
DL_TFC13	(TF0, TF3, TF1)
DL_TFC14	(TF0, TF4, TF1)
DL_TFC15	(TF1, TF0, TF1)
DL_TFC16	(TF1, TF1, TF1)
DL_TFC17	(TF1, TF2, TF1)
DL_TFC18	(TF1, TF3, TF1)
DL_TFC19	(TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC11	UL_TFC1, DL_TFC11	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 640 RB6: 312	RB5: No data RB6: 312
2	DL_TFC2, DL_TFC12	UL_TFC2, DL_TFC12	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 640 RB6: 632	RB5: No data RB6: 632
3	DL_TFC3, DL_TFC13	UL_TFC3, DL_TFC13	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 640 RB6: 952	RB5: No data RB6: 1272
4	DL_TFC4, DL_TFC14	UL_TFC4, DL_TFC14	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC10, UL_TFC14	RB5: 640 RB6: 1272	RB5: No data RB6: 2552
5	DL_TFC5, DL_TFC15	UL_TFC5, DL_TFC15	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC5, UL_TFC10, UL_TFC15	RB5: 640 RB6: 312	RB5: 2x640 RB6: No data
6	DL_TFC6, DL_TFC16	UL_TFC6, DL_TFC16	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, DL_TFC1, UL_TFC5, UL_TFC6, UL_TFC10, UL_TFC11, UL_TFC15, UL_TFC16	RB5: 640 RB6: 312	RB5: 2x640 RB6: 312
7	DL_TFC7, DL_TFC17	UL_TFC7, DL_TFC17	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, DL_TFC2, UL_TFC5, UL_TFC7, UL_TFC10, UL_TFC12, UL_TFC15, UL_TFC17	RB5: 640 RB6: 632	RB5: 2x640 RB6: 632
8	DL_TFC8, DL_TFC18	UL_TFC8, DL_TFC18	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8, UL_TFC10, UL_TFC13, UL_TFC15, UL_TFC18	RB5: 640 RB6: 952	RB5: 2x640 RB6: 1272
9	DL_TFC9, DL_TFC19	UL_TFC9, DL_TFC19	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9, UL_TFC10, UL_TFC14, UL_TFC15, UL_TFC19	RB5: 640 RB6: 1272	RB5: 2x640 RB6: 2552
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  RB6: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the TTI for RB5 and RB6 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size for RB6 has been set equal to the uplink TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit).and .the UL RLC SDU size for RB5 has been set equal to the uplink TB size.</p>						

#### 14.2.52.1.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual subtest.
3. At step 15 the UE shall return
  - for sub-test 1, 2, 3, 4: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.
  - for sub-test 5: two RLC SDUs on RB5 having the same content as sent by SS; and no data shall be received on RB6.
  - for sub-test 6: two RLC SDUs on RB5 and one RLC SDU on RB6 having the same content as sent by SS.
  - For sub-test 3: RLC SDU on RB6 having the content equal to the first 952 bits of the test data sent by the SS in downlink;
  - For sub-test 4: RLC SDU on RB6 having the content equal to the first 1272 bits of the test data sent by the SS in downlink;
  - for sub-test 8: an RLC SDU on RB6 having the content equal to the first 952 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS.
  - for sub-test 9: an RLC SDU on RB6 having the content equal to the first 1272 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS.
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

#### 14.2.52.2 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI + Interactive or background / UL:64 DL:128 kbps / PS RAB

##### 14.2.52.2.1 Conformance requirement

See 14.2.4.1.

##### 14.2.52.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.51 for the 40 ms TTI case.

## 14.2.52.2.3 Method of test

## Initial Conditions

The following RLC Info parameter values shall be set by the SS for the Conversational / unknown / UL:64 DL:64 kbps / CS RAB (RB5):

		<b>RB5 (Conv. 64 kbps)</b>
Uplink RLC TM RLC Segmentation indication Transmission RLC discard CHOICE <i>SDU Discard Mode</i> Timer based no explicit Timer_discard		FALSE  100ms
Downlink RLC TM RLC Segmentation indication		FALSE
NOTE: Timer based discard without explicit signalling is used in uplink to secure that the UE will be able to return data for the case when the UE test loop function will not deliver all the SDUs in one and the same TTI .		

See 14.1.2 for test procedure.

## Uplink TFS:

	<b>TFI</b>	<b>RB5 (Conv. 64 kbps)</b>	<b>RB6 (I/B 64 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	4x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	3x336	N/A
	TF4, bits	N/A	4x336	N/A

## Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF0, TF2, TF0)
UL_TFC3	(TF0, TF3, TF0)
UL_TFC4	(TF0, TF4, TF0)
UL_TFC5	(TF1, TF0, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF1, TF2, TF0)
UL_TFC8	(TF1, TF3, TF0)
UL_TFC9	(TF1, TF4, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF0, TF1, TF1)
UL_TFC12	(TF0, TF2, TF1)
UL_TFC13	(TF0, TF3, TF1)
UL_TFC14	(TF0, TF4, TF1)
UL_TFC15	(TF1, TF0, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF1, TF2, TF1)
UL_TFC18	(TF1, TF3, TF1)
UL_TFC19	(TF1, TF4, TF1)

Downlink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 128 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	4x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	4x336	N/A
	TF4, bits	N/A	8x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF0, TF2, TF0)
DL_TFC3	(TF0, TF3, TF0)
DL_TFC4	(TF0, TF4, TF0)
DL_TFC5	(TF1, TF0, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF1, TF2, TF0)
DL_TFC8	(TF1, TF3, TF0)
DL_TFC9	(TF1, TF4, TF0)
DL_TFC10	(TF0, TF0, TF1)
DL_TFC11	(TF0, TF1, TF1)
DL_TFC12	(TF0, TF2, TF1)
DL_TFC13	(TF0, TF3, TF1)
DL_TFC14	(TF0, TF4, TF1)
DL_TFC15	(TF1, TF0, TF1)
DL_TFC16	(TF1, TF1, TF1)
DL_TFC17	(TF1, TF2, TF1)
DL_TFC18	(TF1, TF3, TF1)
DL_TFC19	(TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under Test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC11	UL_TFC1, DL_TFC11	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 640 RB6: 312	RB5: No data RB6: 312
2	DL_TFC2, DL_TFC12	UL_TFC2, DL_TFC12	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 640 RB6: 632	RB5: No data RB6: 632
3	DL_TFC3, DL_TFC13	UL_TFC3, DL_TFC13	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 640 RB6: 952	RB5: No data RB6: 1272
4	DL_TFC4, DL_TFC14	UL_TFC4, DL_TFC14	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC10, UL_TFC14	RB5: 640 RB6: 1272	RB5: No data RB6: 2552
5	DL_TFC5, DL_TFC15	UL_TFC5, DL_TFC15	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC5, UL_TFC10, UL_TFC15	RB5: 640 RB6: 312	RB5: 4x640 RB6: No data

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
6	DL_TFC6, DL_TFC16	UL_TFC6, UL_TFC16	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6, UL_TFC10, UL_TFC11, UL_TFC15, UL_TFC16	RB5: 640 RB6: 312	RB5: 4x640 RB6: 312
7	DL_TFC7, DL_TFC17	UL_TFC7, UL_TFC17	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7, UL_TFC10, UL_TFC12, UL_TFC15, UL_TFC17	RB5: 640 RB6: 632	RB5: 4x640 RB6: 632
8	DL_TFC8, DL_TFC18	UL_TFC8, UL_TFC18	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8, UL_TFC10, UL_TFC13, UL_TFC15, UL_TFC18	RB5: 640 RB6: 952	RB5: 4x640 RB6: 1272
9	DL_TFC9, DL_TFC19	UL_TFC9, UL_TFC19	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC15, UL_TFC9, UL_TFC10, UL_TFC14, UL_TFC15, UL_TFC19	RB5: 640 RB6: 1272	RB5: 4x640 RB6: 2552
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  RB6: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the TTI for RB5 and RB6 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size for RB6 has been set equal to the uplink TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit).and .the UL RLC SDU size for RB5 has been set equal to the uplink TB size .</p>						

#### 14.2.52.2.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual subtest.
3. At step 15 the UE shall return
  - for sub-test 1, 2, 3, 4: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.
  - for sub-test 5: four RLC SDUs on RB5 having the same content as sent by SS; and no data shall be received on RB6.
  - for sub-test 6: four RLC SDUs on RB5 and one RLC SDU on RB6 having the same content as sent by SS.
  - For sub-test 3: RLC SDU on RB6 having the content equal to the first 652 bits of the test data sent by the SS in downlink;

- For sub-test 4: RLC SDU on RB6 having the content equal to the first 1272 bits of the test data sent by the SS in downlink;
- for sub-test 8: an RLC SDU on RB6 having the content equal to the first 652 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS.
- for sub-test 9: an RLC SDU on RB6 having the content equal to the first 1272 bits of the test data sent by the SS in downlink; an RLC SDU on RB5 having the same content as sent by SS.

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

### 14.2.53 Conversational / unknown / UL:64 DL:64 kbps / CS RAB + Interactive or background / UL:128 DL:128 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

#### 14.2.53.1 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 20 ms TTI + Interactive or background / UL:128 DL:128 kbps / PS RAB

14.2.53.1.1 Conformance requirement

See 14.2.4.1.

14.2.53.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.53 for the 20 ms TTI case.

14.2.53.1.3 Method of test

#### Initial Conditions

The following RLC Info parameter values shall be set by the SS for the Conversational / unknown / UL:64 DL:64 kbps / CS RAB (RB5):

	<b>RB5 (Conv. 64 kbps)</b>
Uplink RLC TM RLC Segmentation indication Transmission RLC discard CHOICE <i>SDU Discard Mode</i> Timer based no explicit Timer_discard	FALSE     100ms
Downlink RLC TM RLC Segmentation indication	FALSE
NOTE: Timer based discard without explicit signalling is used in uplink to secure that the UE will be able to return data for the case when the UE test loop function will not deliver all the SDUs in one and the same TTI .	

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 128 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	4x336	N/A
	TF4, bits	N/A	8x336	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF0, TF2, TF0)
UL_TFC3	(TF0, TF3, TF0)
UL_TFC4	(TF0, TF4, TF0)
UL_TFC5	(TF1, TF0, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF1, TF2, TF0)
UL_TFC8	(TF1, TF3, TF0)
UL_TFC9	(TF1, TF4, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF0, TF1, TF1)
UL_TFC12	(TF0, TF2, TF1)
UL_TFC13	(TF0, TF3, TF1)
UL_TFC14	(TF0, TF4, TF1)
UL_TFC15	(TF1, TF0, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF1, TF2, TF1)
UL_TFC18	(TF1, TF3, TF1)
UL_TFC19	(TF1, TF4, TF1)

Downlink TFS:

	TFI	RB5 (Conv. 64 kbps)	RB6 (I/B 128 kbps)	DCCH
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	2x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	4x336	N/A
	TF4, bits	N/A	8x336	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF0, TF2, TF0)
DL_TFC3	(TF0, TF3, TF0)
DL_TFC4	(TF0, TF4, TF0)
DL_TFC5	(TF1, TF0, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF1, TF2, TF0)
DL_TFC8	(TF1, TF3, TF0)
DL_TFC9	(TF1, TF4, TF0)
DL_TFC10	(TF0, TF0, TF1)
DL_TFC11	(TF0, TF1, TF1)
DL_TFC12	(TF0, TF2, TF1)
DL_TFC13	(TF0, TF3, TF1)
DL_TFC14	(TF0, TF4, TF1)

<b>TFCI</b>	<b>(RB5, RB6, DCCH)</b>
DL_TFC15	(TF1, TF0, TF1)
DL_TFC16	(TF1, TF1, TF1)
DL_TFC17	(TF1, TF2, TF1)
DL_TFC18	(TF1, TF3, TF1)
DL_TFC19	(TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC11	UL_TFC1, DL_TFC11	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 640 RB6: 312	RB5: No data RB6: 312
2	DL_TFC2, DL_TFC12	UL_TFC2, DL_TFC12	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 640 RB6: 632	RB5: No data RB6: 632
3	DL_TFC3, DL_TFC13	UL_TFC3, DL_TFC13	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 640 RB6: 1272	RB5: No data RB6: 1272
4	DL_TFC4, DL_TFC14	UL_TFC4, DL_TFC14	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC10, UL_TFC14	RB5: 640 RB6: 2552	RB5: No data RB6: 2552
5	DL_TFC5, DL_TFC15	UL_TFC5, DL_TFC15	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC5, UL_TFC10, UL_TFC15	RB5: 640 RB6: 312	RB5: 2x640 RB6: No data
6	DL_TFC6, DL_TFC16	UL_TFC6, DL_TFC16	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6, UL_TFC10, UL_TFC11, UL_TFC15, UL_TFC16	RB5: 640 RB6: 312	RB5: 2x640 RB6: 312
7	DL_TFC7, DL_TFC17	UL_TFC7, DL_TFC17	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7, UL_TFC10, UL_TFC12, UL_TFC15, UL_TFC17	RB5: 640 RB6: 632	RB5: 2x640 RB6: 632
8	DL_TFC8, DL_TFC18	UL_TFC8, DL_TFC18	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8, UL_TFC10, UL_TFC13, UL_TFC15, UL_TFC18	RB5: 640 RB6: 1272	RB5: 2x640 RB6: 1272
9	DL_TFC9, DL_TFC19	UL_TFC9, DL_TFC19	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9, UL_TFC10, UL_TFC14, UL_TFC15, UL_TFC19	RB5: 640 RB6: 2552	RB5: 2x640 RB6: 2552
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  RB6: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the TTI for RB5 and RB6 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size for RB6 has been set equal to the uplink TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit).and .the UL RLC SDU size for RB5 has been set equal to the uplink TFS size under test.</p>						

## 14.2.53.1.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual subtest.
3. At step 15 the UE shall return
  - for sub-test 1, 2, 3, 4: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.
  - for sub-test 5: two RLC SDUs on RB5 having the same content as sent by SS; and no data shall be received on RB6.
  - for sub-test 6, 7, 8 and 9: two RLC SDUs on RB5 and one RLC SDU on RB6 having the same content as sent by SS.
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

14.2.53.2 Conversational / unknown / UL:64 DL:64 kbps / CS RAB / 40 ms TTI +  
Interactive or background / UL:128 DL:128 kbps / PS RAB

## 14.2.53.2.1 Conformance requirement

See 14.2.4.1.

## 14.2.53.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.53 for the 40 ms TTI case.

## 14.2.53.2.3 Method of test

## Initial Conditions

The following RLC Info parameter values shall be set by the SS for the Conversational / unknown / UL:64 DL:64 kbps / CS RAB (RB5):

	<b>RB5 (Conv. 64 kbps)</b>
Uplink RLC TM RLC Segmentation indication Transmission RLC discard CHOICE <i>SDU Discard Mode</i> Timer based no explicit Timer_discard	FALSE  100ms
Downlink RLC TM RLC Segmentation indication	FALSE
NOTE: Timer based discard without explicit signalling is used in uplink to secure that the UE will be able to return data for the case when the UE test loop function will not deliver all the SDUs in one and the same TTI .	

See 14.1.2 for test procedure.

Uplink TFS:

	<b>TFI</b>	<b>RB5 (Conv. 64 kbps)</b>	<b>RB6 (I/B 128 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	4x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	4x336	N/A
	TF4, bits	N/A	8x336	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF0, TF1, TF0)
UL_TFC2	(TF0, TF2, TF0)
UL_TFC3	(TF0, TF3, TF0)
UL_TFC4	(TF0, TF4, TF0)
UL_TFC5	(TF1, TF0, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF1, TF2, TF0)
UL_TFC8	(TF1, TF3, TF0)
UL_TFC9	(TF1, TF4, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF0, TF1, TF1)
UL_TFC12	(TF0, TF2, TF1)
UL_TFC13	(TF0, TF3, TF1)
UL_TFC14	(TF0, TF4, TF1)
UL_TFC15	(TF1, TF0, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF1, TF2, TF1)
UL_TFC18	(TF1, TF3, TF1)
UL_TFC19	(TF1, TF4, TF1)

Downlink TFS:

	<b>TFI</b>	<b>RB5 (Conv. 64 kbps)</b>	<b>RB6 (I/B 128 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	0x640	0x336	0x148
	TF1, bits	4x640	1x336	1x148
	TF2, bits	N/A	2x336	N/A
	TF3, bits	N/A	4x336	N/A
	TF4, bits	N/A	8x336	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF0, TF1, TF0)
DL_TFC2	(TF0, TF2, TF0)
DL_TFC3	(TF0, TF3, TF0)
DL_TFC4	(TF0, TF4, TF0)
DL_TFC5	(TF1, TF0, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF1, TF2, TF0)
DL_TFC8	(TF1, TF3, TF0)
DL_TFC9	(TF1, TF4, TF0)
DL_TFC10	(TF0, TF0, TF1)
DL_TFC11	(TF0, TF1, TF1)
DL_TFC12	(TF0, TF2, TF1)
DL_TFC13	(TF0, TF3, TF1)
DL_TFC14	(TF0, TF4, TF1)
DL_TFC15	(TF1, TF0, TF1)
DL_TFC16	(TF1, TF1, TF1)
DL_TFC17	(TF1, TF2, TF1)
DL_TFC18	(TF1, TF3, TF1)
DL_TFC19	(TF1, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, UL_TFC11	UL_TFC1, UL_TFC11	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 640 RB6: 312	RB5: No data RB6: 312
2	DL_TFC2, UL_TFC12	UL_TFC2, UL_TFC12	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 640 RB6: 632	RB5: No data RB6: 632
3	DL_TFC3, UL_TFC13	UL_TFC3, UL_TFC13	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 640 RB6: 1272	RB5: No data RB6: 1272
4	DL_TFC4, UL_TFC14	UL_TFC4, UL_TFC14	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC10, UL_TFC14	RB5: 640 RB6: 2552	RB5: No data RB6: 2552
5	DL_TFC5, UL_TFC15	UL_TFC5, UL_TFC15	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC5, UL_TFC10, UL_TFC15	RB5: 640 RB6: 312	RB5: 4x640 RB6: No data
6	DL_TFC6, UL_TFC16	UL_TFC6, UL_TFC16	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6, UL_TFC10, UL_TFC11, UL_TFC15, UL_TFC16	RB5: 640 RB6: 312	RB5: 4x640 RB6: 312
7	DL_TFC7, UL_TFC17	UL_TFC7, UL_TFC17	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7, UL_TFC10, UL_TFC12, UL_TFC15, UL_TFC17	RB5: 640 RB6: 632	RB5: 4x640 RB6: 632
8	DL_TFC8, UL_TFC18	UL_TFC8, UL_TFC18	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8, UL_TFC10, UL_TFC13, UL_TFC15, UL_TFC18	RB5: 4x640 RB6: 1272	RB5: 4x640 RB6: 1272
9	DL_TFC9, UL_TFC19	UL_TFC9, UL_TFC19	DL_TFC0, DL_TFC10, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9, UL_TFC10, UL_TFC14, UL_TFC15, UL_TFC19	RB5: 640 RB6: 2552	RB5: 4x640 RB6: 2552
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  RB6: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the TTI for RB5 and RB6 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size for RB6 has been set equal to the uplink TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit).and .the UL RLC SDU size for RB5 has been set equal to the uplink TFS size under test.</p>						

## 14.2.53.2.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual subtest.
3. At step 15 the UE shall return
  - for sub-test 1, 2, 3, 4: an RLC SDU on RB6 having the same content as sent by SS; and no data shall be received on RB5.
  - for sub-test 5: four RLC SDUs on RB5 having the same content as sent by SS; and no data shall be received on RB6.
  - for sub-test 6, 7, 8 and 9: four RLC SDUs on RB5 and one RLC SDU on RB6 having the same content as sent by SS.
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

### 14.2.54 Interactive or background / UL:64 DL:128 kbps / PS RAB + Streaming / unknown / UL:0 DL:64 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

## 14.2.54.1 Conformance requirement

See 14.2.4.1.

## 14.2.54.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.54.

To be able to test the downlink radio bearer using the UE loopback function for the reference radio bearer UL:0 DL: 64 kbps, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.1.15.1 (Streaming/unknown/UL:14.4 kbps) is used in uplink.

## 14.2.54.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 (I/B 64 kbps)	RB6 (Str. 14.4 kbps)	DCCH
TFS	TF0, bits	0x336	0x576	0x148
	TF1, bits	1x336	1x576	1x148
	TF2, bits	2x336	N/A	N/A
	TF3, bits	3x336	N/A	N/A
	TF4, bits	4x336	N/A	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF0, TF0)
UL_TFC3	(TF3, TF0, TF0)
UL_TFC4	(TF4, TF0, TF0)
UL_TFC5	(TF0, TF1, TF0)
UL_TFC6	(TF1, TF1, TF0)
UL_TFC7	(TF2, TF1, TF0)
UL_TFC8	(TF3, TF1, TF0)
UL_TFC9	(TF4, TF1, TF0)
UL_TFC10	(TF0, TF0, TF1)
UL_TFC11	(TF1, TF0, TF1)
UL_TFC12	(TF2, TF0, TF1)
UL_TFC13	(TF3, TF0, TF1)
UL_TFC14	(TF4, TF0, TF1)
UL_TFC15	(TF0, TF1, TF1)
UL_TFC16	(TF1, TF1, TF1)
UL_TFC17	(TF2, TF1, TF1)
UL_TFC18	(TF3, TF1, TF1)
UL_TFC19	(TF4, TF1, TF1)

Downlink TFS:

	<b>TFI</b>	<b>RB5 (I/B 128 kbps)</b>	<b>RB6 (Str. 64 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	0x336	0x320	0x148
	TF1, bits	1x336	1x320	1x148
	TF2, bits	2x336	2x320	N/A
	TF3, bits	4x336	4x320	N/A
	TF4, bits	8x336	8x320	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF0, TF0)
DL_TFC3	(TF3, TF0, TF0)
DL_TFC4	(TF4, TF0, TF0)
DL_TFC5	(TF0, TF1, TF0)
DL_TFC6	(TF1, TF1, TF0)
DL_TFC7	(TF2, TF1, TF0)
DL_TFC8	(TF3, TF1, TF0)
DL_TFC9	(TF4, TF1, TF0)
DL_TFC10	(TF0, TF2, TF0)
DL_TFC11	(TF1, TF2, TF0)
DL_TFC12	(TF2, TF2, TF0)
DL_TFC13	(TF3, TF2, TF0)
DL_TFC14	(TF4, TF2, TF0)
DL_TFC15	(TF0, TF3, TF0)
DL_TFC16	(TF1, TF3, TF0)
DL_TFC17	(TF2, TF3, TF0)
DL_TFC18	(TF3, TF3, TF0)
DL_TFC19	(TF4, TF3, TF0)
DL_TFC20	(TF0, TF4, TF0)
DL_TFC21	(TF1, TF4, TF0)
DL_TFC22	(TF2, TF4, TF0)
DL_TFC23	(TF3, TF4, TF0)
DL_TFC24	(TF4, TF4, TF0)

TFCI	(RB5, RB6, DCCH)
DL_TFC25	(TF0, TF0, TF1)
DL_TFC26	(TF1, TF0, TF1)
DL_TFC27	(TF2, TF0, TF1)
DL_TFC28	(TF3, TF0, TF1)
DL_TFC29	(TF4, TF0, TF1)
DL_TFC30	(TF0, TF1, TF1)
DL_TFC31	(TF1, TF1, TF1)
DL_TFC32	(TF2, TF1, TF1)
DL_TFC33	(TF3, TF1, TF1)
DL_TFC34	(TF4, TF1, TF1)
DL_TFC35	(TF0, TF2, TF1)
DL_TFC36	(TF1, TF2, TF1)
DL_TFC37	(TF2, TF2, TF1)
DL_TFC38	(TF3, TF2, TF1)
DL_TFC39	(TF4, TF2, TF1)
DL_TFC40	(TF0, TF3, TF1)
DL_TFC41	(TF1, TF3, TF1)
DL_TFC42	(TF2, TF3, TF1)
DL_TFC43	(TF3, TF3, TF1)
DL_TFC44	(TF4, TF3, TF1)
DL_TFC45	(TF0, TF4, TF1)
DL_TFC46	(TF1, TF4, TF1)
DL_TFC47	(TF2, TF4, TF1)
DL_TFC48	(TF3, TF4, TF1)
DL_TFC49	(TF4, TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
1	DL_TFC1, DL_TFC26	UL_TFC1, UL_TFC11	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC10, UL_TFC11	RB5: 312 RB6: 576	RB5: 312 RB6: No data
2	DL_TFC2, DL_TFC27	UL_TFC2, UL_TFC12	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC10, UL_TFC12	RB5: 632 RB6: 576	RB5: 632 RB6: No data
3	DL_TFC3, DL_TFC28	UL_TFC3, UL_TFC13	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC10, UL_TFC13	RB5: 952 RB6: 576	RB5: 1272 RB6: No data
4	DL_TFC4, DL_TFC29	UL_TFC4, UL_TFC14	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC10, UL_TFC14	RB5: 1272 RB6: 576	RB5: 2552 RB6: No data
5	DL_TFC5, DL_TFC30	UL_TFC5, UL_TFC15	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC5, UL_TFC10, UL_TFC15	RB5: 312 RB6: 576	RB5: No data RB6: 320 (note 2)
6	DL_TFC6, DL_TFC31	UL_TFC6, UL_TFC16	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6, UL_TFC10, UL_TFC11, UL_TFC15, UL_TFC16	RB5: 312 RB6: 576	RB5: 312 RB6: 320 (note 2)

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
7	DL_TFC7, DL_TFC32	UL_TFC7, UL_TFC17	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC5 UL_TFC7, UL_TFC10, UL_TFC12, UL_TFC15, UL_TFC17	RB5: 632 RB6: 576	RB5: 632 RB6: 320 (note 2)
8	DL_TFC8, DL_TFC33	UL_TFC8, UL_TFC18	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC5 UL_TFC8, UL_TFC10, UL_TFC13, UL_TFC15, UL_TFC18	RB5: 952 RB6: 576	RB5: 1272 RB6: 320 (note 2)
9	DL_TFC9, DL_TFC34	UL_TFC9, UL_TFC19	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9, UL_TFC10, UL_TFC14, UL_TFC15, UL_TFC19	RB5: 1272 RB6: 576	RB5: 2552 RB6: 320 (note 2)
10	DL_TFC10, DL_TFC35	UL_TFC5, UL_TFC15	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC5, UL_TFC10, UL_TFC15	RB5: 312 RB6: 576	RB5: No data RB6: 640 (note 3)
11	DL_TFC11, DL_TFC36	UL_TFC6, UL_TFC16	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6, UL_TFC10, UL_TFC11, UL_TFC15, UL_TFC16	RB5: 312 RB6: 576	RB5: 312 RB6: 640 (note 3)
12	DL_TFC12, DL_TFC37	UL_TFC7, UL_TFC17	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC5 UL_TFC7, UL_TFC10, UL_TFC12, UL_TFC15, UL_TFC17	RB5: 632 RB6: 576	RB5: 632 RB6: 640 (note 3)
13	DL_TFC13, DL_TFC38	UL_TFC8, UL_TFC18	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8, UL_TFC10, UL_TFC13, UL_TFC15, UL_TFC18	RB5: 952 RB6: 576	RB5: 1272 RB6: 640 (note 3)
14	DL_TFC14, DL_TFC39	UL_TFC9, UL_TFC19	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9, UL_TFC10, UL_TFC14, UL_TFC15, UL_TFC19	RB5: 1272 RB6: 576	RB5: 2552 RB6: 640 (note 3)
15	DL_TFC15, DL_TFC40	UL_TFC5, UL_TFC15	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC5, UL_TFC10, UL_TFC15	RB5: 312 RB6: 576	RB5: No data RB6: 1280 (note 4)

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
16	DL_TFC16, DL_TFC41	UL_TFC6, UL_TFC16	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6, UL_TFC10, UL_TFC11, UL_TFC15, UL_TFC16	RB5: 312 RB6: 576	RB5: 312 RB6: 1280 (note 4)
17	DL_TFC17, DL_TFC42	UL_TFC7, UL_TFC17	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7, UL_TFC10, UL_TFC12, UL_TFC15, UL_TFC17	RB5: 632 RB6: 576	RB5: 632 RB6: 1280 (note 4)
18	DL_TFC18, DL_TFC43	UL_TFC8, UL_TFC18	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8, UL_TFC10, UL_TFC13, UL_TFC15, UL_TFC18	RB5: 952 RB6: 576	RB5: 1272 RB6: 1280 (note 4)
19	DL_TFC19, DL_TFC44	UL_TFC9, UL_TFC19	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9, UL_TFC10, UL_TFC14, UL_TFC15, UL_TFC19	RB5: 1272 RB6: 576	RB5: 2552 RB6: 1280 (note 4)
20	DL_TFC20, DL_TFC45	UL_TFC5, UL_TFC15	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC5, UL_TFC10, UL_TFC15	RB5: 312 RB6: 576	RB5: No data RB6: 2560 (note 5)
21	DL_TFC21, DL_TFC46	UL_TFC6, UL_TFC16	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6, UL_TFC10, UL_TFC11, UL_TFC15, UL_TFC16	RB5: 312 RB6: 576	RB5: 312 RB6: 2560 (note 5)
22	DL_TFC22, DL_TFC47	UL_TFC7, UL_TFC17	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7, UL_TFC10, UL_TFC12, UL_TFC15, UL_TFC17	RB5: 632 RB6: 576	RB5: 632 RB6: 2560 (note 5)

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note 1)	Test data size (bits) (note 1)
23	DL_TFC23, DL_TFC48	UL_TFC8, UL_TFC18	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC3, UL_TFC5 UL_TFC8, UL_TFC10, UL_TFC13, UL_TFC15, UL_TFC18	RB5: 952 RB6: 576	RB5: 1272 RB6: 2560 (note 5)
24	DL_TFC24, DL_TFC49	UL_TFC9, UL_TFC19	DL_TFC0, DL_TFC25, UL_TFC0, UL_TFC10	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9, UL_TFC10, UL_TFC14, UL_TFC15, UL_TFC19	RB5: 1272 RB6: 576	RB5: 2552 RB6: 2560 (note 5)
<p>NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.</p> <p>NOTE 2: RB6: SS is using a DL RLC SDU with 320 bits as test data (=DL RLC PDU size for DL/TF1). UE will return one RLC PDU. SS creates an UL RLC SDU from the first 320 bits of the received RLC PDU.</p> <p>NOTE 3: RB6: SS is using a DL RLC SDU size of 640 bits as test data (=DL RLC PDU size for DL/TF2). UE will return one RLC PDU. SS creates an UL RLC SDU from the received RLC PDU.</p> <p>NOTE 4: RB6: SS is using a DL RLC SDU size of 1280 bits as test data (=DL RLC PDU size for DL/TF3). UE will return one RLC PDU. SS creates an UL RLC SDU from the received RLC PDU.</p> <p>NOTE 5: RB6: SS is using a DL RLC SDU size of 2560 bits as test data (=DL RLC PDU size for DL/TF4). UE will return one RLC PDU. SS creates an UL RLC SDU from the received RLC PDU.</p> <p>RB5: Test data size has been set to DL TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the TTI for RB5 and RB6 is the same for both downlink and uplink then UL RLC SDU size has been set to achieve UE to return one SDU per TTI, i.e. the UL RLC SDU size for RB5 has been set equal to the uplink TFS size under test minus 8 bits (size of 7 bit length indicator and expansion bit), and the UL RLC SDU size for RB6 has been set equal to the uplink TFS size under test.</p>						

#### 14.2.54.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and 15b the UE transmitted transport format shall be within the set of restricted TFCs as specified for the actual subtest.
3. At step 15 the UE shall return
  - for sub-test 1, 2, 6, 7, 11, 12, 16, 17, 21, 22: an RLC SDU on RB5 having the same content as sent by the SS.
  - for sub-test 5, 10, 15 and 20: no data shall be received on RB5.
  - for sub-test 1 to 4: no data shall be received on RB6.
  - for sub-test 5 to 9: an RLC SDU on RB6 having the same content as sent by the SS.
  - for sub-test 10, 11, 12, 15, 16, 17, 20, 21 and 22: an RLC SDU on RB5 having the same content as the first 576 bits of the RLC SDU sent by the SS.
  - For sub-test 3,8,13,18,23: an RLC SDU on RB5 having the content equal to the first 952 bits of the test data sent by the SS in downlink;
  - For sub-test 4,9,14,19,24: an RLC SDU on RB5 having the content equal to the first 1272 bits of the test data sent by the SS in downlink;

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

### 14.2.55 Void

### 14.2.56 Interactive or background / UL:8 DL:8 kbps / PS RAB + Interactive or background / UL:8 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.

14.2.56.1 Conformance requirement

See 14.2.4.1.

14.2.56.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.56.

14.2.56.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 + RB6 (2x8 kbps)	DCCH
TFS	TF0, bits	0x340	0x148
	TF1, bits	1x340	1x148

Uplink TFCS:

TFCI	(RB5 + RB6, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF0, TF1)
UL_TFC3	(TF1, TF1)

Downlink TFS:

		RB5 + RB6 (2x8 kbps)	DCCH
TFS	TF0, bits	0x340	0x148
	TF1, bits	1x340	1x148

Downlink TFCS:

TFCI	(RB5+RB6, DCCH)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)
DL_TFC3	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC3	UL_TFC1, UL_TFC3	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 312 RB6: 312	RB5: 312 RB6: no data
2	DL_TFC1, DL_TFC3	UL_TFC1, UL_TFC3	DL_TFC0, DL_TFC2, UL_TFC0, UL_TFC2	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3	RB5: 312 RB6: 312	RB5: no data RB6: 312
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB5 and RB6: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size has been set equal to the size of the payload size of the UL TF under test minus 8 bits (the size of 7 bit length indicator and expansion bit).						

#### 14.2.56.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15a and step 15b the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
  - for sub-test 2: an RLC SDU on RB6; and no data shall be received on RB5.
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

#### 14.2.57 Interactive or background / UL:64 DL:64 kbps / PS RAB + Interactive or background / UL:64 DL:64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.

##### 14.2.57.1 Conformance requirement

See 14.2.4.1.

##### 14.2.57.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.57.

##### 14.2.57.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	<b>TFI</b>	<b>RB5 + RB6 (64 kbps RAB, 20 ms TTI)</b>	<b>DCCH</b>
TFS	TF0, bits	0x340	0x148
	TF1, bits	1x340	1x148
	TF2, bits	2x340	N/A
	TF3, bits	3x340	N/A
	TF4, bits	4x340	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5 + RB6, DCCH)</b>
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

Downlink TFS:

	<b>TFI</b>	<b>RB5 + RB6 (64 kbps RAB, 20 ms TTI)</b>	<b>DCCH</b>
TFS	TF0, bits	0x340	0x148
	TF1, bits	1x340	1x148
	TF2, bits	2x340	N/A
	TF3, bits	3x340	N/A
	TF4, bits	4x340	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5 + RB6, DCCH)</b>
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF3, TF0)
DL_TFC4	(TF4, TF0)
DL_TFC5	(TF0, TF1)
DL_TFC6	(TF1, TF1)
DL_TFC7	(TF2, TF1)
DL_TFC8	(TF3, TF1)
DL_TFC9	(TF4, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) Note 1	Test data size (bits) Note 1
1	DL_TFC1 DL_TFC6	UL_TFC1 DL_TFC6	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312 RB6: 312	RB5: 312 RB6: No data
2	DL_TFC2 DL_TFC7	UL_TFC2 DL_TFC7	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632 RB6: 632	RB5: 632 RB6: No data
3	DL_TFC3 DL_TFC8	UL_TFC3 DL_TFC8	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 952 RB6: 952	RB5: 952 RB6: No data
4	DL_TFC4 DL_TFC9	UL_TFC4 DL_TFC9	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 1272 RB6: 1272	RB5: 1272 RB6: No data
5	DL_TFC4 DL_TFC9	UL_TFC4 DL_TFC9	DL_TFC0, DL_TFC5, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 1272 RB5: 1272	RB5: No data RB6: 1272

NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  
RB5 and RB6: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size has been set equal to the size of the payload size of the UL TF under test minus 8 bits (the size of 7 bit length indicator and expansion bit).

#### 14.2.57.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.
3. At step 15a and step 15b the UE shall return
  - for sub-test 1 to 4: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS in RB5.
  - for sub-test 5: an RLC SDU on RB6 having the same content as the DL RLC SDU sent by the SS in RB6.
4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

#### 14.2.58 Streaming / unknown / UL:16 DL:64 kbps / PS RAB + Interactive or background / UL:8 DL:8 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH.

##### 14.2.58.1 Conformance requirement

See 14.2.4.1.

##### 14.2.58.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.1.58.

##### 14.2.58.3 Method of test

See 14.1.2 for test procedure.

Uplink TFS:

	TFI	RB5 uplink (16 kbps, 20 ms TTI)	RB6 (8 kbps)	DCCH
TFS	TF0, bits	0x336	0x336	0x148
	TF1, bits	1x336	1x336	1x148

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF0, TF1, TF0)
UL_TFC3	(TF1, TF1, TF0)
UL_TFC4	(TF0, TF0, TF1)
UL_TFC5	(TF1, TF0, TF1)
UL_TFC6	(TF0, TF1, TF1)
UL_TFC7	(TF1, TF1, TF1)

Downlink TFS:

	TFI	RB5 (64 kbps, 40 ms TTI)	RB6 (8 kbps)	DCCH
TFS	TF0, bits	0x656	0x336	0x148
	TF1, bits	1x656	1x336	1x148
	TF2, bits	2x656	N/A	N/A
	TF3, bits	4x656	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF0, TF0)
DL_TFC3	(TF3, TF0, TF0)
DL_TFC4	(TF0, TF1, TF0)
DL_TFC5	(TF1, TF1, TF0)
DL_TFC6	(TF2, TF1, TF0)
DL_TFC7	(TF3, TF1, TF0)
DL_TFC8	(TF0, TF0, TF1)
DL_TFC9	(TF1, TF0, TF1)
DL_TFC10	(TF2, TF0, TF1)
DL_TFC11	(TF3, TF0, TF1)
DL_TFC12	(TF0, TF1, TF1)
DL_TFC13	(TF1, TF1, TF1)
DL_TFC14	(TF2, TF1, TF1)
DL_TFC15	(TF3, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCs Under Test	Uplink TFCs Under test	Implicitly tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_TFC1, DL_TFC9	UL_TFC1, UL_TFC5	DL_TFC0, DL_TFC8, UL_TFC0, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC4, UL_TFC5	RB5: 632 RB6: 312	RB5: 632 RB6: no data
2	DL_TFC2, DL_TFC10	UL_TFC1, UL_TFC5	DL_TFC0, DL_TFC8, UL_TFC0, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC4, UL_TFC5	RB5: 632 RB6: 312	RB5: 1272 RB6: no data
3	DL_TFC3, DL_TFC11	UL_TFC1, UL_TFC5	DL_TFC0, DL_TFC8, UL_TFC0, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC4, UL_TFC5	RB5: 632 RB6: 312	RB5: 2552 RB6: no data
4	DL_TFC4, DL_TFC12	UL_TFC2, UL_TFC6	DL_TFC0, DL_TFC8, UL_TFC0, UL_TFC4	UL_TFC0, UL_TFC2, UL_TFC4, UL_TFC6	RB5: 632 RB6: 312	RB5: no data RB6: 312
5	DL_TFC5, DL_TFC13	UL_TFC3, UL_TFC7	DL_TFC0, DL_TFC8, UL_TFC0, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3, UL_TFC4, UL_TFC5, UL_TFC6	RB5: 632 RB6: 312	RB5: 632 RB6: 312
6	DL_TFC6, DL_TFC14	UL_TFC3, UL_TFC7	DL_TFC0, DL_TFC8, UL_TFC0, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3, UL_TFC4, UL_TFC5, UL_TFC6	RB5: 632 RB6: 312	RB5: 1272 RB6: 312
7	DL_TFC7, DL_TFC15	UL_TFC3, UL_TFC7	DL_TFC0, DL_TFC8, UL_TFC0, UL_TFC4	UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3, UL_TFC4, UL_TFC5, UL_TFC6, UL_TFC7	RB5: 632 RB6: 312	RB5: 2552 RB6: 312
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  RB5: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). As the uplink TTI for RB5 is 20 ms while the downlink TTI is 40 ms then, to achieve continuous data transmission in uplink the size of the uplink RLC SDU has been set such that it will be transmitted over two subsequent TTIs, i.e. UL RLC SDU size has been set to two times the payload size of the UL TF under test minus 8 bits (the size of a 7 bit length indicator and expansion bit).  RB6: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size has been set equal to the uplink TFS size minus 8 bits (the size of a 7 bit length indicator and expansion bit).</p>						

#### 14.2.58.4 Test requirements

See 14.1.2 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15a and step 15b the UE transmitted transport format shall be within the set of restricted TFCIs as specified for the actual sub-test.

3. At step 15a and step 15b the UE shall return

- for sub-test 1: RLC SDUs on RB5 having the same content as sent by the SS; and no data shall be received on RB6.
- for sub-test 2 and 3: RLC SDUs on RB5 having the first 632 bits equal to the content of the test data sent by the SS in downlink; and no data shall be received on RB6.
- for sub-test 4: RLC SDUs on RB6 having the same content as sent by the SS; and no data shall be received on RB5.
- for sub-test 5: RLC SDUs on RB5 and RB6 having the same content as sent by the SS.
- for sub-test 6 and 7: RLC SDUs on RB5 having the first 632 bits equal to the content of the test data sent by the SS in downlink; and RLC SDUs on RB6 having the same content as sent by the SS.

4. At step 15b the UE shall send at least one MEASUREMENT REPORT message.

## 14.3 Combinations on PDSCH and DPCH

### 14.3.1 Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

#### 14.3.1.1 Interactive or background / UL:64 DL:256 kbps / PS RAB / 10 ms TTI

##### 14.3.1.1.1 Conformance requirement

See 14.2.4.1.

##### 14.3.1.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.1 for the downlink 10 ms TTI case.

##### 14.3.1.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

DSCH downlink TFS:

	<b>TFI</b>	<b>RB5 (256 kbps)</b>
TFS	DSCH_TF0, bits	0x354
	DSCH_TF1, bits	1x354
	DSCH_TF2, bits	2x354
	DSCH_TF3, bits	4x354
	DSCH_TF4, bits	8x354

DSCH downlink TFCS:

<b>TFCI</b>	<b>RB5</b>
DL_DSCH_TFC0	DSCH_TF0
DL_DSCH_TFC1	DSCH_TF1
DL_DSCH_TFC2	DSCH_TF2
DL_DSCH_TFC3	DSCH_TF3
DL_DSCH_TFC4	DSCH_TF4

DCH downlink TFS:

	<b>TFI</b>	<b>DCCH</b>
TFS	DCH_TF0, bits	0x148
	DCH_TF1, bits	1x148

DCH downlink TFCS:

<b>TFCI</b>	<b>DCCH</b>
DL_DCH_TFC0	DCH_TF0
DL_DCH_TFC1	DCH_TF1

Sub-tests:

<b>Sub-test</b>	<b>Downlink TFCs Under test</b>	<b>Uplink TFCs Under test</b>	<b>Implicitely tested</b>	<b>Restricted UL TFCs</b>	<b>UL RLC SDU size (bits) (note)</b>	<b>Test data size (bits) (note)</b>
1	DL_DSCH_TFC1	UL_TFC1	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312	RB5: 312
2	DL_DSCH_TFC2	UL_TFC2	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632	RB5: 632
3	DL_DSCH_TFC3	UL_TFC3	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1912	RB5: 1272
4	DL_DSCH_TFC4	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552	RB5: 2552
<b>NOTE:</b> See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB5: the UL RLC SDU size have been choosen such that the UE will return all data received in downlink and that the UL RLC SDU will fill up the uplink transport format set under test over one or several transmission time intervals.						

See 14.1.1 for test procedure.

#### 14.3.1.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (3x336).
  - for sub-test 4: RB5/TF4 (4x336).
3. At step 15 the UE shall return
  - for sub-test 1, 2 to 3: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.
  - for sub-test 3: an RLC SDU on RB5 having the first 1272 bits equal to the content of the DL RLC SDU sent by the SS.

#### 14.3.1.2 Interactive or background / UL:64 DL:256 kbps / PS RAB / 20 ms TTI

##### 14.3.1.2.1 Conformance requirement

See 14.2.4.1.

##### 14.3.1.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.1 for the downlink 20 ms TTI case.

##### 14.3.1.2.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

DSCH downlink TFS:

	<b>TFI</b>	<b>RB5 (256 kbps)</b>
TFS	DSCH_TF0, bits	0x354
	DSCH_TF1, bits	1x354
	DSCH_TF2, bits	2x354
	DSCH_TF3, bits	4x354
	DSCH_TF4, bits	8x354
	DSCH_TF5, bits	12x354
	DSCH_TF6, bits	16x354

DSCH downlink TFCS:

<b>TFCI</b>	<b>RB5</b>
DL_DSCH_TFC0	DSCH_TF0
DL_DSCH_TFC1	DSCH_TF1
DL_DSCH_TFC2	DSCH_TF2
DL_DSCH_TFC3	DSCH_TF3
DL_DSCH_TFC4	DSCH_TF4
DL_DSCH_TFC5	DSCH_TF5
DL_DSCH_TFC6	DSCH_TF6

DCH downlink TFS:

	<b>TFI</b>	<b>DCCH</b>
TFS	DCH_TF0, bits	0x148
	DCH_TF1, bits	1x148

DCH downlink TFCS:

<b>TFCI</b>	<b>DCCH</b>
DL_DCH_TFC0	DCH_TF0
DL_DCH_TFC1	DCH_TF1

Sub-tests:

Sub-test	Downlink TFCs Under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_DSCH_TFC1	UL_TFC1	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312	RB5: 312
2	DL_DSCH_TFC2	UL_TFC2	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632	RB5: 632
3	DL_DSCH_TFC3	UL_TFC3	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1912	RB5: 1972
4	DL_DSCH_TFC4	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552	RB5: 2552
5	DL_DSCH_TFC5	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 3832	RB5: 3832
6	DL_DSCH_TFC6	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5112	RB5: 5112
<p>NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB5: the UL RLC SDU size have been choosen such that the UE will return all data received in downlink and that the UL RLC SDU will fill up the uplink transport format set under test over one or several transmission time intervals.</p>						

See 14.1.1 for test procedure.

#### 14.3.1.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (3x336).
  - for sub-test 4, 5 and 6: RB5/TF4 (4x336).
3. At step 15 the UE shall return
  - for sub-test 1, 2, 4, 5 and 6: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.

- for sub-test 3: an RLC SDU on RB5 having the first 1272 bits equal to the content of the DL RLC SDU sent by the SS.

### 14.3.2 Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

#### 14.3.2.1 Interactive or background / UL:64 DL:384 kbps / PS RAB / 10 ms TTI

##### 14.3.2.1.1 Conformance requirement

See 14.2.4.1.

##### 14.3.2.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.2 for the downlink 10 ms TTI case.

##### 14.3.2.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

DSCH downlink TFS:

	TFI	RB5 (384 kbps)
TFS	DSCH_TF0, bits	0x354
	DSCH_TF1, bits	1x354
	DSCH_TF2, bits	2x354
	DSCH_TF3, bits	4x354
	DSCH_TF4, bits	8x354
	DSCH_TF5, bits	12x354

DSCH downlink TFCS:

TFCI	RB5
DL_DSCH_TFC0	DSCH_TF0
DL_DSCH_TFC1	DSCH_TF1
DL_DSCH_TFC2	DSCH_TF2
DL_DSCH_TFC3	DSCH_TF3
DL_DSCH_TFC4	DSCH_TF4
DL_DSCH_TFC5	DSCH_TF5

DCH downlink TFS:

	TFI	DCCH
TFS	DCH_TF0, bits	0x148
	DCH_TF1, bits	1x148

DCH downlink TFCs:

TFCI	DCCH
DL_DCH_TFC0	DCH_TF0
DL_DCH_TFC1	DCH_TF1

Sub-tests:

Sub-test	Downlink TFCs Under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_DSCH_TFC1	UL_TFC1	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312	RB5: 312
2	DL_DSCH_TFC2	UL_TFC2	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632	RB5: 632
3	DL_DSCH_TFC3	UL_TFC3	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1912	RB5: 1272
4	DL_DSCH_TFC4	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552	RB5: 2552
5	DL_DSCH_TFC5	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 3832	RB5: 3832
NOTE : See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB5: the UL RLC SDU size have been choosen such that the UE will return all data received in downlink and that the UL RLC SDU will fill up the uplink transport format set under test over one or several transmission time intervals.						

See 14.1.1 for test procedure.

#### 14.3.2.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (3x336).
  - for sub-test 4 and 5: RB5/TF4 (4x336).
3. At step 15 the UE shall return
  - for sub-test 1, 2, 4 and 6: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.
  - for sub-test 3: an RLC SDU on RB5 having the first 1272 bits equal to the content of the DL RLC SDU sent by the SS.

### 14.3.2.2 Interactive or background / UL:64 DL:384 kbps / PS RAB / 20 ms TTI

#### 14.3.2.2.1 Conformance requirement

See 14.2.4.1.

#### 14.3.2.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.2 for the downlink 20 ms TTI case.

#### 14.3.2.2.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

DSCH downlink TFS:

	<b>TFI</b>	<b>RB5 (384 kbps)</b>
TFS	DSCH_TF0, bits	0x354
	DSCH_TF1, bits	1x354
	DSCH_TF2, bits	2x354
	DSCH_TF3, bits	4x354
	DSCH_TF4, bits	8x354
	DSCH_TF5, bits	12x354
	DSCH_TF6, bits	16x354
	DSCH_TF7, bits	20x354
	DSCH_TF8, bits	24x354

DSCH downlink TFCS:

<b>TFCI</b>	<b>RB5</b>
DL_DSCH_TFC0	DSCH_TF0
DL_DSCH_TFC1	DSCH_TF1
DL_DSCH_TFC2	DSCH_TF2
DL_DSCH_TFC3	DSCH_TF3
DL_DSCH_TFC4	DSCH_TF4
DL_DSCH_TFC5	DSCH_TF5
DL_DSCH_TFC6	DSCH_TF6
DL_DSCH_TFC7	DSCH_TF7
DL_DSCH_TFC8	DSCH_TF8

DCH downlink TFS:

	<b>TFI</b>	<b>DCCH</b>
TFS	DCH_TF0, bits	0x148
	DCH_TF1, bits	1x148

DCH downlink TFCS:

<b>TFCI</b>	<b>DCCH</b>
DL_DCH_TFC0	DCH_TF0
DL_DCH_TFC1	DCH_TF1

Sub-tests:

<b>Sub-test</b>	<b>Downlink TFCS Under test</b>	<b>Uplink TFCS Under test</b>	<b>Implicitely tested</b>	<b>Restricted UL TFCIs</b>	<b>UL RLC SDU size (bits) (note)</b>	<b>Test data size (bits) (note)</b>
1	DL_DSCH_TFC1	UL_TFC1	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 312	RB5: 312
2	DL_DSCH_TFC2	UL_TFC2	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 632	RB5: 632
3	DL_DSCH_TFC3	UL_TFC3	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 1912	RB5: 1272
4	DL_DSCH_TFC4	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 2552	RB5: 2552

Sub-test	Downlink TFCs Under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
5	DL_DSCH_TFC5	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 3832	RB5: 3832
6	DL_DSCH_TFC6	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5112	RB5: 5112
7	DL_DSCH_TFC7	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 6392	RB5: 6392
8	DL_DSCH_TFC8	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 7672	RB5: 7672
NOTE 1: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. . RB5: the UL RLC SDU size have been choosen such that the UE will return all data received in downlink and that the UL RLC SDU will fill up the uplink transport format set under test over one or several transmission time intervals.						

See 14.1.1 for test procedure.

#### 14.3.2.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (3x336).
  - for sub-test 4, 5, 6, 7 and 8: RB5/TF4 (4x336).
3. At step 15 the UE shall return
  - for sub-test 1, 2, 4, 5, 6, 7 and 8: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.
  - for sub-test 3: an RLC SDU on RB5 having the first 1272 bits equal to the content of the DL RLC SDU sent by the SS.

### 14.3.3 Interactive or background / UL:64 DL:2048 kbps / PS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

#### 14.3.3.1 Interactive or background / UL:64 DL:2048 kbps / PS RAB / 10 ms TTI

##### 14.3.3.1.1 Conformance requirement

See 14.2.4.1.

## 14.3.3.1.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.3 for the downlink 10 ms TTI case.

## 14.3.3.1.3 Method of test

Uplink TFS:

	TFI	RB5 (64 kbps)	DCCH
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

TFCI	(RB5, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

DSCH downlink TFS:

	TFI	RB5 (384 kbps)
TFS	DSCH_TF0, bits	0x674
	DSCH_TF1, bits	1x674
	DSCH_TF2, bits	2x674
	DSCH_TF3, bits	4x674
	DSCH_TF4, bits	8x674
	DSCH_TF5, bits	12x674
	DSCH_TF6, bits	16x674
	DSCH_TF7, bits	20x674
	DSCH_TF8, bits	24x674
	DSCH_TF9, bits	28x674
	DSCH_TF10, bits	32x674

DSCH downlink TFCS:

TFCI	RB5
DL_DSCH_TFC0	DSCH_TF0
DL_DSCH_TFC1	DSCH_TF1
DL_DSCH_TFC2	DSCH_TF2
DL_DSCH_TFC3	DSCH_TF3
DL_DSCH_TFC4	DSCH_TF4
DL_DSCH_TFC5	DSCH_TF5
DL_DSCH_TFC6	DSCH_TF6
DL_DSCH_TFC7	DSCH_TF7
DL_DSCH_TFC8	DSCH_TF8
DL_DSCH_TFC9	DSCH_TF9
DL_DSCH_TFC10	DSCH_TF10

DCH downlink TFS:

	TFI	DCCH
TFS	DCH_TF0, bits	0x148
	DCH_TF1, bits	1x148

DCH downlink TFCS:

TFCI	DCCH
DL_DCH_TFC0	DCH_TF0
DL_DCH_TFC1	DCH_TF1

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_DSCH_TFC1	UL_TFC1	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 632	RB5: 632
2	DL_DSCH_TFC2	UL_TFC2	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 1272	RB5: 1272
3	DL_DSCH_TFC3	UL_TFC3	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 2872	RB5: 2552
4	DL_DSCH_TFC4	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5112	RB5: 5112
5	DL_DSCH_TFC5	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 7672	RB5: 7672
6	DL_DSCH_TFC6	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 10232	RB5: 10232
7	DL_DSCH_TFC7	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 12792	RB5: 12792
8	DL_DSCH_TFC8	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 15352	RB5: 15352

Sub-test	Downlink TFCs Under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
9	DL_DSCH_TFC9	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 17912	RB5: 17912
10	DL_DSCH_TFC10	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 20472	RB5: 20472
NOTE : See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB5: the UL RLC SDU size have been choosen such that the UE will return all data received in downlink and that the UL RLC SDU will fill up the uplink transport format set under test over one or several transmission time intervals.						

See 14.1.1 for test procedure.

#### 14.3.3.1.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (3x336).
  - for sub-test 4, 5, 6, 7, 8, 9 and 10: RB5/TF4 (4x336).
3. At step 15 the UE shall return
  - for sub-test 1, 2, 4 to 10: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.
  - for sub-test 3: an RLC SDU on RB5 having the first 2552 bits equal to the content of the DL RLC SDU sent by the SS.

#### 14.3.3.2 Interactive or background / UL:64 DL:2048 kbps / PS RAB / 20 ms TTI

##### 14.3.3.2.1 Conformance requirement

See 14.2.4.1.

##### 14.3.3.2.2 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.3 for the downlink 20 ms TTI case.

##### 14.3.3.2.3 Method of test

Uplink TFS:

	<b>TFI</b>	<b>RB5 (64 kbps)</b>	<b>DCCH</b>
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, DCCH)</b>
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF1, TF0)
UL_TFC2	(TF2, TF0)
UL_TFC3	(TF3, TF0)
UL_TFC4	(TF4, TF0)
UL_TFC5	(TF0, TF1)
UL_TFC6	(TF1, TF1)
UL_TFC7	(TF2, TF1)
UL_TFC8	(TF3, TF1)
UL_TFC9	(TF4, TF1)

DSCH downlink TFS:

	<b>TFI</b>	<b>RB5 (384 kbps)</b>
TFS	DSCH_TF0, bits	0x674
	DSCH_TF1, bits	1x674
	DSCH_TF2, bits	2x674
	DSCH_TF3, bits	4x674
	DSCH_TF4, bits	8x674
	DSCH_TF5, bits	12x674
	DSCH_TF6, bits	16x674
	DSCH_TF7, bits	20x674
	DSCH_TF8, bits	24x674
	DSCH_TF9, bits	28x674
	DSCH_TF10, bits	32x674
	DSCH_TF11, bits	36x674
	DSCH_TF12, bits	40x674
	DSCH_TF13, bits	44x674
	DSCH_TF14, bits	48x674
	DSCH_TF15, bits	52x674
	DSCH_TF16, bits	56x674
	DSCH_TF17, bits	60x674
DSCH_TF18, bits	64x674	

DSCH downlink TFCS:

<b>TFCI</b>	<b>RB5</b>
DL_DSCH_TFC0	DSCH_TF0
DL_DSCH_TFC1	DSCH_TF1
DL_DSCH_TFC2	DSCH_TF2
DL_DSCH_TFC3	DSCH_TF3
DL_DSCH_TFC4	DSCH_TF4
DL_DSCH_TFC5	DSCH_TF5
DL_DSCH_TFC6	DSCH_TF6
DL_DSCH_TFC7	DSCH_TF7
DL_DSCH_TFC8	DSCH_TF8
DL_DSCH_TFC9	DSCH_TF9
DL_DSCH_TFC10	DSCH_TF10
DL_DSCH_TFC11	DSCH_TF11
DL_DSCH_TFC12	DSCH_TF12
DL_DSCH_TFC13	DSCH_TF13
DL_DSCH_TFC14	DSCH_TF14
DL_DSCH_TFC15	DSCH_TF15
DL_DSCH_TFC16	DSCH_TF16
DL_DSCH_TFC17	DSCH_TF17
DL_DSCH_TFC18	DSCH_TF18

DCH downlink TFS:

	<b>TFI</b>	<b>DCCH</b>
TFS	DCH_TF0, bits	0x148
	DCH_TF1, bits	1x148

DCH downlink TFCS:

<b>TFCI</b>	<b>DCCH</b>
DL_DCH_TFC0	DCH_TF0
DL_DCH_TFC1	DCH_TF1

Sub-tests:

Sub-test	Downlink TFCs Under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
1	DL_DSCH_TFC1	UL_TFC1	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC1, UL_TFC5, UL_TFC6	RB5: 632	RB5: 632
2	DL_DSCH_TFC2	UL_TFC2	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC2, UL_TFC5, UL_TFC7	RB5: 1272	RB5: 1272
3	DL_DSCH_TFC3	UL_TFC3	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC3, UL_TFC5, UL_TFC8	RB5: 2872	RB5: 2552
4	DL_DSCH_TFC4	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 5112	RB5: 5112
5	DL_DSCH_TFC5	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 7672	RB5: 7672
6	DL_DSCH_TFC6	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 10232	RB5: 20232
7	DL_DSCH_TFC7	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 12792	RB5: 12792
8	DL_DSCH_TFC8	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 15352	RB5: 15352
9	DL_DSCH_TFC9	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 17912	RB5: 17912
10	DL_DSCH_TFC10	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 20472	RB5: 20472
11	DL_DSCH_TFC11	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 23032	RB5: 23032
12	DL_DSCH_TFC12	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 25592	RB5: 25592

Sub-test	Downlink TFCs Under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (bits) (note)	Test data size (bits) (note)
13	DL_DSCH_TFC13	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 28152	RB5: 28152
14	DL_DSCH_TFC14	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 30712	RB5: 30712
15	DL_DSCH_TFC15	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 33272	RB5: 33272
16	DL_DSCH_TFC16	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 35832	RB5: 35832
17	DL_DSCH_TFC17	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 38392	RB5: 38392
18	DL_DSCH_TFC18	UL_TFC4	DL_DSCH_TFC0, DL_DCH_TFC0, DL_DCH_TFC1, UL_TFC0, UL_TFC5	UL_TFC0, UL_TFC4, UL_TFC5, UL_TFC9	RB5: 40952	RB5: 40952
NOTE : See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB5: the UL RLC SDU size have been choosen such that the UE will return all data received in downlink and that the UL RLC SDU will fill up the uplink transport format set under test over one or several transmission time intervals.						

See 14.1.1 for test procedure.

#### 14.3.3.2.4 Test requirements

See 14.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x336).
  - for sub-test 2: RB5/TF2 (2x336).
  - for sub-test 3: RB5/TF3 (3x336).
  - for sub-test 4 to 18: RB5/TF4 (4x336).
3. At step 15 the UE shall return
  - for sub-test 1, 2, 4 to 18: an RLC SDU on RB5 having the same content as the DL RLC SDU sent by the SS.
  - for sub-test 3: an RLC SDU on RB5 having the first 2552 bits equal to the content of the DL RLC SDU sent by the SS.

#### 14.3.4 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

##### 14.3.4.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 10 ms TTI

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.4 for the downlink 10 ms TTI case.

##### 14.3.4.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:256 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 20 ms TTI

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.4 for the downlink 20 ms TTI case.

#### 14.3.5 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

##### 14.3.5.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 10 ms TTI

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.5 for the downlink 10 ms TTI case.

##### 14.3.5.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:384 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 20 ms TTI

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.5 for the downlink 20 ms TTI case.

#### 14.3.6 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

##### 14.3.6.1 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 10 ms TTI

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.6 for the downlink 10 ms TTI case.

##### 14.3.6.2 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + Interactive or background / UL:64 DL:2048 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH / 10 ms TTI

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.2.6 for the downlink 20 ms TTI case.

## 14.4 Combinations on SCCPCH

### 14.4.1 Stand-alone signalling RB for PCCH

Implicitly tested.

NOTE The stand-alone signalling radio bearer for PCCH in TS 34.108, clause 6.10.2.4.3.1 is used in RRC test case 8.1.2.2.

### 14.4.2 Interactive/Background 32 kbps PS RAB + SRBs for CCCH + SRB for DCCH + SRB for BCCH

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.3.2.

This radio bearer configuration is tested with three different SYSTEM INFORMATION (BCCH) configurations:

1. The contents of System Information Block type 5 and 6 as specified in TS 34.108, clause 6.1.1.

Two SCCPCHs are used in this SYSTEM INFORMATION configuration. The first SCCPCH carries the PCH and the second SCCPCH carries the FACH for Interactive/Background 32 kbps PS RAB and the FACH for SRBs on CCCH/ DCCH/ BCCH.

This configuration is verified in test case 14.4.2.1.

2. The contents of System Information Block type 5 as specified in TS 34.108, clause 6.1.3.

Three SCCPCHs are used in this SYSTEM INFORMATION configuration. The first SCCPCH carries the PCH and both the second and third SCCPCHs carry the FACH for Interactive/Background 32 kbps PS RAB and the FACH for SRBs on CCCH/ DCCH/ BCCH.

This configuration is verified in test case 14.4.2.2.

3. The contents of System Information Block type 5 and 6 as specified in TS 34.108, clause 6.1.2.

Three SCCPCHs are used in this SYSTEM INFORMATION configuration. The first SCCPCH carries the PCH. The second SCCPCH carries the FACH for CTCH (Cell Broadcast Service) and the FACH for SRBs on CCCH/ BCCH for idle mode UEs. The third SCCPCH carries the FACH for Interactive/Background 32 kbps PS RAB and the FACH for SRBs on CCCH/ DCCH/ BCCH for connected mode UEs.

This configuration is verified in test case 14.4.2.3.

#### 14.4.2.1 One SCCPCH: Interactive/Background 32 kbps PS RAB + SRBs for CCCH + SRB for DCCH + SRB for BCCH

##### 14.4.2.1.1 Conformance requirement

See 14.2.4.1.

##### 14.4.2.1.2 Test purpose

To verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clauses 6.10.2.4.3.2 and 6.10.2.4.4.1 for the case when two SCCPCHs are used in this SYSTEM INFORMATION configuration. The first SCCPCH carries the PCH and the second SCCPCH carries the FACH for Interactive/Background 32 kbps PS RAB and the FACH for SRBs on CCCH/ DCCH/ BCCH.

To be able to test the downlink radio bearer using the UE loopback function, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.4.1 (Interactive/Background 32 kbps PS RAB + SRB for CCCH + SRB for DCCH on PRACH) is used in uplink.

## 14.4.2.1.3 Method of Test

The contents of System Information Block type 5 and 6 shall be as specified in TS 34.108, clause 6.1.1.

Uplink TFS:

	TFI	RB7+SRB (32kbps on RACH)
TFS	TF0, bits	1x168
	TF1, bits	1x360

Uplink TFCS:

TFCI	RB7+SRB
UL_TFC0	TF0
UL_TFC1	TF1

Downlink TFS:

		SRBs	RB7 (32 kbps)
TFS	TF0, bits	0x168	0x360
	TF1, bits	1x168	1x360
	TF2, bits	2x168	N/A

Downlink TFCS:

TFCI	(SRB, RB7)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF0, TF1)
DL_TFC4	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC3	UL_TFC1	DL_TFC0, UL_TFC0	UL_TFC1, UL_TFC0	RB7: 312 bits	RB7: 312 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB7: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size paramater has been set to the payload size of the UL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit).						

See 14.1.1 for test procedure.

## 14.4.2.1.4 Test Requirements

See 14.1.1 for definition of step 15

- At step 15 the UE transmitted transport format shall be RB7/TF1 (1x360).
- At step 15 the UE shall return an RLC SDU on RB7 having the same content as sent by SS

### 14.4.2.2 Two SCCPCHs: Interactive/Background 32 kbps PS RAB + SRBs for CCCH + SRB for DCCH + SRB for BCCH

#### 14.4.2.2.1 Conformance requirement

See 14.2.4.1.

#### 14.4.2.2.2 Test purpose

To verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clauses 6.10.2.4.3.2 and 6.10.2.4.4.1 for the case when three SCCPCHs are used in this SYSTEM INFORMATION configuration. The first SCCPCH carries the PCH and both the second and third SCCPCHs carry the FACH for Interactive/Background 32 kbps PS RAB and the FACH for SRBs on CCCH/ DCCH/ BCCH.

To be able to test the downlink radio bearer using the UE loopback function, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.4.1 (Interactive/Background 32 kbps PS RAB + SRB for CCCH + SRB for DCCH on PRACH) is used in uplink.

#### 14.4.2.2.3 Method of Test

The contents of System Information Block type 5 shall be as specified in TS 34.108, clause 6.1.3.

Uplink TFS:

	TFI	RB7+SRB (32kbps on RACH)
TFS	TF0, bits	1x168
	TF1, bits	1x360

Uplink TFCS:

TFCI	RB7+SRB
UL_TFC0	TF0
UL_TFC1	TF1

Downlink TFS:

		SRBs	RB7 (32 kbps)
TFS	TF0, bits	0x168	0x360
	TF1, bits	1x168	1x360
	TF2, bits	2x168	N/A

Downlink TFCS:

TFCI	(SRB, RB7)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF0, TF1)
DL_TFC4	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC3	UL_TFC1	DL_TFC0, UL_TFC0	UL_TFC1, UL_TFC0	RB7: 312 bits	RB7: 312 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB7: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size paramater has been set to the payload size of the UL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit).						

See 14.1.1 for test procedure.

#### 14.4.2.2.4 Test Requirements

See 14.1.1 for definition of step 15

- At step 15 the UE transmitted transport format shall be RB7/TF1 (1x360).
- At step 15 the UE shall return an RLC SDU on RB7 having the same content as sent by SS

#### 14.4.2.3 One SCCPCH/connected mode: Interactive/Background 32 kbps PS RAB + SRBs for CCCH + SRB for DCCH + SRB for BCCH

##### 14.4.2.3.1 Conformance requirement

See 14.2.4.1.

##### 14.4.2.3.2 Test purpose

To verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clauses 6.10.2.4.3.2 and 6.10.2.4.4.1 for the case when three SCCPCHs are used in this SYSTEM INFORMATION configuration. The first SCCPCH carries the PCH. The second SCCPCH carries the FACH for CTCH (Cell Broadcast Service) and the FACH for SRBs on CCCH/ BCCH for idle mode UEs. The third SCCPCH carries the FACH for Interactive/Background 32 kbps PS RAB and the FACH for SRBs on CCCH/ DCCH/ BCCH for connected mode UEs.

To be able to test the downlink radio bearer using the UE loopback function, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.4.1 (Interactive/Background 32 kbps PS RAB + SRB for CCCH + SRB for DCCH on PRACH) is used in uplink.

##### 14.4.2.3.3 Method of Test

The contents of System Information Block type 5 and 6 shall be as specified in TS 34.108, clause 6.1.2.

Uplink TFS:

	TFI	RB7+SRB (32kbps on RACH)
TFS	TF0, bits	1x168
	TF1, bits	1x360

Uplink TFCS:

TFCI	RB7+SRB
UL_TFC0	TF0
UL_TFC1	TF1

Downlink TFS:

		SRBs	RB7 (32 kbps)
TFS	TF0, bits	0x168	0x360
	TF1, bits	1x168	1x360
	TF2, bits	2x168	N/A

Downlink TFCS:

TFCI	(SRB, RB7)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF0, TF1)
DL_TFC4	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC3	UL_TFC1	DL_TFC0, UL_TFC0	UL_TFC1, UL_TFC0	RB7: 312 bits	RB7: 312 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB7: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size parameter has been set to the payload size of the UL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit).						

See 14.1.1 for test procedure.

#### 14.4.2.3.4 Test Requirements

See 14.1.1 for definition of step 15

- At step 15 the UE transmitted transport format shall be RB7/TF1 (1x360).
- At step 15 the UE shall return an RLC SDU on RB7 having the same content as sent by SS

### 14.4.2a Interactive/Background 32 kbps PS RAB + Interactive/Background 32 kbps PS RAB + SRBs for CCCH + SRB for DCCH + SRB for BCCH

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.3.2a.

This radio bearer configuration is tested with three different SYSTEM INFORMATION (BCCH) configurations:

- The contents of System Information Block type 5 and 6 as specified in TS 34.108, clause 6.1.1.

Two SCCPCHs are used in this SYSTEM INFORMATION configuration. The first SCCPCH carries the PCH and the second SCCPCH carries the FACH for two Interactive/Background 32 kbps PS RABs and the FACH for SRBs on CCCH/ DCCH/ BCCH.

This configuration is verified in test case 14.4.2a.1.

- The contents of System Information Block type 5 as specified in TS 34.108, clause 6.1.3.

Three SCCPCHs are used in this SYSTEM INFORMATION configuration. The first SCCPCH carries the PCH and both the second and third SCCPCHs carry the FACH for two Interactive/Background 32 kbps PS RABs and the FACH for SRBs on CCCH/ DCCH/ BCCH.

This configuration is verified in test case 14.4.2a.2.

3. The contents of System Information Block type 5 and 6 as specified in TS 34.108, clause 6.1.2.

Three SCCPCHs are used in this SYSTEM INFORMATION configuration. The first SCCPCH carries the PCH. The second SCCPCH carries the FACH for CTCH (Cell Broadcast Service) and the FACH for SRBs on CCCH/ BCCH for idle mode UEs. The third SCCPCH carries the FACH for two Interactive/Background 32 kbps PS RABs and the FACH for SRBs on CCCH/ DCCH/ BCCH for connected mode UEs.

This configuration is verified in test case 14.4.2a.3.

#### 14.4.2a.1 One SCCPCH: Interactive/Background 32 kbps PS RAB + SRBs for CCCH + SRB for DCCH + SRB for BCCH

##### 14.4.2a.1.1 Conformance requirement

See 14.2.4.1.

##### 14.4.2a.1.2 Test purpose

To verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.3.2a and 6.10.2.4.4.2 for the case when two SCCPCHs are used in this SYSTEM INFORMATION configuration. The first SCCPCH carries the PCH and the second SCCPCH carries the FACH for two Interactive/Background 32 kbps PS RABs and the FACH for SRBs on CCCH/ DCCH/ BCCH.

To be able to test the downlink radio bearer using the UE loopback function, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.4.2 (Interactive/Background 32 kbps PS RAB + Interactive/Background 32 kbps PS RAB + SRB for CCCH + SRB for DCCH on PRACH) is used in uplink.

##### 14.4.2a.1.3 Method of Test

The contents of System Information Block type 5 and 6 shall be as specified in TS 34.108, clause 6.1.1.

See 14.1.1 for test procedure.

**NOTE** The test procedure for single radio bearer configurations is used as there are no uplink transport format combination for simultaneous data transmission on the PS radio bearers, nor any transport format combination for simultaneous data transmission and signalling.

Uplink TFS:

	TFI	RB7+RB8+SRB (2x32 kbps on RACH)
TFS	TF0, bits	1x168
	TF1, bits	1x360

Uplink TFCS:

TFCI	RB7 + RB8
UL_TFC0	TF0
UL_TFC1	TF1

Downlink TFS:

		SRBs	RB7 + RB8 (2x32 kbps)
TFS	TF0, bits	0x168	0x360
	TF1, bits	1x168	1x360
	TF2, bits	2x168	N/A

Downlink TFCS:

TFCI	(SRB, RB7+RB8)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF0, TF1)
DL_TFC4	(TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS Under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC3	UL_TFC1	DL_TFC0, UL_TFC0	UL_TFC1, UL_TFC0	RB7: 312 bits RB8: 312 bits	RB7: 312 bits RB8: No data
2	DL_TFC3	UL_TFC1	DL_TFC0, UL_TFC0	UL_TFC1, UL_TFC0	RB7: 312 bits RB8: 312 bits	RB7: No data RB8: 312 bits

NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  
RB7 and RB8: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size parameter has been set to the payload size of the UL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit).

#### 14.4.2a.1.4 Test Requirements

See 14.1.1 for definition of step 15

1. At step 15 the UE transmitted transport format shall be TF1 (1x360).
2. At step 15 the UE shall return
  - for sub test 1: an RLC SDU on RB7 having the same content as sent by SS
  - for sub test 2: an RLC SDU on RB8 having the same content as sent by SS

#### 14.4.2a.2 Two SCCPCHs: Interactive/Background 32 kbps PS RAB + SRBs for CCCH + SRB for DCCH + SRB for BCCH

##### 14.4.2a.2.1 Conformance requirement

See 14.2.4.1.

##### 14.4.2a.2.2 Test purpose

To verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clauses 6.10.2.4.3.2 and 6.10.2.4.4.2 for the case when three SCCPCHs are used in this SYSTEM INFORMATION configuration. The first SCCPCH carries the PCH and both the second and third SCCPCHs carry the FACH for two Interactive/Background 32 kbps PS RABs and the FACH for SRBs on CCCH/ DCCH/ BCCH.

To be able to test the downlink radio bearer using the UE loopback function, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.4.2 (Interactive/Background 32 kbps PS RAB + Interactive/Background 32 kbps PS RAB + SRB for CCCH + SRB for DCCH on PRACH) is used in uplink.

## 14.4.2a.2.3 Method of Test

The contents of System Information Block type 5 shall be as specified in TS 34.108, clause 6.1.3.

See 14.1.1 for test procedure.

**NOTE** The test procedure for single radio bearer configurations is used as there are no uplink transport format combination for simultaneous data transmission on the PS radio bearers, nor any transport format combination for simultaneous data transmission and signalling.

Uplink TFS:

	<b>TFI</b>	<b>RB7 + RB8 (2x32 kbps on RACH)</b>
TFS	TF0, bits	1x168
	TF1, bits	1x360

Uplink TFCS:

<b>TFCI</b>	<b>RB7 + RB8</b>
UL_TFC0	TF0
UL_TFC1	TF1

Downlink TFS:

		<b>SRBs</b>	<b>RB7 + RB8 (2x32 kbps)</b>
TFS	TF0, bits	0x168	0x360
	TF1, bits	1x168	1x360
	TF2, bits	2x168	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(SRB, RB7+RB8)</b>
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF0, TF1)
DL_TFC4	(TF1, TF1)

Sub-tests:

<b>Sub-test</b>	<b>Downlink TFCS Under test</b>	<b>Uplink TFCS Under test</b>	<b>Implicitely tested</b>	<b>Restricted UL TFCIs</b>	<b>UL RLC SDU size (note)</b>	<b>Test data size (note)</b>
1	DL_TFC3	UL_TFC1	DL_TFC0, UL_TFC0	UL_TFC1, UL_TFC0	RB7: 312 bits RB8: 312 bits	RB7: 312 bits RB8: No data
2	DL_TFC3	UL_TFC1	DL_TFC0, UL_TFC0	UL_TFC1, UL_TFC0	RB7: 312 bits RB8: 312 bits	RB7: No data RB8: 312 bits
<b>NOTE:</b> See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB7 and RB8: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size paramater has been set to the payload size of the UL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit).						

## 14.4.2a.2.4 Test Requirements

See 14.1.1 for definition of step 15

1. At step 15 the UE transmitted transport format shall be TF1 (1x360).
2. At step 15 the UE shall return
  - for sub test 1: an RLC SDU on RB7 having the same content as sent by SS
  - for sub test 2: an RLC SDU on RB8 having the same content as sent by SS

#### 14.4.2a.3 One SCCPCH/connected mode: Interactive/Background 32 kbps PS RAB + SRBs for CCCH + SRB for DCCH + SRB for BCCH

##### 14.4.2a.3.1 Conformance requirement

See 14.2.4.1.

##### 14.4.2a.3.2 Test purpose

To verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clauses 6.10.2.4.3.2 and 6.10.2.4.4.2 for the case when three SCCPCHs are used in this SYSTEM INFORMATION configuration. The first SCCPCH carries the PCH. The second SCCPCH carries the FACH for CTCH (Cell Broadcast Service) and the FACH for SRBs on CCCH/ BCCH for idle mode UEs. The third SCCPCH carries the FACH for two Interactive/Background 32 kbps PS RABs and the FACH for SRBs on CCCH/ DCCH/ BCCH for connected mode UEs.

To be able to test the downlink radio bearer using the UE loopback function, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.4.2 (Interactive/Background 32 kbps PS RAB + Interactive/Background 32 kbps PS RAB + SRB for CCCH + SRB for DCCH on PRACH) is used in uplink.

##### 14.4.2a.3.3 Method of Test

The contents of System Information Block type 5 and 6 shall be as specified in TS 34.108, clause 6.1.2.

See 14.1.1 for test procedure.

**NOTE** The test procedure for single radio bearer configurations is used as there are no uplink transport format combination for simultaneous data transmission on the PS radio bearers, nor any transport format combination for simultaneous data transmission and signalling.

Uplink TFS:

	TFI	RB7+RB8+SRB (2x32 kbps on RACH)
TFS	TF0, bits	1x168
	TF1, bits	1x360

Uplink TFCS:

TFCI	RB7 + RB8
UL_TFC0	TF0
UL_TFC1	TF1

Downlink TFS:

		SRBs	RB7 + RB8 (2x32 kbps)
TFS	TF0, bits	0x168	0x360
	TF1, bits	1x168	1x360
	TF2, bits	2x168	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(SRB, RB7+RB8)</b>
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF2, TF0)
DL_TFC3	(TF0, TF1)
DL_TFC4	(TF1, TF1)

Sub-tests:

<b>Sub-test</b>	<b>Downlink TFCs Under test</b>	<b>Uplink TFCs Under test</b>	<b>Implicitely tested</b>	<b>Restricted UL TFCIs</b>	<b>UL RLC SDU size</b> (note)	<b>Test data size</b> (note)
1	DL_TFC3	UL_TFC1	DL_TFC0, UL_TFC0	UL_TFC1, UL_TFC0	RB7: 312 bits RB8: 312 bits	RB7: 312 bits RB8: No data
2	DL_TFC3	UL_TFC1	DL_TFC0, UL_TFC0	UL_TFC1, UL_TFC0	RB7: 312 bits RB8: 312 bits	RB7: No data RB8: 312 bits

NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs. RB7 and RB8: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size parameter has been set to the payload size of the UL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit).

#### 14.4.2a.3.4 Test Requirements

1. At step 15 the UE transmitted transport format shall be TF1 (1x360).
2. At step 15 the UE shall return
  - for sub test 1: an RLC SDU on RB7 having the same content as sent by SS
  - for sub test 2: an RLC SDU on RB8 having the same content as sent by SS

### 14.4.3 Interactive/Background 32 kbps RAB + SRBs for PCCH + SRB for CCCH + SRB for DCCH + SRB for BCCH

#### 14.4.3.1 Conformance requirement

See 14.2.4.1.

#### 14.4.3.2 Test purpose

To verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clauses 6.10.2.4.3.3 and 6.10.2.4.4.1 for the case when one SCCPCH is used in this SYSTEM INFORMATION (BCCH) configuration. The SCCPCH carries the PCH, the FACH for Interactive/Background 32 kbps PS RAB and the FACH for SRBs on CCCH/ DCCH/ BCCH.

To be able to test the downlink radio bearer using the UE loopback function, the reference radio bearer configuration according to TS 34.108, clause 6.10.2.4.4.1 (Interactive/Background 32 kbps PS RAB + SRB for CCCH + SRB for DCCH on PRACH) is used in uplink.

#### 14.4.3.3 Method of Test

The contents of System Information Block type 5 and 6 shall be as specified in TS 34.108, clause 6.1.

Uplink TFS:

	TFI	RB8 (32kbps on RACH)
TFS	TF0, bits	1x168
	TF1, bits	1x360

Uplink TFCS:

TFCI	RB8
UL_TFC0	TF0
UL_TFC1	TF1

Downlink TFS:

		PCCH	SRBs	RB8 (32 kbps)
TFS	TF0, bits	0x240	0x168	0x360
	TF1, bits	1x240	1x168	1x360
	TF2, bits	N/A	2x168	N/A

Downlink TFCS:

TFCI	(PCCH, SRB, RB8)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF0, TF1, TF0)
DL_TFC3	(TF1, TF1, TF0)
DL_TFC4	(TF0, TF2, TF0)
DL_TFC5	(TF1, TF2, TF0)
DL_TFC6	(TF0, TF0, TF1)
DL_TFC7	(TF0, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC6	UL_TFC1	DL_TFC0, UL_TFC0	UL_TFC1, UL_TFC0	RB8: 312 bits	RB8: 312 bits

NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.  
RB8: Test data size has been set to the payload size of the DL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit). The UL RLC SDU size paramater has been set to the payload size of the UL TF under test minus 8 bits (size of 7 bit length indicator and expansion bit).

See 14.1.1 for test procedure.

#### 14.4.3.4 Test requirements

See 14.1.1 for definition of step 15

- At step 15 the UE transmitted transport format shall be RB8/TF1 (1x360).
- At step 15 the UE shall return an RLC SDU on RB8 having the same content as sent by SS

## 14.4.4 RB for CTCH + SRB for CCCH +SRB for BCCH.

### 14.4.4.1 Definition and applicability

Applicable only for a UE supporting Cell Broadcast Services (CBS) as a type of Broadcast/Multicast Services.

It shall be possible to indicate the reception of certain CBS message contents carried with certain activated CG message types in a clear way on UE side.

### 14.4.4.2 Conformance Requirement

See 14.2.4.1 and 7.4.2.1.2.

### 14.4.4.3 Test purpose

Test to verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.3.4 for the case when three SCCPCHs are used in this SYSTEM INFORMATION configuration. The first SCCPCH carries the PCH. The second SCCPCH carries the FACH for CTCH (Cell Broadcast Service) and the FACH for SRBs on CCCH/ BCCH for idle mode UEs. The third SCCPCH carries the FACH for Interactive/Background 32 kbps PS RAB and the FACH for SRBs on CCCH/ DCCH/ BCCH for connected mode UEs.

To verify establishment and data transfer of reference radio bearer configuration as specified in TS 34.108, clauses 6.10.2.4.3.3. Data transfer on CTCH is tested similar to testing BMC for a UE in idle mode as specified in TS 34.123-1, clause 7.4.2, data transfer on CCCH is tested by establishing a RRC connection.

### 14.4.4.4 Method of Test

Initial conditions:

The contents of System Information Block type 5 and 6 shall be as specified in TS 34.108, clause 6.1.2.

The UE is RRC idle mode, the BMC entity is established.

The CB message ID stored on the SIM shall be known for this test (parameter for CBS PDUs). The CBS data type shall be allocated and activated in the UE.

Related ICS/IXIT Statement(s)

As in clause 7.4.2.1.4

Uplink TFS:

	TFI	RB7+SRB (32 kbps on RACH)
TFS	TF0, bits	1x168
	TF1, bits	1x360

Uplink TFCS:

TFCI	RB7+SRB
UL_TFC0	TF0
UL_TFC1	TF1

Downlink TFS:

		RB7 (32 kbps on CTCH)	SRBs
TFS	TF0, bits	0x168	0x168
	TF1, bits	1x168	1x168

Downlink TFCS:

TFCI	(RB7, SRB)
DL_TFC0	(TF0, TF0)
DL_TFC1	(TF1, TF0)
DL_TFC2	(TF0, TF1)

Test Procedure:

- a) The UE in RRC Idle mode is triggered to wait for the next system information. The UE is activated to receive CBS messages.
- b) The UE and the SS have configured their RLC, MAC, and PHYs layers with all CB related system information.
- c) The SS sends the CVS message containing an activated CGS message type according to CB-Data 1 to the UE; this shall be repeated for CPREP times (indicated by the parameter “repetition period”).
- d) The UE indicates in an unambiguous way, that this message was received.

Steps 1 – 4 in the Expected sequence are followed by the steps 2 – 6 of the test procedure according to clause 14.1.1.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION	
2				The SS waits for about 10 s to make sure, that the UE is configured to receive CBS data
3		←	BMC CBS Message	Activated CBS message with CB Data 1 message content as described by the manufacturer. This message shall be repeated "CPREP" times, Parameter: - Message_ID, - Serial-No, - Data coding scheme, - CB-Data 1,
4				After having received the BMC CBS message the UE shall indicate the reception of CB Data 1 in a clear way.

#### 14.4.4.5 Test Requirements

At step 4 in the table above, the UE shall store and decode a received activated CBS message.

At step 5 of the test procedure according to clause 14.1.1 the RRC Connection shall be established.

## 14.5 Combinations on PRACH

### 14.5.1 Interactive/Background 32 kbps PS RAB + SRB for CCCH + SRB for DCCH

The reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.4.1 is implicitly tested by the test cases 14.4.2.1, 14.4.2.2, 14.4.2.3 and 14.4.3.

### 14.5.2 Interactive/Background 32 kbps PS RAB + Interactive/Background 32 kbps PS RAB + SRB for CCCH + SRB for DCCH

The reference radio bearer configuration as specified in TS 34.108, clause 6.10.2.4.4.2 is implicitly tested by the test cases 14.4.2a.1, 14.4.2a.2 and 14.4.2a.3.

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## 15 Supplementary Services

This clause is FFS.

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## 16 Short message service (SMS)

Ref.: 3GPP TS 23.040, 3GPP TS 24.011 (point to point)  
3GPP TS 23.041, (cell broadcast)

### General

The purpose of these tests is to verify that the UE can handle Iu mode system functions when submitting or receiving Short Messages (SM) between UE and a short message service centre as described in 3GPP TS 23.040.

The procedures are based upon services provided by the Mobility Management (MM) sublayer and GPRS Mobility Management(GMM) sublayer which are not tested in this case.

The SMS comprises three basic services; SMS point to point services on CS mode, on PS mode and SMS cell broadcast service. The SMS point to point services on CS mode shall work in an active UE at any time independent of whether or not there is a speech or data call in progress. The SMS point to point services on PS mode shall work in an active UE at any time independent of whether or not there is a PDP context in progress. The SMS cell broadcast service only works when the UE is in idle mode.

Since the timer TC1M currently is not standardized, the value of TC1M shall be declared by the manufacturer (to be used in clauses 16.1.1 and 16.1.2).

The manufacturer shall declare whether SMS messages are stored in the USIM and/or the ME. This shall be referred to as the SMS message store in the following tests.

Unless otherwise stated default message contents from 3GPP TS 34.108 applies for following tests.

### 16.1 Short message service point to point on CS mode

All of test cases in this clause are applied to UE supporting CS mode.

#### 16.1.1 SMS mobile terminated

16.1.1.1 Definition

16.1.1.2 Conformance requirements

An active UE shall be able to receive short message TPDU (SMS-DELIVER) at any time, independently of whether or not there is a speech or data call in progress. A report will always be returned to the SC, confirming that the UE has received the short message.

#### Reference

3GPP TS 23.040, clause 3.1.

16.1.1.3 Test purpose

To verify the ability of a UE to receive and decode the SMS where provided for the point to point service.

16.1.1.4 Method of test

#### Initial Conditions

- System simulator:
  - 1 cell, default parameters.

- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the SMS message storage shall be empty.

#### Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

Support for call control state U10.

#### Test procedure

- a) Mobile terminates establishment of Radio Resource Connection. After the completion of RRC Connection SS authenticates UE.  
  
After the SS receives SECURITY MODE COMPLETE, the SS sends a CP-DATA message. The information element of the CP-DATA message will be RP-DATA RPDU (SMS DELIVER TPDU).
- b) The SS waits a maximum of 25 s for the CP-ACK message and then a maximum of 60 s for the CP-DATA message containing the RP-ACK RPDU.
- c) The SS sends a CP-ACK to the UE within TC1M with no further CP-DATA messages and the SS initiates RRC Connection release.
- d) Steps a), b) and c) are repeated but the first CP-DATA message from the UE is not acknowledged. The second CP-DATA message from the UE is acknowledged by a CP-ACK within a time TC1M.
- e) Steps a) and b) are repeated. The SS is configured not to send CP-ACK. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 5 s after the last CP-DATA retransmission the SS then initiates the channel release. The 5 s is the appropriate time to wait to verify that the UE does not send more than the maximum allowed (3) CP-DATA retransmissions.
- f) The SMS message store shall be cleared manually by the operator.
- g) A data or speech call is established on a DTCH with the SS and the state U10 of call control is entered.  
  
The SS sends a CP-DATA message. The information element of the CP-DATA message will be RP-DATA RPDU (SMS DELIVER TPDU). The SS waits a maximum of 25 s for the CP-ACK message and then a maximum of 60 s for the CP-DATA message containing the RP-ACK RPDU.
- h) The SS sends a CP-ACK to the UE within TC1M with no further CP-DATA messages and the SS initiates RRC Connection release. The SMS message store shall be cleared manually by the operator.
- i) Steps g) and h) are repeated but the first CP-DATA message from the UE is not acknowledged. The second CP-DATA message from the UE is acknowledged by a CP-ACK within a time TC1M.
- j) Step g) is repeated. The SS is configured not to send CP-ACK. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 15 s after the last CP-DATA retransmission the SS initiates the channel release. The 15 s is the appropriate time to wait to verify that the UE does not send more than the maximum allowed (3) CP-DATA retransmissions (during a call in progress).

- k) A data or speech call is established on a DTCH with the SS and the state U10 of call control shall be entered. The speech call is cleared by the SS with a disconnect message. (The call clearing is continued on the DCCH in parallel to the following exchange of messages related to SMS).

The SS sends a CP-DATA RPDU (SMS DELIVER TPDU) message. The information element of the CP-DATA message is RP-DATA.

The SS waits a maximum of 25 s for the CP-ACK message and then a maximum of 60 s for the CP-DATA message containing the RP-ACK RPDU.

The SS sends a CP-ACK to the UE within TC1M with no further CP-DATA messages and the SS initiates channel release.

The SMS message store shall be cleared manually by the operator.

- l) A data or speech call is established with the SS and the state U10 of call control is entered. The speech call shall be cleared from the UE. (The call clearing is continued in parallel to the following exchange of messages related to SMS).

The SS sends a CP-DATA message. The information element of the CP-DATA message is RP-DATA RPDU (SMS DELIVER TPDU).

The SS waits a maximum of 25 s for the CP-ACK message and then a maximum of 60 s for the CP-DATA message containing the RP-ACK RPDU.

The SS sends a CP-ACK to the UE within TC1M with no further CP-DATA messages and the SS initiates RRC Connection release.

The SMS message store shall be cleared manually by the operator.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS 34.108
2	-->		PAGING RESPONSE	
3	<--		AUTHENTICATION REQUEST	
4	-->		AUTHENTICATION RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
8	SS			Waits max 25 s for CP-ACK
9	-->		CP-ACK	
10	SS			Waits max 60 s for RP-ACK RPDU
11	-->		CP-DATA	Contains RP-ACK RPDU
12	<--		CP-ACK	
13	UE			There should be no further CP-DATA messages until the UE aborts the RRC connection .
14	UE			The UE shall indicate that an SM has arrived.
15			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS 34.108
16	-->		PAGING RESPONSE	
17	<--		AUTHENTICATION REQUEST	
18	-->		AUTHENTICATION RESPONSE	
19	<--		SECURITY MODE COMMAND	
20	-->		SECURITY MODE COMPLETE	
21	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
22	SS			Waits max 25 s for CP-ACK
23	-->		CP-ACK	
24	SS			Waits max 60 s for RP-ACK RPDU
25	-->		CP-DATA	First CP-DATA from UE, contains RP-ACK RPDU
26	SS			First CP-DATA message not acknowledged by SS
27	-->		CP-DATA	Retransmitted CP-DATA from UE within twice TC1M, after step 25, contains RP-ACK RPDU
28	<--		CP-ACK	Second CP_DATA message is acknowledged

Step	Direction		Message	Comments
	UE	SS		
29	UE			There should be no further CP-DATA messages until the UE aborts the RRC connection.
30	UE			The UE shall indicate that an SM has arrived.
31			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS 34.108
32	-->		PAGING RESPONSE	
33	<--		AUTHENTICATION REQUEST	
34	-->		AUTHENTICATION RESPONSE	
35	<--		SECURITY MODE COMMAND	
36	-->		SECURITY MODE COMPLETE	
37	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
38	SS			Waits max 25 s for CP-ACK
39	-->		CP-ACK	
40	SS			Waits max 60 s for RP-ACK RPDU
41	-->		CP-DATA	Contains RP-ACK RPDU
42	SS			First CP-DATA message not acknowledged by SS
43			CP-DATA	Retransmitted CP-DATA from UE within twice TC1M after step 41, contains RP-ACK RPDU
44	SS			Retransmitted CP-DATA message not acknowledged by SS
45	UE			Depending upon the maximum number of CP-DATA retransmissions implemented, step 43 and 44 may be repeated.
46	<--		RRC CONNECTION RELEASE	RRC connection is released after a duration of TC1M + 5 s after the last CP-DATA retransmission.
47	-->		RRC CONNECTION RELEASE COMPLETE	
48	UE			The UE shall indicate that an SM has arrived.
49	SS			A data or speech call is established on a DTCH and the state U10 of call control is entered.
50			(void)	
51	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
52	SS			Waits max 25 s for CP-ACK
53	-->		CP-ACK	
54	SS			Waits max 60 s for RP-ACK RPDU
55	-->		CP-DATA	Contains RP-ACK RPDU
56	<--		CP-ACK	
57	<--		DISCONNECT	Disconnect the active call
58	-->		RELEASE	
58a	<		RELEASE COMPLETE	
58b	UE			There should be no further CP-DATA messages until the UE aborts the RRC connection
59	UE			The UE shall indicate that an SM has arrived.
60	UE			Clear the SMS message store
61	SS			A data or speech call is established on a DTCH and the state U10 of call control is entered.
62			(void)	
63	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
64	SS			Waits max 25 s for CP-ACK
65	-->		CP-ACK	
66	SS			Waits max 60 s for RP-ACK RPDU
67	-->		CP-DATA	First CP-DATA from UE, contains RP-ACK RPDU
68	SS			First CP-DATA message not acknowledged by SS
69	-->		CP-DATA	Retransmitted CP-DATA message within twice TC1M after step 67, contains RP-ACK RPDU
70	<--		CP-ACK	Second CP-DATA message is acknowledged
71	<--		DISCONNECT	Disconnect the active call
72	-->		RELEASE	
73	<		RELEASE COMPLETE	
74	UE			There should be no further CP-DATA messages until the UE aborts the RRC connection
75	UE			The UE shall indicate that an SM has arrived.
76	UE			Clear the SMS message store
77	SS			A data or speech call is established on a DTCH and the state U10 of call control is entered.
78			(void)	

Step	Direction		Message	Comments
	UE	SS		
79	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) Waits max 25 s for CP-ACK
80		SS		
81	-->		CP-ACK	
82		SS		Waits max 60 s for RP-ACK RPDU First CP-DATA from UE, contains RP-ACK RPDU First CP-DATA message not acknowledged by SS Transmitted CP-DATA message within twice TC1M after step 83, contains RP-ACK RPDU Retransmitted CP-DATA message not acknowledged by SS Depending on the maximum number of CP-DATA retransmissions implemented, step 85-86 may be repeated. The maximum number of retransmissions may however not exceed three. Disconnect the active call
83	-->		CP-DATA	
84		SS		
85	-->		CP-DATA	
86		SS		
87		UE		
87a	←		DISCONNECT	
87b	→		RELEASE	
87c	←		RELEASE COMPLETE	
88			(void)	
89		UE		UE aborts the RRC connection
90		UE		The UE shall indicate that an SM has arrived.
91		UE		Clear the SMS message store
92		SS		A data or speech call is established on a DTCH and the state U10 of call control is entered.
93			(void)	
94	<--		DISCONNECT	The speech call is cleared by the SS. The call clearing is continued in parallel to the following exchange of messages related to SMS.
95	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
96		SS		Waits max 25 s for CP-ACK
97	-->		CP-ACK	
98		SS		Waits max 60 s for RP-ACK RPDU
99	-->		CP-DATA	Contains RP-ACK RPDU
100	<--		CP-ACK	
101		UE		There should be no further CP-DATA messages until the UE aborts the RRC connection.
102		UE		The UE shall indicate that an SM has arrived.
103		UE		Clear the SMS message store
104		SS		A data or speech call is established on a DTCH and the state U10 of call control is entered.
105			(void)	
106	-->		DISCONNECT	The speech call is cleared from the UE. The call clearing is continued in parallel to the following exchange of messages related to SMS.
107	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
108	<--		RELEASE	This message is likely to be sent before all of the CP-DATA message has been sent on the DCCH.
109	-->		RELEASE COMPLETE	
110	-->		CP-ACK	shall be sent before 25 s after the start of step 107
111		SS		Waits max 60 s for RP-ACK RPDU
112	-->		CP-DATA	Contains RP-ACK RPDU
113	<--		CP-ACK	
114		UE		There should be no further CP-DATA messages until the UE aborts the RRC connection.
115		UE		The UE shall indicate that an SM has arrived.
116		UE		Clear the SMS message store

NOTE: Time values for SS wait time are chosen sufficiently high to be sure that the UE has enough time to respond to the different messages.

## Specific Message Contents

## SMS DELIVER TPDU

Information element	Comment Value
TP-UDL	160
TP-UD (140 octets)	text of message (160 characters)
NOTE: The 160 characters in TP-UD shall include at least one occurrence of each character in the default alphabet (see 3GPP TS 23.038, clause 6.2.1).	

## 16.1.1.5 Test requirements

After step 7 UE shall receive SMS-DELIVER TPDU and send CP-ACK within 25 s and CP-DATA containing RP-ACK within 60 s.

After step 25 UE shall retransmit CP-DATA containing RP-ACK within twice TC1M.

After step 30 UE shall indicate that an SM has arrived.

After step 43 UE shall repeat CP-DATA retransmissions as many times as the decided maximum number.

After step 48 UE shall indicate that an SM has arrived.

After step 51 UE shall receive SMS-DELIVER TPDU and send CP-ACK within 25 s and CP-DATA containing RP-ACK within 60 s.

After step 67 UE shall retransmit CP-DATA containing RP-ACK within twice TC1M.

After step 74 UE shall indicate that an SM has arrived.

After step 79 UE shall repeat CP-DATA retransmissions as many times as the decided maximum number.

After step 90 UE shall indicate that an SM has arrived.

After step 95 UE shall receive SMS-DELIVER TPDU and send CP-ACK within 25 s and CP-DATA containing RP-ACK within 60 s.

After step 107 UE shall receive SMS-DELIVER TPDU and send CP-ACK within 25 s and CP-DATA containing RP-ACK within 60 s.

## 16.1.2 SMS mobile originated

## 16.1.2.1 Definition

## 16.1.2.2 Conformance requirements

An active UE shall be able to submit short message TPDU (SMS-SUBMIT) at any time, independently of whether or not there is a speech or data call in progress.

## Reference

3GPP TS 23.040 clause 3.1.

## 16.1.2.3 Test purpose

To verify that the UE is able to correctly send a short message where the SMS is provided for the point to point service.

## 16.1.2.4 Method of test

## Initial Conditions

- System simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the SMS message storage shall be empty.

## Related ICS/IXIT Statements

Support for Short message MO/PP.

Support for state U10 of call control.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

Maximum length (characters) of a mobile originated short message.

## Test procedure

- a) The UE shall be set up to send a SM to the SS. The SS responds to RRC CONNECTION REQUEST by allocating a CCCH. The SS receives RRC CONNECTION SETUP COMPLETE on DCCH and then performs the authentication.
- b) After receiving SECURITY MODE COMMAND UE shall send SECURITY COMMAND COMPLETE.
- c) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the UE with a CP-ACK message within TC1M followed by a CP-DATA message containing the correct RP-ACK RPDU. The SS waits a maximum of 25 s for the CP-ACK message.
- d) The SS sends a channel release message to the UE.
- e) Steps a) and b) are repeated. The SS is configured not to send the CP-ACK message. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 5 s after the last CP-DATA retransmission the UE initiates channel release. The 5 s is the appropriate time to wait to verify that the UE does not send more than the maximum CP-DATA retransmissions.
- f) Steps a) and b) are repeated. On receipt of the CP-DATA from the UE the SS sends a CP-ERROR message within TC1M containing a "Network Failure" cause. Then the SS initiates channel release.
- g) A data or speech call is established with the SS and the state U10 of call control is entered. The UE is set up to send an SM to the SS. After the reception of the CM SERVICE REQUEST, the SS sends a CM SERVICE ACCEPT message.
- h) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the UE with a CP-ACK message within TC1M followed by a CP-DATA message containing the correct RP-ACK RPDU. The SS waits a maximum of 25 s for the CP-ACK message. Then the SS sends a channel release message to the UE.
- i) Step g) is repeated. The SS is configured not to send the CP-ACK message. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 15 s after the last CP-DATA retransmission the SS initiates channel release. The 15 s is the appropriate time to wait to verify that the UE does not send more than the maximum CP-DATA retransmissions (during a call in progress).
- j) (void)

- k) The UE is set up to send an SM to the SS. On receipt of the CM SERVICE REQUEST the SS sends a CM SERVICE REJECT message with the reject cause set to "Service Option not supported" or "Service Option temporarily out of order". After 5 s the SS initiates channel release.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION	BCCH
2	-->		RRC CONNECTION REQUEST	CCCH
3	<--		RRC CONNECTION SETUP	CCCH
4	-->		RRC CONNECTION SETUP COMPLETE	DCCH
5	-->		CM SERVICE REQUEST	
6	<--		AUTHENTICATION REQUEST	
7	-->		AUTHENTICATION RESPONSE	
8	<--		SECURITY MODE COMMAND	
9	-->		SECURITY MODE COMPLETE	
10	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
11	<--		CP-ACK	Sent within TC1M after step 10
12	<--		CP-DATA	Contains RP-ACK RPDU
13	SS			Waits max 25 s for CP-ACK
14	-->		CP-ACK	
15	<--		RRC CONNECTION RELEASE	RRC connection is released.
16	-->		RRC CONNECTION RELEASE COMPLETE	
17	<--		SYSTEM INFORMATION	BCCH
18	-->		RRC CONNECTION REQUEST	CCCH
19	<--		RRC CONNECTION SETUP	CCCH
20	-->		RRC CONNECTION SETUP COMPLETE	DCCH
21			(void)	
22	-->		CM SERVICE REQUEST	
23	<--		AUTHENTICATION REQUEST	
24	-->		AUTHENTICATION RESPONSE	
25	<--		SECURITY MODE COMMAND	
26	-->		SECURITY MODE COMPLETE	
27	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
28	SS			SS configured not to send CP-ACK
29	-->		CP-DATA	Retransmitted CP-DATA message within twice TC1M after step 27
30	UE			Depending on the maximum number of CP-DATA retransmissions implemented, step 29 may be repeated. The maximum number of retransmissions may however not exceed three.
30a	UE			The UE aborts the RRC connection
31			(void)	
32			(void)	
33	<--		SYSTEM INFORMATION	BCCH
34	-->		RRC CONNECTION REQUEST	CCCH
35	<--		RRC CONNECTION SETUP	CCCH
36	-->		RRC CONNECTION SETUP COMPLETE	DCCH
37	-->		CM SERVICE REQUEST	
38	<--		AUTHENTICATION REQUEST	
39	-->		AUTHENTICATION RESPONSE	
40	<--		SECURITY MODE COMMAND	
41	-->		SECURITY MODE COMPLETE	
42	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
43	<--		CP-ERROR	Sent within TC1M containing "Network Failure" cause.
44	<--		RRC CONNECTION RELEASE	RRC CONNECTION is released.
45	-->		RRC CONNECTION RELEASE COMPLETE	
46	SS			A data or speech call is established on a DTCH and the state U10 of call control is entered.
47	UE			The UE is set up to send an SM

Step	Direction		Message	Comments
	UE	SS		
48	-->		CM SERVICE REQUEST	CM service type set to "short message "
49	<--		CM SERVICE ACCEPT	
50	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
51	<--		CP-ACK	Sent within TC1M after step 50
52	<--		CP-DATA	Contains RP-ACK RPDU
53	SS			Waits max 25 s for CP-ACK
54	-->		CP-ACK	
55	<--		RRC CONNECTION RELEASE	RRC CONNECTION is released.
56	-->		RRC CONNECTION RELEASE COMPLETE	
57	SS			A data or speech call is established on a DTCH and the state U10 of call control is entered.
58	-->		CM SERVICE REQUEST	CM service type set to "short message "
59	<--		CM SERVICE ACCEPT	
60	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
61	SS			SS configured not to send CP-ACK
62	-->		CP-DATA	Transmitted CP-DATA message within twice TC1M after step 60
63	UE			Depending on the maximum number of CP-DATA retransmissions implemented, step 62 may be repeated. The maximum number of retransmissions may however not exceed three.
64	<--		RRC CONNECTION RELEASE	RRC CONNECTION is released after a duration of TC1m + 15 s after the last CP-DATA retransmission.
65	-->		RRC CONNECTION RELEASE COMPLETE	
66-78			(void)	
79	-->		RRC CONNECTION REQUEST	
80	<--		RRC CONNECTION SETUP	
81	-->		RRC CONNECTION SETUP COMPLETE	
82	-->		CM SERVICE REQUEST	. CM service type set to "short message transfer"
83	<--		CM SERVICE REJ	Reject cause set to "Service Option not supported" or "Service Option temporarily out of order"
84			(void)	
85	<--		RRC CONNECTION RELEASE	Sent 5 s after CM SERVICE REJ
86	-->		RRC CONNECTION RELEASE COMPLETE	
NOTE: Time values for SS wait times are chosen sufficiently high to be sure that the UE has enough time to respond to the different messages.				

## Specific Message Contents

### SMS SUBMIT TPDU

Information element	Comment/Value
TP-UDL	as applicable
TP-UD (140 octets max)	maximum number of characters (text of message) as defined by the manufacturer (see ICS/IXIT)

#### 16.1.2.5 Test requirements

After step 9 UE shall send a CP-DATA containing RP-data. The RP-DATA shall contain SMS SUBMIT TPDU.

After step 27 UE shall retransmit a CP-DATA containing RP-data. The RP-DATA shall contain SMS SUBMIT TPDU.

After step 44 UE shall send the RRC CONNECTION RELEASE COMPLETE.

After step 49 UE shall send a CP-DATA containing RP-data. The RP-DATA shall contain SMS SUBMIT TPDU.

After step 60 UE shall repeat CP-DATA retransmissions as many times as the decided maximum number.

After step 83 UE shall not send CP-DATA.

### 16.1.3 Test of memory full condition and memory available notification:

The Memory Available Notification provides a means for the UE to notify the network that it has memory available to receive one or more short messages. The SMS status field in the USIM contains status information on the "memory available" notification flag.

#### 16.1.3.1 Definition

#### 16.1.3.2 Conformance requirement

1. When a mobile terminated message is Class 2, the UE shall ensure that the message has been transferred to the SMS data field in the USIM before sending an acknowledgement to the SC. The UE shall return a protocol error message if the short message cannot be stored in the USIM and there is other short message storage available in the UE. If all the short message storage in the UE is already in use, the UE shall return "memory capability exceeded".
2. When the UE rejects a short message due to lack of available memory capability the need to transfer notification shall be stored in the USIM.
3. If the memory capability becomes available because memory is cleared, the value of the memory capability exceeded notification flag in the USIM is read. If the flag is set, the UE notifies the network that memory capability is now available. After a positive acknowledgement from the network, the UE unsets the memory capability exceeded notification flag in the USIM.

#### References

- 3GPP TS 23.040 clause 9.2.3.10, 3GPP TS 23.038 clause 4.
- 3GPP TS 23.040 clause 10.3 (operation 14).
- 3GPP TS 23.040 clause 10.3 (operation 14).

#### 16.1.3.3 Test purpose

1. To verify that the UE sends the correct acknowledgement when its memory in the USIM becomes full.
2. To verify that the UE sends the correct acknowledgement when its memory in the ME and the USIM becomes full, and sets the "memory exceeded" notification flag in the USIM.
3. To verify that the UE performs the "memory available" procedure when its message store becomes available for receiving short messages, and only at this moment.

#### 16.1.3.4 Method of test

##### Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the SMS message storage shall be empty;
  - the UE shall be connected to the USIM simulator. The following shall be present in the USIM simulator:
    - EF<sub>SMS</sub> with at least one record;
    - EF<sub>SMSstatus</sub> with SMS "Memory Cap. Exceed" notification flag set to "memory available";

- Service no. 10 (SMS) in EF<sub>UST</sub> set to allocated and activated.
- for storing of Class 1 Short Messages the UE shall be set up to store Short Messages in the ME memory (by way of MMI, as described in ICS/IXIT statement).

### Related ICS/IXIT Statements

Support for Short message MT/PP.

Whether SMS messages are stored in the USIM and/or the ME.

The value of timer TC1M.

### Test procedure

- a) step a) of clause 16.1.5.3 (test of Class 2 Short Messages) is repeated until the UE sends a negative acknowledgement (RP-ERROR). The USIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the USIM.
- b) a Class 1 Short Message is sent to the UE.
- c) step b) is repeated until the UE sends a negative acknowledgement (RP-ERROR). The USIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the USIM.
- d) a Short Message is sent to the UE with the DCS field of the SMS-DELIVER TPDU set to 0.
- e) the SS prompts the operator to read a short message and to remove it from the message store of the UE.
- f) the SS waits for a RRC CONNECTION REQUEST from the UE, and sends a RRC CONNECTION SETUP.
- g) after the SS receives a RRC CONNECTION SETUP COMPLETE, the SS authenticates the UE and activates ciphering.
- h) the SS answers to the RP-SMMA from the UE with a CP-DATA containing a RP-ACK RPDU.
- i) after the UE has acknowledged the CP-DATA with a CP-ACK, the SS releases the RRC connection. The USIM simulator shall indicate if the "memory capability exceeded" notification flag has been unset on the USIM.
- j) step e) is repeated.

### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108  Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 2 Short Message Waits max 25 s for CP-ACK  Waits max 60 s for RP-ACK RPDU Contains RP-ACK RPDU Within TC1M after step 11 RRC connection is released. Step 1-13 is repeated until UE sends a negative acknowledgement (RP-ERROR) in step 11. The RP-ERROR RPDU cause field shall be "Protocol error, unspecified" if there is message capability in the USIM, or "Memory capability exceeded" if there is no message capability in the USIM. If the total memory store of the UE is full, the ME shall set the "memory capability exceeded" notification flag on the USIM.
2	-->		PAGING RESPONSE	
3	<--		AUTHENTICATION REQUEST	
4	-->		AUTHENTICATION RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	
8		SS		
9	-->		CP-ACK	
10		SS		
11	-->		CP-DATA	
12	<--		CP-ACK	
13	<--		RRC CONNECTION RELEASE	

Step	Direction		Message	Comments
	UE	SS		
14	-->		RRC CONNECTION RELEASE COMPLETE	
15			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
16	-->		PAGING RESPONSE	
17	<--		AUTHENTICATION REQUEST	
18	-->		AUTHENTICATION RESPONSE	
19	<--		SECURITY MODE COMMAND	
20	-->		SECURITY MODE COMPLETE	
21	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 1 Short Message
22	SS			Waits max 25 s for CP-ACK
23	-->		CP-ACK	
24	SS			Waits max 60 s for RP-ACK RPDU
25	-->		CP-DATA	Shall contain RP-ACK RPDU if there is memory capability in the ME. If not it shall contain RP-ERROR RPDU which cause field shall be "memory capability exceeded". If the total memory store of the UE now becomes full at this step, the ME shall set the "memory cap. exceed" notification flag on the USIM.
26	<--		CP-ACK	Within TC1M after step 25
27	<--		RRC CONNECTION RELEASE	RRC connection is released. Step 15-27 is repeated until the UE sends an RP-ERROR. The USIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the USIM.
28	-->		RRC CONNECTION RELEASE COMPLETE	
29			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
30	-->		PAGING RESPONSE	
31	<--		AUTHENTICATION REQUEST	
32	-->		AUTHENTICATION RESPONSE	
33	<--		SECURITY MODE COMMAND	
34	-->		SECURITY MODE COMPLETE	
35	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) with TP-DCS set to 0
36	SS			Waits max 25 s for CP-ACK
37	-->		CP-ACK	
38	SS			Waits max 60 s for RP-ACK RPDU
39	-->		CP-DATA	Shall contain RP-ERROR RPDU with error cause "memory capability exceeded".
40	<--		CP-ACK	Within TC1M after step 39
41	<--		RRC CONNECTION RELEASE	RRC connection is released.
42	-->		RRC CONNECTION RELEASE COMPLETE	
43	SS			Prompts the operator to remove one of the short messages from the message store of the UE.
44	<--		SYSTEM INFORMATION	BCCH
45	-->		RRC CONNECTION REQUEST	CCCH
46	<--		RRC CONNECTION SETUP	CCCH
47	-->		RRC CONNECTION SETUP COMPLETE	DCCH
48	-->		CM SERVICE REQUEST	CM service type information element is set to "Short message transfer".
49	<--		CM SERVICE ACCEPT	
50	-->		CP-DATA	Contains RP-SMMA RPDU
51	<--		CP-ACK	
52	<--		CP-DATA	Contains RP-ACK RPDU
53	-->		CP-ACK	Acknowledge of CP-DATA containing the RP-ACK RPDU. The ME shall unset the "memory capability exceeded" notification flag on the USIM.
54	<--		RRC CONNECTION RELEASE	RRC connection is released. The USIM simulator shall indicate if the "memory capability exceeded" notification flag has been unset on the USIM.

Step	Direction		Message	Comments
	UE	SS		
55	-->		RRC CONNECTION RELEASE COMPLETE	
56		SS		Prompts the operator to remove one of the short messages from the message store of the UE. Shall not attempt to send a RP-SMMA RPDU. This is verified by checking that the UE does not send a CHANNEL REQUEST message with the establishment cause "Other services which can be completed with an SDCCH"
57		UE		
NOTE: Time values for SS wait time are chosen sufficiently high to be sure that the UE has enough time to respond to the different messages.				

### Specific Message Contents

#### SMS-DELIVER TPDU in step 7

Information element	Comment Value
TP-DCS	default alphabet, class 2 "11110010"B

#### SMS-DELIVER TPDU in step 21

TP-DCS	default alphabet, class 1 "11110001"B
--------	---------------------------------------

#### SMS-DELIVER TPDU in step 35

TP-DCS	default alphabet "00000000"B
--------	------------------------------

### 16.1.3.5 Test requirements

After UE sends a negative acknowledgement (RP-ERROR) in step 11, the USIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the USIM.

After UE sends a negative acknowledgement (RP-ERROR) in step 23, the USIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the USIM.

After step 53 the ME shall unset the "memory capability exceeded" notification flag on the USIM.

After step 56 UE shall not attempt to send a RP-SMMA RPDU.

## 16.1.4 Test of the status report capabilities and of SMS-COMMAND:

This test applies to UEs which support the status report capabilities.

### 16.1.4.1 Definition

### 16.1.4.2 Conformance requirement

The SMS offers the SC the capabilities of informing the UE of the status of a previously sent mobile originated short message. This is achieved by the SC returning a status report TPDU (SMS-STATUS-REPORT) to the originating UE.

SMS-COMMAND enables an UE to invoke an operation at the SC.

The UE shall increment TP-MR by 1 for each SMS-SUBMIT or SMS-COMMAND being submitted.

### References

- 3GPP TS 23.040 clause 3.2.9.

- 3GPP TS 23.040 clause 9.2.3.6.

#### 16.1.4.3 Test purpose

- 1) To verify that the UE is able to accept a SMS-STATUS-REPORT TPDU.
- 2) To verify that the UE is able to use the SMS-COMMAND functionality correctly and sends an SMS-COMMAND TPDU with the correct TP-Message-Reference.

#### 16.1.4.4 Method of test

##### Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated".

##### Related ICS/IXIT Statements

Support of SMS MO/PP and MT/PP.

##### Test procedure

- a) The UE is made to send a Mobile Originated short message setting TP-SRR as in steps a) to d) of test 16.1.2 (SMS Mobile originated).
- b) The SS sends a CP-DATA message containing a RP-DATA RPDU itself containing an SMS-STATUS-REPORT TPDU.
- c) The SS sends a RRC CONNECTION RELEASE message.
- d) The UE is made to send an SMS-COMMAND message enquiring about the previously submitted short message.
- e) void.
- f) The SS acknowledges the CP-DATA message from the UE with a CP-ACK followed by a CP-DATA message containing an RP-ACK RPDU
- g) After receiving the CP-ACK from the UE, the SS releases the RRC connection by using a RRC CONNECTION RELEASE message.
- h) The UE is made to send an SMS-COMMAND message requiring to delete the previously submitted short message.
- i) steps e) to g) are repeated.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		<--	SYSTEM INFORMATION	BCCH
2		-->	RRC CONNECTION REQUEST	CCCH
3		<--	RRC CONNECTION SETUP	CCCH
4		-->	RRC CONNECTION SETUP COMPLETE	DCCH
5		-->	CM SERVICE REQUEST	
6		<--	AUTHENTICATION REQUEST	
7		-->	AUTHENTICATION RESPONSE	
8		<--	SECURITY MODE COMMAND	
9		-->	SECURITY MODE COMPLETE	
10		-->	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
11		<--	CP-ACK	Sent within TC1M after step 10
12		<--	CP-DATA	Contains RP-ACK RPDU
13		SS		Waits max 25 s for CP-ACK
14		-->	CP-ACK	
15		<--	RRC CONNECTION RELEASE	RRC connection is released.
16		-->	RRC CONNECTION RELEASE COMPLETE	
17			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
18		-->	PAGING RESPONSE	
19		<--	AUTHENTICATION REQUEST	
20		-->	AUTHENTICATION RESPONSE	
21		<--	SECURITY MODE COMMAND	
22		-->	SECURITY MODE COMPLETE	
23		<--	CP-DATA	Contains RP-DATA RPDU (SMS-STATUS-REPORT TPDU)
24		-->	CP-ACK	
25		-->	CP-DATA	Contains RP-ACK RPDU
26		<--	CP-ACK	
27		<--	RRC CONNECTION RELEASE	RRC connection is released.
28		-->	RRC CONNECTION RELEASE COMPLETE	
29	UE			The UE is made to send an SMS-COMMAND message enquiring about the previously submitted SM
30		<--	SYSTEM INFORMATION	BCCH
31		-->	RRC CONNECTION REQUEST	CCCH
32		<--	RRC CONNECTION SETUP	CCCH
33		-->	RRC CONNECTION SETUP COMPLETE	DCCH
34		-->	CM SERVICE REQUEST	
35		<--	AUTHENTICATION REQUEST	
36		-->	AUTHENTICATION RESPONSE	
37		<--	SECURITY MODE COMMAND	
38		-->	SECURITY MODE COMPLETE	
39		-->	CP-DATA	Contains RP-DATA RPDU (SMS-COMMAND TPDU) which shall contain the correct TP-MR
40		<--	CP-ACK	
41		<--	CP-DATA	Contains RP-ACK RPDU
42		-->	CP-ACK	
43		<--	RRC CONNECTION RELEASE	RRC connection is released.
44		-->	RRC CONNECTION RELEASE COMPLETE	
45	UE		The UE is made to send an SMS- COMMAND	message requiring to delete the previously submitted SM.
46		-->	RRC CONNECTION REQUEST	CCCH
47		<--	RRC CONNECTION SETUP	CCCH
48		-->	RRC CONNECTION SETUP COMPLETE	DCCH
49		-->	CM SERVICE REQUEST	
50		<--	AUTHENTICATION REQUEST	

Step	Direction		Message	Comments	
	UE	SS			
51	-->		AUTHENTICATION RESPONSE	Contains RP-DATA RPDU (SMS-COMMAND TPDU) which shall contain the correct TP-MR	
52	<--		SECURITY MODE COMMAND		
53	-->		SECURITY MODE COMPLETE		
			.		
54	-->		CP-DATA		
55	<--		CP-ACK		
56	<--		CP-DATA		Contains RP-ACK RPDU
57	-->		CP-ACK		
58	<--		RRC CONNECTION RELEASE		RRC connection is released.
59	-->		RRC CONNECTION RELEASE COMPLETE		

## Specific Message Contents

## SMS SUBMIT TPDU

Information element	Comment Value
TP-SRR	status report is requested "1"B

## SMS-STATUS-REPORT TPDU (SS to UE in step 23):

Information element	Comment Value
TP-MR	same as previous SMS-SUBMIT
TP-MMS	no more messages "1"B
TP-SRQ	result of SMS-SUBMIT "0"B
TP-RA	same as the Destination address of the SMS-SUBMIT
TP-ST	SM received "00000000"B

## first SMS-COMMAND TPDU (UE to SS in step 39)

Information element	Comment Value
TP-MR	TP-MR in previous SMS-SUBMIT plus "1"
TP-SRR	status report requested "1"B
TP-CT	Enquiry relating to previously submitted short message "00000000"B
TP-MN	not checked (TP-MR in previous SMS-SUBMIT)

## second SMS-COMMAND TPDU (UE to SS in step 54)

Information element	Comment Value
TP-MR	TP-MR in previous SMS-COMMAND plus "1"
TP-CT	Delete previously submitted short message "00000010"B
TP-MN	not checked (TP-MR in previous SMS-SUBMIT)

## 16.1.4.5 Test requirements

After step 23 UE accept a SMS-STATUS-REPORT TPDU.

After step 38 UE shall send a SMS-COMMAND TPDU with the correct TP-Message-Reference.

After step 53 UE shall send a SMS-COMMAND TPDU with the correct TP-Message-Reference.

## 16.1.5 Test of message class 0 to 3

### 16.1.5.1 Short message class 0

#### 16.1.5.1.1 Definition

#### 16.1.5.1.2 Conformance requirement

When a mobile terminated message is class 0 and the UE has the capability of indicating short messages, the UE shall indicate the message immediately and send an acknowledgement to the SC when the message has successfully reached the UE irrespective of whether there is memory available in the USIM or ME. The message shall not be automatically stored in the USIM or ME.

#### References

3GPP TS 23.038 clause 4.

#### 16.1.5.1.3 Test purpose

To verify that the UE will accept and indicate but not store a class 0 message, and that it will accept and indicate a class 0 message if its message store is full.

NOTE: failure of this test in a UE could cause it to reject a class 0 message when its SMS memory becomes full. This could lead to unwanted repetitions between the UE and the service centre.

#### 16.1.5.1.4 Method of test

##### Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the UE message store shall be empty.

##### Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

##### Test procedure

- a) The SS sends a class 0 message by using the method described in step a) of clause 16.1.1 but with the TPDU described in this clause.
- b) The UE message store shall be filled (for example by using the method of clause 16.1.3 test of the memory available notification) with the same SMS-DELIVER TPDU except that TP-DCS is set to class 1.
- c) The SS sends a class 0 message as in step a).

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108  Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 0 Short Message  Contains RP-ACK RPDU.  The content of the short message shall be indicated by the ME. The UE shall not store the message. This can be checked by verifying that it is impossible to retrieve any short messages from the UE message store. The UE message store shall be filled (for example by using the method of 16.1.3) with Class 1 SMS-DELIVER TPDU.  See 3GPP TS34.108  Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 0 Short Message  Contains RP-ACK RPDU.  The content of the short message shall be indicated by the ME.
2	-->		PAGING RESPONSE	
3	<--		AUTHENTICATION REQUEST	
4	-->		AUTHENTICATION RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	
8	-->		CP-ACK	
9	-->		CP-DATA	
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13		UE		
14		SS		
15			Mobile terminated establishment of Radio Resource Connection	
16	-->		PAGING RESPONSE	
17	<--		AUTHENTICATION REQUEST	
18	-->		AUTHENTICATION RESPONSE	
19	<--		SECURITY MODE COMMAND	
20	-->		SECURITY MODE COMPLETE	
21	<--		CP-DATA	
22	-->		CP-ACK	
23	-->		CP-DATA	
24	<--		CP-ACK	
25	<--		RRC CONNECTION RELEASE	
26	-->		RRC CONNECTION RELEASE COMPLETE	
27		UE		

Specific Message Contents

SMS-DELIVER TPDU (containing a class 0 message) (SS to UE)

Information element	Comment Value
TP-DCS	default alphabet, class 0 "1111 0000"B

SMS-DELIVER TPDU (containing a class 1 message to fill the UE message store) (SS to UE)

Information element	Comment Value
TP-DCS	default alphabet, class 1 "1111 0001"B

16.1.5.1.5 Test requirements

After step 7 UE shall accept and indicate but not store a class 0 message.

After step 21 UE shall accept and indicate a class 0 message.

### 16.1.5.2 Test of class 1 short messages

This test shall apply to UEs which support:

- storing of received Class 1 Short Messages; and
- indicating of stored Short Messages.

#### 16.1.5.2.1 Definition

#### 16.1.5.2.2 Conformance requirement

When a mobile terminated message is class 1, the UE shall send an acknowledgement to the SC when the message has successfully reached the UE and can be stored, either in the ME or in the USIM.

#### References

3GPP TS 23.038 clause 4.

#### 16.1.5.2.3 Test purpose

This procedure verifies that the UE acts correctly on receiving a class 1 message, i.e. that it stores the message in the ME or USIM and sends an acknowledgement (at RP and CP-Layer).

#### 16.1.5.2.4 Method of test

##### Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the UE message store shall be empty;
  - for storing of class 1 Short Messages, the UE shall be set up to store Short Messages in the ME memory (by way of MMI, as described in ICS/IXIT statement).

##### Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

##### Test procedure

- a) The SS delivers a Short Message of class 1 to the UE as specified in clause 16.1.1, step a).
- b) The Short Message is recalled (e.g. by means of the MMI).

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108  Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 1 Short Message  Contains RP-ACK RPDU.  The short message shall be recalled and indicated at the UE.
2	-->		PAGING RESPONSE	
3	<--		AUTHENTICATION REQUEST	
4	-->		AUTHENTICATION RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	
8	-->		CP-ACK	
9	-->		CP-DATA	
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13		UE		

Specific Message Contents

SMS-DELIVER TPDU (containing a class 1 message) (SS to UE)

Information element	Comment	Value
TP-DCS	default alphabet, class 1	"1111 0001"B

#### 16.1.5.2.5 Test requirements

After step 7 UE shall store the message in the ME or USIM and send an acknowledgement.

#### 16.1.5.3 Test of class 2 short messages

##### 16.1.5.3.1 Definition

Class 2 Short Messages are defined as USIM specific, and the UE shall ensure that a message of this class is stored on the USIM.

##### 16.1.5.3.2 Conformance requirement

When a mobile terminated message is Class 2, the UE shall ensure that the message has been correctly transferred to the SMS data field in the USIM before sending an acknowledgement to the SC. The UE shall return a "protocol error, unspecified" error message if the short message cannot be stored in the USIM and there is other short message storage available at the UE. If all the short message storage at the UE is already in use, the UE shall return "memory capacity exceeded".

##### Reference(s)

3GPP TS 23.040 clause 9.2.3.10.

3GPP TS 23.038 clause 4.

3GPP TS 34.108 clause 8.3.2.28.

##### 16.1.5.3.3 Test purpose

This procedure verifies that the UE acts correctly on receiving a class 2 message, i.e. that it stores the message correctly in the USIM, and if this is not possible, returns a protocol error message, with the correct error cause, to the network.

There are 2 cases:

- 1) if the UE supports storing of short messages in the USIM and in the ME, and storage in the ME is not full, and the short message cannot be stored in the USIM, the error cause shall be "protocol error, unspecified";
- 2) if the UE supports storing of short messages in the USIM and not in the ME, and storage in the ME is not full, and the short message cannot be stored in the USIM, the error cause shall be "memory capacity exceeded".

NOTE: If the UE supports storing of short messages in the USIM and the ME, and storage in the ME is full, and the short message cannot be stored in the USIM, the error cause shall be "memory capacity exceeded". This case is not tested in this test.

#### 16.1.5.3.4 Method of test

##### Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the ME message store shall be empty;
  - the ME shall be connected to the USIM simulator. The following shall be present in the USIM simulator:
    - EF<sub>SMS</sub> with at least two free records and one full record;
    - EF<sub>SMSstatus</sub> with SMS "Memory Cap. Exceed" notification flag set to "memory available";
    - Service no. 10 (SMS) in EF<sub>UST</sub> set to allocated and activated;
    - for storing of Class 1 Short Messages the UE shall be set up to store Short Messages in the ME memory (by way of MMI, as described in ICS/IXIT statement).

##### Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

##### Test procedure

- a) The SS delivers a Short Message of class 2 to the UE as specified in clause 16.1.1, step b).
- b) Following an attempt by the ME to store the short message in a free record of EF<sub>SMS</sub> in the USIM, the USIM simulator returns the status response "OK" ("90 00").
- c) Step a) is repeated.
- d) Following an attempt by the ME to store the short message in a free record of EF<sub>SMS</sub> in the USIM, the USIM simulator returns the status response "memory problem" ("92 40").
- e) The USIM simulator indicates if an attempt was made in steps a) and c) to store the messages and if the messages are stored according to the requirement.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<		Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		PAGING RESPONSE	
3	<--		AUTHENTICATION REQUEST	
4	-->		AUTHENTICATION RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 2 Short Message
8	-->		CP-ACK	
9	ME			The ME shall correctly store the short message in a free record of EFSMS in the USIM, i.e. -the ME shall use a free record - the first byte of the record shall indicate "message received by UE from network" <ul style="list-style-type: none"> <li>- the TS-Service-Centre-Address shall be correctly stored</li> <li>- the TPDU shall be identical to that sent by the SS</li> <li>- bytes following the TPDU shall be set to "FF"</li> </ul>
10	USIM			The USIM simulator returns the status response "OK" ("90 00"). The USIM simulator shall indicate if an attempt was made by the ME to store the short message in the USIM.
11	-->		CP-DATA	Contains RP-ACK RPDU.
12	<--		CP-ACK	
13	<--		RRC CONNECTION RELEASE	
14	-->		RRC CONNECTION RELEASE COMPLETE	
15			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
16	-->		PAGING RESPONSE	
17	<--		AUTHENTICATION REQUEST	
18	-->		AUTHENTICATION RESPONSE	
19	<--		SECURITY MODE COMMAND	
20	-->		SECURITY MODE COMPLETE	
21	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 2 Short Message
22	-->		CP-ACK	
23	ME			The ME shall attempt to store the short message in a free record of EFSMS in the USIM.
24	USIM			The USIM simulator returns the status response "memory problem" ("92 40"). The USIM simulator shall indicate if an attempt was made by the ME to store the short message in the USIM.
25	-->		CP-DATA	Contains RP-ERROR RPDU with error cause "protocol error, unspecified" if the UE supports storing of short messages in the ME, or error cause "memory capacity exceeded" if not.
26	<--		CP-ACK	
27	<--		RRC CONNECTION RELEASE	
28	-->		RRC CONNECTION RELEASE COMPLETE	

## Specific Message Contents

## SMS-DELIVER TPDU (containing a class 2 message) (SS to UE)

Information element	Comment Value
TP-DCS	default alphabet, class 2 "1111 0010"B

#### 16.1.5.3.5 Test requirements

After step 10 UE shall confirm that the short message is stored in the USIM and send CP-DATA containing RP-ACK RPDU.

After step 24 UE shall confirm that the short message cannot be stored in the USIM and send CP-DATA containing RP-ERROR RPDU. If UE supports storing of short message in the ME, the error cause of RP-ERROR RPDU shall be "protocol error, unspecified", and if not the error cause of RP-ERROR RPDU shall be "memory capacity exceeded"

#### 16.1.5.4 Test of class 3 short messages

For further study.

### 16.1.6 Test of short message type 0 (R99 and REL-4 UE)

#### 16.1.6.1 Definition and applicability

This tests that the UE correctly acknowledges the receipt of the short message type 0 to the SC in Circuit Switched mode. It is highly recommended that the UE discards the contents of the short message type 0.

This test shall apply to all R99 and REL-4 UEs supporting receipt of short messages in CS mode.

#### 16.1.6.2 Conformance requirement

When a mobile terminated message is type 0, the UE shall acknowledge receipt of the short message to the SC but may discard its contents.

Note: It is highly recommended that the UE discards the type 0 short message. This means that the UE is able to receive the type 0 short message irrespective of whether there is memory available in the (U)SIM or ME or not, the UE does not indicate the receipt of the type 0 short message to the user, and the message is not stored in the (U)SIM or ME.

#### Reference(s)

3GPP TS 23.040, 9.2.3.9.

#### 16.1.6.3 Test purpose

To verify that the UE will acknowledge receipt of the short message to the SC. The UE should discard its contents.

NOTE: failure of this test in a UE could cause it to reject a type 0 message when the network is trying to reach the UE. This could lead to unwanted repetitions between the UE and the service centre.

#### 16.1.6.4 Method of test

##### Initial conditions

##### System Simulator:

1 cell, default parameters.

##### User Equipment:

the UE shall be in MM-state "Idle, updated".

##### Related ICS/IXIT Statements

Support for Short Message MT/PP.

The value of timer TC1M.

Foreseen Final State of UE

Idle, updated.

Test Procedure

The SS sends a type 0 message by using the method described in step a) of section 16.1.1 but with the TPDU described in this section.

Maximum Duration of Test

1 minute

Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108  Contains RP-DATA RPDU (SMS DELIVER TPDU), type 0 Short Message  Contains RP-ACK TP-Protocol-Identifier (TP-PID).
2	-->		PAGING RESPONSE	
3	<--		AUTHENTICATION REQUEST	
4	-->		AUTHENTICATION RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	
8	-->		CP-ACK	
9	-->		CP-DATA	
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13	UE			

Specific Message Contents:

SMS-DELIVER TPDU (containing a type 0 message) (SS to UE):

Information element	Comment Value
TP-MIT	SMS-DELIVER "00"B
TP-MMS	more messages are waiting in SC "0"B
TP-RP	no reply path "0"B
TP-UDHI	TP-UD contains only the SM"0"B
TP-SRI	no status report returned0
TP-OA	an international number coded E.164
TP-PID	Type 0: "01000000"B
TP-DCS	default alphabet "0000 0000"B
TP-SCTS	any legal value (cf. 3GPP TS 23.040)
TP-UDL	160
TP-UD (140 octets)	text of message (160 characters)

## 16.1.6a Test of short message type 0 ( $\geq$ REL-5 UE)

### 16.1.6a.1 Definition and applicability

This tests that the UE correctly acknowledges the receipt of the short message type 0 to the SC in Circuit Switched mode. The UE shall discard the contents of the short message type 0.

This test shall apply to all  $\geq$  REL-5 UEs supporting receipt of short messages in CS mode.

### 16.1.6a.2 Conformance requirement

When a mobile terminated message is type 0, the UE shall acknowledge receipt of the short message to the SC but shall discard its contents. This means that

- the UE shall be able to receive the type 0 short message irrespective of whether there is memory available in the (U)SIM or ME or not,
- the UE shall not indicate the receipt of the type 0 short message to the user,
- the short message shall neither be stored in the (U)SIM nor ME.

### Reference(s)

3GPP TS 23.040, 9.2.3.9.

### 16.1.6a.3 Test purpose

To verify that the UE will acknowledge receipt of the short message to the SC. The UE shall discard its contents. This means that

- the UE shall be able to receive the type 0 short message irrespective of whether there is memory available in the (U)SIM or ME or not,
- the UE shall not indicate the receipt of the type 0 short message to the user,
- the short message shall neither be stored in the (U)SIM nor ME.

NOTE: Failure of this test in a UE could cause it to reject a type 0 message when the network is trying to reach the UE. This could lead to unwanted repetitions between the US and the service centre. In addition service affecting restrictions could happen to the customer.

### 16.1.6a.4 Method of test

#### Initial conditions

#### System Simulator:

1 cell, default parameters.

#### User Equipment:

the UE shall be in MM-state "Idle, updated".

the ME- and (U)SIM message store shall be empty.

#### Related ICS/IXIT Statements

Support for Short Message MT/PP.

Whether SMS messages are stored in the USIM and/or the ME.

UE capable of displaying short messages

The value of timer TC1M.

Foreseen Final State of UE

Idle, updated.

Test Procedure

- a) The SS sends a type 0 short message by using the method described in step a) of clause 16.1.1 but with the TPDU described in this section.
- b) The ME- and (U)SIM short message store shall be filled (for example by using the method of clause 16.1.3 test of the memory available notification).
- c) The SS sends a type 0 short message as in step a).

Maximum Duration of Test

5 minutes

Expected sequence

Step	Direction		Message	Comments	
	UE	SS			
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108	
2	-->		PAGING RESPONSE		
3	<--		AUTHENTICATION REQUEST		
4	-->		AUTHENTICATION RESPONSE		
5	<--		SECURITY MODE COMMAND		
6	-->		SECURITY MODE COMPLETE		
7	<--		CP-DATA		
8	-->		CP-ACK		Contains RP-DATA RPDU (SMS DELIVER TPDU), type 0 Short Message
9	-->		CP-DATA		
10	<--		CP-ACK		Contains RP-ACK TP-Protocol-Identifier (TP-PID).
11	<--		RRC CONNECTION RELEASE		
12	-->		RRC CONNECTION RELEASE COMPLETE		
13	UE				The UE shall discard the type 0 short message. This means that the UE does not indicate the receipt of the type 0 short message to the user. The UE shall not store the message in the (U)SIM or ME. This can be checked by verifying that it is impossible to retrieve any short messages from the ME- and (U)SIM message store.
14	SS				
15			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108	
16	-->		PAGING RESPONSE		
17	<--		AUTHENTICATION REQUEST		
18	-->		AUTHENTICATION RESPONSE		
19	<--		SECURITY MODE COMMAND		
20	-->		SECURITY MODE COMPLETE		
21	<--		CP-DATA		
22	-->		CP-ACK		Contains RP-DATA RPDU (SMS DELIVER TPDU), type 0 Short Message
23	-->		CP-DATA		
24	<--		CP-ACK		Contains RP-ACK TP-Protocol-Identifier (TP-PID).
25	<--		RRC CONNECTION RELEASE		
26	-->		RRC CONNECTION RELEASE COMPLETE		

Step	Direction		Message	Comments
	UE	SS		
27	UE			The UE shall discard the type 0 short message. This means that the UE does not indicate the receipt of the type 0 short message to the user. The UE shall not store the message in the (U)SIM or ME. This can be checked by verifying that it is impossible to retrieve any short messages from the ME- and (U)SIM message store.

Specific Message Contents:

SMS-DELIVER TPDU (containing a type 0 message) (SS to UE):

Information element	Comment Value
TP-MIT	SMS-DELIVER "00"B
TP-MMS	more messages are waiting in SC "0"B
TP-RP	no reply path "0"B
TP-UDHI	TP-UD contains only the SM"0"B
TP-SRI	no status report returned0
TP-OA	an international number coded E.164
TP-PID	Type 0: "01000000"B
TP-DCS	default alphabet "0000 0000"B
TP-SCTS	any legal value (cf. 3GPP TS 23.040)
TP-UDL	160
TP-UD (140 octets)	text of message (160 characters)

## 16.1.7 Test of the replace mechanism for SM type 1-7

16.1.7.1 Definition

16.1.7.2 Conformance requirement

On receipt of a short message, the UE shall check to see if the associated Protocol Identifier contains a Replace Short Message Type code. If such a code is present, then the UE will check the associated originating address (TP-OA) and replace any existing stored message having the same Protocol Identifier code and originating address with the new short message.

Reference(s)

3GPP TS 23.040 clause 9.2.3.9.

16.1.7.3 Test purpose

This procedure verifies the correct implementation of the replace mechanism for Replace Short Messages.

16.1.7.4 Method of test

Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the UE message store shall be empty.

## Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

## Test procedure

- a) Two different numbers n and m are drawn randomly between 1 and 7. Two different addresses for TP-Originating-Address (TPOA1 and TPOA2) are drawn.
- b) The SS delivers a short message to the UE as specified in clause 16.1.1 step a). In the SMS-DELIVER TPDU, the TP-Protocol-Identifier parameter is "Replace Short Message Type n", the TP-Originating-Address is TPOA1, and the RP-Originating-Address is RPOA.
- c) Step b) is repeated but with a different TP-Originating-Address (TPOA2), and different contents of TP-User-Data in the SMS-DELIVER TPDU. The other parameters are the same as in step b).
- d) Void
- e) Step c) is repeated but with the TP-Protocol-Identifier equal to "Replace Short Message Type m", and contents of TP-User-Data different from the former two messages. The other parameters are the same as in step c).
- f) Step e) is repeated but the contents of TP-User-Data are different from that used in step e).
- g) The SS prompts the operator to indicate the Short Messages stored in the UE.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		PAGING RESPONSE	
3	<--		AUTHENTICATION REQUEST	
4	-->		AUTHENTICATION RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type n", TP-OA is TPOA1 and RP-OA is RPOA
8	-->		CP-ACK	
9	-->		CP-DATA	Contains RP-ACK RPDU.
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
14	-->		PAGING RESPONSE	
15	<--		AUTHENTICATION REQUEST	
16	-->		AUTHENTICATION RESPONSE	
17	<--		SECURITY MODE COMMAND	
18	-->		SECURITY MODE COMPLETE	
19	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type n", TP-OA is TPOA2 and RP-OA is RPOA, TP-UD different from step 7
20	-->		CP-ACK	
21	-->		CP-DATA	Contains RP-ACK RPDU.
22	<--		CP-ACK	
23	<--		RRC CONNECTION RELEASE	
24	-->		RRC CONNECTION RELEASE COMPLETE	
25			(void)	
26			(void)	
27			(void)	
28			(void)	

Step	Direction		Message	Comments
	UE	SS		
29			(void)	
30			(void)	
31			(void)	
32			(void)	
33			(void)	
34			(void)	
35			(void)	
36			(void)	
37			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
38	-->		PAGING RESPONSE	
39	<--		AUTHENTICATION REQUEST	
40	-->		AUTHENTICATION RESPONSE	
41	<--		SECURITY MODE COMMAND	
42	-->		SECURITY MODE COMPLETE	
43	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type m", TP-OA is TPOA2 and RP-OA is RPOA, TP-UD different from step 7 and 19
44	-->		CP-ACK	
45	-->		CP-DATA	Contains RP-ACK RPDU.
46	<--		CP-ACK	
47	<--		RRC CONNECTION RELEASE	
48	-->		RRC CONNECTION RELEASE COMPLETE	
49			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
50	-->		PAGING RESPONSE	
51	<--		AUTHENTICATION REQUEST	
52	-->		AUTHENTICATION RESPONSE	
53	<--		SECURITY MODE COMMAND	
54	-->		SECURITY MODE COMPLETE	
55	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type m", TP-OA is TPOA2 and RP-OA is RPOA, TP-UD different from step 43
56	-->		CP-ACK	
57	-->		CP-DATA	Contains RP-ACK RPDU.
58	<--		CP-ACK	
59	<--		RRC CONNECTION RELEASE	
60	-->		RRC CONNECTION RELEASE COMPLETE	
61		SS		Prompts the operator to indicate the Short Messages stored in the UE. Only the Short Messages delivered in step 7, 19 and 55 shall be retrievable and indicated

### Specific Message Contents

#### SMS-DELIVER TPDU

Information element	Comment Value
TP-MMS	no more messages are waiting in SC
TP-PID	"1"B binary 01000xxx, xxx represents n resp. m (see test method description)

#### 16.1.7.5 Test requirements

After step 60 only the Short Messages delivered in step 7, 19 and 55 shall be retrieved and indicated.

## 16.1.8 Test of the reply path scheme

### 16.1.8.1 Definition

### 16.1.8.2 Conformance requirement

When a replying UE receives an original mobile terminated short message it has:

- originating SME = TP-Originating Address in the SMS-DELIVER TPDU;
- original SC = RP-Originating Address in the RP-MT-DATA.

When submitting the reply mobile originated short message, the replying UE should use parameters as follows:

- TP-Destination Address in SMS-SUBMIT TPDU = originating SME;
- RP-Destination Address in RP-MO-DATA = original SC.

### Reference(s)

3GPP TS 23.040 Annex D.5, D.6

### 16.1.8.3 Test purpose

This procedure verifies that the UE is able to send a Reply Short Message back to the correct originating SME even if in the meantime it receives another Short Message.

### 16.1.8.4 Method of test

#### Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the UE message store shall be empty.

#### Related ICS/IXIT Statements

Support for Short message MT/PP.

Support for Short message MO/PP.

The value of timer TC1M.

#### Test procedure

- a) The SS delivers a Short Message as specified in clause 16.1.1, step b) with TP-Reply-Path set to 1.
- b) Step a) is repeated but with:
  - different TP-Originating-Address for the originating SME;
  - different RP-Originating-Address for the original SC; and
  - different message contents TP-User-Data.
- c) UE sends the Reply Short Message corresponding to one of two received Short Messages (e.g. by means of the MMI).

d) step c) is repeated for the other Short Message.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		PAGING RESPONSE	
3	<--		AUTHENTICATION REQUEST	
4	-->		AUTHENTICATION RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-RP set to 1
8	-->		CP-ACK	Sent within TC1M after step 7
9	-->		CP-DATA	Contains RP-ACK RPDU.
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
14	-->		PAGING RESPONSE	
15	<--		AUTHENTICATION REQUEST	
16	-->		AUTHENTICATION RESPONSE	
17	<--		SECURITY MODE COMMAND	
18	-->		SECURITY MODE COMPLETE	
19	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-OA, RP-OA and TP-UD different from step 7
20	-->		CP-ACK	Sent within TC1M after step 7
21	-->		CP-DATA	Contains RP-ACK RPDU.
22	<--		CP-ACK	
23	<--		RRC CONNECTION RELEASE	
24	-->		RRC CONNECTION RELEASE COMPLETE	
25	UE			UE sends the Reply Short Message corresponding to one of two received Short Messages.
26	<--		SYSTEM INFORMATION	BCCH
27	-->		RRC CONNECTION REQUEST	CCCH
28	<--		RRC CONNECTION SETUP	CCCH
29	-->		RRC CONNECTION SETUP COMPLETE	DCCH
30	-->		CM SERVICE REQUEST	
31	<--		AUTHENTICATION REQUEST	
32	-->		AUTHENTICATION RESPONSE	
33	<--		SECURITY MODE COMMAND	
34	-->		SECURITY MODE COMPLETE	
35	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU) RP-DA = RP-OA corresponding to the message TP-DA = TP-OA corresponding to the message
36	<--		CP-ACK	Sent within TC1M after step 35
37	<--		CP-DATA	Contains RP-ACK RPDU
38	SS			Waits max 25 s for CP-ACK
39	-->		CP-ACK	
40	<--		RRC CONNECTION RELEASE	RRC connection is released.
40A	-->		RRC CONNECTION RELEASE COMPLETE	
41	UE			UE sends the Reply Short Message corresponding to other Short Message.
42	<--		SYSTEM INFORMATION	BCCH
43	-->		RRC CONNECTION REQUEST	CCCH
44	<--		RRC CONNECTION SETUP	CCCH
45	-->		RRC CONNECTION SETUP COMPLETE	DCCH
46	-->		CM SERVICE REQUEST	

Step	Direction		Message	Comments
	UE	SS		
47	<--		AUTHENTICATION REQUEST	
48	-->		AUTHENTICATION RESPONSE	
49	<--		SECURITY MODE COMMAND	
50	-->		SECURITY MODE COMPLETE	
51	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU) RP-DA = RP-OA corresponding to the Message TP-DA = TP-OA corresponding to the message
52	<--		CP-ACK	Sent within TC1M after step 51
53	<--		CP-DATA	Contains RP-ACK RPDU
54	SS			Waits max 25 s for CP-ACK
55	-->		CP-ACK	
56	<--		RRC CONNECTION RELEASE	RRC connection is released.
57	-->		RRC CONNECTION RELEASE COMPLETE	

### Specific Message Contents

#### SMS-DELIVER TPDU

Information element	Comment Value
TP-MMS	no more messages are waiting in SC "1"B
TP-RP	Reply Path exists "1"B

#### 16.1.8.5 Test requirements

After step 34 UE shall send the Reply Short Message corresponding to one of two previously received short messages.

After step 50 UE shall send the Reply Short Message corresponding to the other of two previously received short messages.

### 16.1.9 Multiple SMS mobile originated

#### 16.1.9.1 UE in idle mode

This test applies to UE supporting the ability of sending multiple short messages on the same RRC connection when there is no call in progress.

##### 16.1.9.1.1 Definition

##### 16.1.9.1.2 Conformance requirements

When the UE chooses to use the same RRC connection to send another short message or a memory available notification, then:

- the UE shall transmit a CM SERVICE REQUEST for the new CM connection before the final CP-ACK (e.g. the one that acknowledges the CP-DATA that carried the RP-ACK) for the old MM connection is transmitted;
- before transmission of the first CP-DATA on the new MM connection, the UE shall transmit the CP-ACK for the old MM connection;
- the Transaction Identifier used on the new MM connection shall be different to that used on the old MM connection; and
- the UE shall not initiate establishment of the new MM connection before the final CP-DATA (e.g. the one carrying the RP-ACK) has been received.

## Reference

- 3GPP TS 23.040 clause 3.1.
- 3GPP TS 24.011 clause 5.4.

### 16.1.9.1.3 Test purpose

To verify that the UE is able to correctly send multiple short messages on the same RRC connection when using a DCCH.

### 16.1.9.1.4 Method of test

#### Initial conditions

- System simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the SMS message storage shall be empty.

#### Related ICS/IXIT statements

Support for multiple short message MO/PP on the same RRC connection.

Description of how to enter multiple SMS.

Whether SMS messages are stored in the USIM and/or the ME.

#### Foreseen final state of UE

Idle, updated.

#### Test procedure

- a) The UE shall be set up to send 3 short messages as multiple SM to the SS. The SS answers correctly to RRC CONNECTION REQUEST on CCCH and then performs the authentication.
- b) After receiving SECURITY MODE COMMAND UE shall send SECURITY COMMAND COMPLETE.
- c) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the UE with a CP-ACK message followed by a CP-DATA message containing the correct RP-ACK RPDU. The Transaction Identifier used on this MM connection is 'x'.
- d) The UE shall transmit a CM SERVICE REQUEST for the new CM connection (for the second short message) before the final CP-ACK (the one that acknowledges the CP-DATA that carried the RP-ACK before) for the old MM connection is transmitted. The UE shall not initiate establishment of the new MM connection before the final CP-DATA (i.e. the one carrying the RP-ACK for the first short message) has been received. Before transmission of the first CP-DATA on the new MM connection, the UE shall transmit the CP-ACK for the old MM connection. The Transaction Identifier used on the new MM connection shall be y, where  $y < x$  (see procedure c)).
- e) The SS waits a maximum of 5 s after receiving the CM SERVICE REQUEST for the CP-ACK message from the UE.
- f) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the UE with a CP-ACK message followed by a CP-DATA message containing the correct RP-ACK RPDU.

- g) The UE shall transmit a CM SERVICE REQUEST for the new CM connection (for the third short message) before the final CP-ACK (the one that acknowledges the CP-DATA that carried the RP-ACK before) for the old MM connection is transmitted. Before transmission of the first CP-DATA on the new MM connection, the UE shall transmit the CP-ACK for the old MM connection. The Transaction Identifier used on the new MM connection shall be z, where  $z < y$  (see procedure d)). The UE shall not initiate establishment of the new MM connection before the final CP-DATA (i.e. the one carrying the RP-ACK for the second short message) has been received.
- h) The SS waits a maximum of 5 s after receiving the CM SERVICE REQUEST for the CP-ACK message from the UE.
- i) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the UE with a CP-ACK message followed by a CP-DATA message containing the correct RP-ACK RPDU.
- j) The SS waits a maximum of 5 s after sending CP-DATA for the CP-ACK message from the UE.
- k) The SS sends a RRC CONNECTION RELEASE to the UE.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION	BCCH
2	-->		RRC CONNECTION REQUEST	CCCH
3	<--		RRC CONNECTION SETUP	CCCH
4	-->		RRC CONNECTION SETUP COMPLETE	DCCH
5	-->		CM SERVICE REQUEST	
6	<--		AUTHENTICATION REQUEST	
7	-->		AUTHENTICATION RESPONSE	
8	<--		SECURITY MODE COMMAND	
9	-->		SECURITY MODE COMPLETE	
10	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU). The Transaction Identifier used in steps 10, 11, 12 and 14 shall be x.
11	<--		CP-ACK	
12	<--		CP-DATA	Contains RP-ACK RPDU
13	-->		CM SERVICE REQUEST	CM service type set to "Short message transfer".
14	-->		CP-ACK	Shall be sent within 5 s of step 13
15	<--		CM SERVICE ACCEPT	
16	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU). The Transaction Identifier used in steps 16, 17, 18 and 20 shall be y where $y < x$ (see step 10).
17	<--		CP-ACK	
18	<--		CP-DATA	Contains RP-ACK RPDU
19	-->		CM SERVICE REQUEST	CM service type set to "Short message transfer".
20	-->		CP-ACK	Shall be sent within 5 s of step 19
21	<--		CM SERVICE ACCEPT	
22	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU). The Transaction Identifier used in steps 22, 23, 24 and 25 shall be z, where $z < y$ (see step 16).
23	<--		CP-ACK	
24	<--		CP-DATA	Contains RP-ACK RPDU
25	-->		CP-ACK	Shall be sent within 5 s of step 24
26	<--		RRC CONNECTION RELEASE	RRC connection is released.
27	-->		RRC CONNECTION RELEASE COMPLETE	

#### 16.1.9.1.5

#### Test requirements

In step 13 the UE shall transmit a CM SERVICE REQUEST for the new CM connection (for the second short message) before the final CP-ACK for the old MM connection is transmitted.

In step 19 the UE shall transmit a CM SERVICE REQUEST for the new CM connection (for the third short message) before the final CP-ACK for the old MM connection is transmitted.

### 16.1.9.2 UE in active mode

This test applies to UE supporting the ability of sending concatenated multiple short messages when there is a call in progress.

#### 16.1.9.2.1 Definition

#### 16.1.9.2.2 Conformance requirements

When the UE chooses to use the same RRC connection to send another short message or a memory available notification, then:

- the UE shall transmit a CM SERVICE REQUEST for the new CM connection before the final CP-ACK (e.g. the one that acknowledges the CP-DATA that carried the RP-ACK) for the old MM connection is transmitted;
- before transmission of the first CP-DATA on the new MM connection, the UE shall transmit the CP-ACK for the old MM connection;
- the Transaction Identifier used on the new MM connection shall be different to that used on the old MM connection; and
- the UE shall not initiate establishment of the new MM connection before the final CP-DATA (e.g. the one carrying the RP-ACK) has been received.

#### Reference

- 3GPP TS 23.040 clause 3.1.
- 3GPP TS 24.011 clause 5.4.

#### 16.1.9.2.3 Test purpose

To verify that the UE is able to correctly concatenate multiple short messages on the same RRC connection when sent parallel to a call.

#### 16.1.9.2.4 Method of test

##### Initial conditions

- System simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the SMS message storage shall be empty.

##### Related ICS/IXIT statements

Support for multiple short message MO/PP on the same RRC connection.

Description of how to enter multiple SMS.

Support for state U10 of call control.

Whether SMS messages are stored in the USIM and/or the ME.

Foreseen final state of UE

Idle, updated.

Test procedure

- a) A data or speech call is established on a DTCH with the SS and the state U10 of call control is entered. The UE is set up to send 3 short messages as multiple SM to the SS. After the reception of the CM SERVICE REQUEST, the SS sends a CM SERVICE ACCEPT message.
- b) Steps c) to k) of the test procedure in clause 16.1.9.1.4 are repeated.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		SS		A data or speech call is established on a DTCH and the state U10 of call control is entered.
2	UE			The UE is set up to send 3 short messages as multiple SM
3	-->		CM SERVICE REQUEST	Sent in a layer 2 frame on the DCCH. CM service type set to "short message transfer"
4	<--		CM SERVICE ACCEPT	
7	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU). The Transaction Identifier used in steps 7, 8, 9 and 11 shall be x.
8	<--		CP-ACK	
9	<--		CP-DATA	Contains RP-ACK RPDU
10	-->		CM SERVICE REQUEST	Sent in a layer 2 frame on the DCCH. CM service type set to "short message transfer"
11	-->		CP-ACK	Shall be sent within 5 s of step 10
12	<--		CM SERVICE ACCEPT	
13	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU). The Transaction Identifier used in steps 13, 14, 15 and 17 shall be y where $y < x$ (see step 7).
14	<--		CP-ACK	
15	<--		CP-DATA	Contains RP-ACK RPDU
16	-->		CM SERVICE REQUEST	Sent in a layer 2 frame on the DCCH. CM service type set to "short message transfer"
17	-->		CP-ACK	Shall be sent within 5 s of step 16
18	<--		CM SERVICE ACCEPT	
19	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU). The Transaction Identifier used in steps 19, 20, 21 and 22 shall be z, where $z < y$ (see step 13).
20	<--		CP-ACK	
21	<--		CP-DATA	Contains RP-ACK RPDU
22	-->		CP-ACK	Shall be sent within 5 s of step 21
23	<--		RRC CONNECTION RELEASE	RRC connection is released.
24	-->		RRC CONNECTION RELEASE COMPLETE	

#### 16.1.9.2.5 Test requirements

In step 10 the UE shall transmit a CM SERVICE REQUEST for the new CM connection (for the second short message) before the final CP-ACK for the old MM connection is transmitted.

In step 16 the UE shall transmit a CM SERVICE REQUEST for the new CM connection (for the third short message) before the final CP-ACK for the old MM connection is transmitted.

## 16.1.10 Test of capabilities of simultaneously receiving a short message whilst sending a mobile originated short message

16.1.10.1 Definition

16.1.10.2 Conformance requirements

An active UE shall be able to receive short message TPDU (SMS-SUBMIT) at any time, independently of whether or not there is in SMS mobile originated.

### Reference

3GPP TS 23.040 clause 3.1.

16.1.10.3 Test purpose

The test verifies that the UE is capable of simultaneously receiving a network originated SM whilst sending a mobile originated SM.

16.1.10.4 Method of test

### Initial Conditions

- System simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in MM-state "Idle, updated";
  - the SMS message storage shall be empty.

### Related ICS/IXIT Statements

Support for Short message MO/PP and MT/PP.

Support for state U10 of call control.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

Maximum length (characters) of a mobile originated short message.

### Test procedure

- a) The SS is configured to receive a mobile originated SM. In clause 16.1.2 steps a) and b) are repeated and, using the end of the CP-DATA message from the UE as a trigger, the SS sends a SM to the UE. In this case a new transaction identifier shall be used in the CP messages of SMS mobile terminated.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION	BCCH
2	-->		RRC CONNECTION REQUEST	CCCH
3	<--		RRC CONNECTION SETUP	CCCH
4	-->		RRC CONNECTION SETUP COMPLETE	DCCH
5	-->		CM SERVICE REQUEST	
6	<--		AUTHENTICATION REQUEST	
7	-->		AUTHENTICATION RESPONSE	
8	<--		SECURITY MODE COMMAND	
9	-->		SECURITY MODE COMPLETE	
10	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
11	SS			The SS sends an SM to the UE triggered by the end of the CP-DATA message from the UE
12	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
13	UE			The UE shall correctly receive the SM and indicate that a message has arrived. In the MO case the UE shall send the CP-ACK message with transaction identifier assigned to this transfer. In the MT case the UE shall send a CP-ACK message and a CP-DATA message containing the RP-ACK RPDU. The transaction identifier shall be the same as chosen by the SS for the MT transfer.
NOTE: Time values for SS wait times are chosen sufficiently high to be sure that the UE has enough time to respond to the different messages.				

Specific Message Contents

SMS SUBMIT TPDU

Information element	Comment Value
TP-UDL TP-UD (140 octets max)	as applicable maximum number of characters (text of message) as defined by the manufacturer (see ICS/IXIT)

#### 16.1.10.5 Test requirements

After step 12 UE shall correctly receive the SM and indicate that a message has arrived.

## 16.2 Short message service point to point on PS mode

All of test cases in this clause are applied to the UE supported PS mode.

### 16.2.1 SMS mobile terminated

#### 16.2.1.1 Definition

#### 16.2.1.2 Conformance requirements

An active UE shall be able to receive short message TPDU (SMS-DELIVER) at any time, independently of whether or not there is a PDP context in progress. A report will always be returned to the SC, confirming that the UE has received the short message.

Reference

3GPP TS 23.040 clause 3.1.

### 16.2.1.3 Test purpose

To verify the ability of a UE to receive and decode the SMS where provided for the point to point service.

### 16.2.1.4 Method of test

#### Initial Conditions

- System simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in GMM-state "GMM-REGISTERED";
  - the SMS message storage shall be empty.

#### Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

Support for session management state "PDP-ACTIVE".

#### Test procedure

- a) Mobile terminates establishment of Radio Resource Connection. After the completion of RRC Connection the SS authenticates the UE and activates ciphering.  
  
After the SS receives SECURITY MODE COMPLETE, the SS sends a CP-DATA message. The information element of the CP-DATA message will be RP-DATA RPDU (SMS DELIVER TPDU).
- b) The SS waits a maximum of 25 s for the CP-ACK message and then a maximum of 60 s for the CP-DATA message containing the RP-ACK RPDU.
- c) The SS sends a CP-ACK to the UE within TC1M with no further CP-DATA messages and the SS initiates channel release.
- d) Steps a), b) and c) are repeated but the first CP-DATA message from the UE is not acknowledged. The second CP-DATA message from the UE is acknowledged by a CP-ACK within a time TC1M.
- e) Steps a) and b) are repeated. The SS is configured not to send CP-ACK. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 5 s after the last CP-DATA retransmission the SS then initiates the channel release. The 5 s is the appropriate time to wait to verify that the UE does not send more than the maximum allowed (3) CP-DATA retransmissions.
- f) The SMS message store shall be cleared manually by the operator.
- g) A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered.  
  
The SS sends a CP-DATA message. The information element of the CP-DATA message will be RP-DATA RPDU (SMS DELIVER TPDU). The SS waits a maximum of 25 s for the CP-ACK message and then a maximum of 60 s for the CP-DATA message containing the RP-ACK RPDU.
- h) The SS sends a CP-ACK to the UE within TC1M with no further CP-DATA messages and the SS initiates channel release. The SMS message store shall be cleared manually by the operator.
- i) Steps g) and h) are repeated but the first CP-DATA message from the UE is not acknowledged. The second CP-DATA message from the UE is acknowledged by a CP-ACK within a time TC1M.

- j) Step g) is repeated. The SS is configured not to send CP-ACK. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 15 s after the last CP-DATA retransmission the SS initiates the channel release. The 15 s is the appropriate time to wait to verify that the UE does not send more than the maximum allowed (3) CP-DATA retransmissions (during PDP context in progress).
- k) A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered. The PDP context is cleared by the SS with a disconnect message. (The PDP context deactivating is continued in parallel to the following exchange of messages related to SMS).

The SS sends a CP-DATA RPDU (SMS DELIVER TPDU) message. The information element of the CP-DATA message is RP-DATA.

The SS waits a maximum of 25 s for the CP-ACK message and then a maximum of 60 s for the CP-DATA message containing the RP-ACK RPDU.

The SS sends a CP-ACK to the UE within TC1M with no further CP-DATA messages and the SS initiates channel release.

The SMS message store shall be cleared manually by the operator.

- l) A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered. The PDP context shall be cleared from the UE. (The PDP context deactivating is continued in parallel to the following exchange of messages related to SMS).

The SS sends a CP-DATA message. The information element of the CP-DATA message is RP-DATA RPDU (SMS DELIVER TPDU).

The SS waits a maximum of 25 s for the CP-ACK message and then a maximum of 60 s for the CP-DATA message containing the RP-ACK RPDU.

The SS sends a CP-ACK to the UE within TC1M with no further CP-DATA messages and the SS initiates channel release.

The SMS message store shall be cleared manually by the operator.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		SERVICE REQUEST	
3	<--		AUTHENTICATION AND CIPHERING REQUEST	
4	-->		AUTHENTICATION AND CIPHERING RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
8	SS			Waits max 25 s for CP-ACK
9	-->		CP-ACK	
10	SS			Waits max 60 s for RP-ACK RPDU
11	-->		CP-DATA	Contains RP-ACK RPDU
12	<--		CP-ACK	
13	UE			There should be no further CP-DATA messages until the UE aborts the RRC connection (disconnection of layer 2).
14	UE			The UE shall indicate that an SM has arrived.
15			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
16	-->		SERVICE REQUEST	
17	<--		AUTHENTICATION AND CIPHERING REQUEST	
18	-->		AUTHENTICATION AND CIPHERING RESPONSE	
19	<--		SECURITY MODE COMMAND	
20	-->		SECURITY MODE COMPLETE	
21	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
22	SS			Waits max 25 s for CP-ACK
23	-->		CP-ACK	
24	SS			Waits max 60 s for RP-ACK RPDU
25	-->		CP-DATA	First CP-DATA from UE, contains RP-ACK RPDU
26	SS			First CP-DATA message not acknowledged by SS
27	-->		CP-DATA	Retransmitted CP-DATA from UE within twice TC1M, after step 25, contains RP-ACK RPDU
28	<--		CP-ACK	Second CP_DATA message is acknowledged
29	UE			There should be no further CP-DATA messages until the UE aborts the RRC connection
30	UE			The UE shall indicate that an SM has arrived.
31			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
32	-->		SERVICE REQUEST	
33	<--		AUTHENTICATION AND CIPHERING REQUEST	
34	-->		AUTHENTICATION AND CIPHERING RESPONSE	
35	<--		SECURITY MODE COMMAND	
36	-->		SECURITY MODE COMPLETE	
37	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
38	SS			Waits max 25 s for CP-ACK
39	-->		CP-ACK	
40	SS			Waits max 60 s for RP-ACK RPDU
41	-->		CP-DATA	Contains RP-ACK RPDU
42	SS			First CP-DATA message not acknowledged by SS
43	-->		CP-DATA	Retransmitted CP-DATA from UE within twice TC1M after step 41, contains RP-ACK RPDU
44	SS			Retransmitted CP-DATA message not acknowledged by SS
45	UE			Depending upon the maximum number of CP-DATA retransmissions implemented, step 43 and 44 may be repeated.
46	<--		RRC CONNECTION RELEASE	RRC connection is released after a duration of TC1M + 5 s after the last CP-DATA retransmission.

Step	Direction		Message	Comments
	UE	SS		
47	-->		RRC CONNECTION RELEASE COMPLETE	
48	UE			The UE shall indicate that an SM has arrived.
49	SS			A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered.
50			(void)	
51	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
52	SS			Waits max 25 s for CP-ACK
53	-->		CP-ACK	
54	SS			Waits max 60 s for RP-ACK RPDU
55	-->		CP-DATA	Contains RP-ACK RPDU
56	<--		CP-ACK	
57	<--		DEACTIVATE PDP CONTEXT REQUEST	Deactivates an existing PDP context.
58	-->		DEACTIVATE PDP CONTEXT ACCEPT	
59	UE			The UE shall indicate that an SM has arrived.
60	UE			Clear the SMS message store
61	SS			A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered.
62			(void)	
63	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
64	SS			Waits max 25 s for CP-ACK
65	-->		CP-ACK	
66	SS			Waits max 60 s for RP-ACK RPDU
67	-->		CP-DATA	First CP-DATA from UE, contains RP-ACK RPDU
68	SS			First CP-DATA message not acknowledged by SS
69	-->		CP-DATA	Retransmitted CP-DATA message within twice TC1M after step 67, contains RP-ACK RPDU
70	<--		CP-ACK	Second CP-DATA message is acknowledged
71	<--		DEACTIVATE PDP CONTEXT REQUEST	Deactivates an existing PDP context.
72	-->		DEACTIVATE PDP CONTEXT ACCEPT	
73	UE			There should be no further CP-DATA messages until the UE aborts the RRC connection
74	UE			The UE shall indicate that an SM has arrived.
75	UE			Clear the SMS message store
76	SS			A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered.
77			(void)	
78	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
79	SS			Waits max 25 s for CP-ACK
80	-->		CP-ACK	
81	SS			Waits max 60 s for RP-ACK RPDU
82	-->		CP-DATA	First CP-DATA from UE, contains RP-ACK RPDU
83	SS			First CP-DATA message not acknowledged by SS
84	-->		CP-DATA	Transmitted CP-DATA message within twice TC1M after step 82, contains RP-ACK RPDU
85	SS			Retransmitted CP-DATA message not acknowledged by SS
86	UE			Depending on the maximum number of CP-DATA retransmissions implemented, step 83-84 may be repeated. The maximum number of retransmissions may however not exceed three.
87	<--		RRC CONNECTION RELEASE	RRC CONNECTION is released after a duration of TC1M + 15 s after the last CP-DATA retransmission.
88	-->		RRC CONNECTION RELEASE COMPLETE	
89	UE			The UE shall indicate that an SM has arrived.
90	UE			Clear the SMS message store
91	SS			A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered.
92			(void)	
93			(void)	
94	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)

Step	Direction		Message	Comments
	UE	SS		
94A	<--		DEACTIVATE PDP CONTEXT REQUEST	The PDP context is deactivated by the SS. The PDP context deactivating is continued in parallel to the following exchange of messages related to SMS. This message may be transmitted after this step timing. Waits max 25 s for CP-ACK Waits max 60 s for RP-ACK RPDU Contains RP-ACK RPDU There should be no further CP-DATA messages until the UE aborts the RRC connection. The UE shall indicate that an SM has arrived. Clear the SMS message store A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered. The PDP context is deactivated by the UE. The PDP context deactivation is continued in parallel to the following Contains RP-DATA RPDU (SMS DELIVER TPDU) shall be sent before 25 s after the start of step 106 Waits max 60 s for RP-ACK RPDU Contains RP-ACK RPDU There should be no further CP-DATA messages until the UE aborts the RRC connection. The UE shall indicate that an SM has arrived. Clear the SMS message store
94B	-->		DEACTIVATE PDP CONTEXT ACCEPT	
95		SS		
96	-->		CP-ACK	
97		SS		
98	-->		CP-DATA	
99	<--		CP-ACK	
100		UE		
101		UE		
102		UE		
103		SS		
104			(void)	
105	-->		DEACTIVATE PDP CONTEXT REQUEST	
106	<--		CP-DATA	
107	<--		DEACTIVATE PDP CONTEXT ACCEPT	
108	-->		CP-ACK	
109		SS		
110	-->		CP-DATA	
111	<--		CP-ACK	
112		UE		
113		UE		
114		UE		
NOTE:	Time values for SS wait time are chosen sufficiently high to be sure that the UE has enough time to respond to the different messages.			

### Specific Message Contents

#### SMS DELIVER TPDU

Information element	Comment Value
TP-UDL	160
TP-UD (140 octets)	text of message (160 characters)
NOTE:	The 160 characters in TP-UD shall include at least one occurrence of each character in the default alphabet (see 3GPP TS 23.038, clause 6.2.1).

#### 16.2.1.5 Test requirements

After step 7 UE shall receive SMS-DELIVER TPDU and send CP-ACK within 25 s and CP-DATA containing RP-ACK within 60 s.

After step 25 UE shall retransmit CP-DATA containing RP-ACK within twice TC1M.

After step 30 UE shall indicate that an SM has arrived.

After step 43 UE shall repeat CP-DATA retransmissions as many times as the decided maximum number.

After step 48 UE shall indicate that an SM has arrived.

After step 51 UE shall receive SMS-DELIVER TPDU and send CP-ACK within 25 s and CP-DATA containing RP-ACK within 60 s.

After step 67 UE shall retransmit CP-DATA containing RP-ACK within twice TC1M.

After step 73 UE shall indicate that an SM has arrived.

After step 78 UE shall repeat CP-DATA retransmissions as many times as the decided maximum number.

After step 89 UE shall indicate that an SM has arrived.

After step 94 UE shall receive SMS-DELIVER TPDU and send CP-ACK within 25 s and CP-DATA containing RP-ACK within 60 s.

After step 106 UE shall receive SMS-DELIVER TPDU and send CP-ACK within 25 s and CP-DATA containing RP-ACK within 60 s.

## 16.2.2 SMS mobile originated

### 16.2.2.1 Definition

### 16.2.2.2 Conformance requirements

An active UE shall be able to submit short message TPDU (SMS-SUBMIT) at any time, independently of whether or not there is a PDP context in progress.

#### Reference

3GPP TS 23.040 clause 3.1.

### 16.2.2.3 Test purpose

To verify that the UE is able to correctly send a short message where the SMS is provided for the point to point service.

### 16.2.2.4 Method of test

#### Initial Conditions

- System simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in GMM-state "GMM-REGISTERED";
  - the SMS message storage shall be empty.

#### Related ICS/IXIT Statements

Support for Short message MO/PP.

Support for state PDP-ACTIVE of session management.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

Maximum length (characters) of a mobile originated short message.

#### Test procedure

- a) The UE shall be set up to send a SM to the SS. The SS responds to RRC CONNECTION REQUEST by allocating a CCCH. The SS receives RRC CONNECTION SETUP COMPLETE on DCCH and then performs the authentication.
- b) After receiving SECURITY MODE COMMAND UE shall send SECURITY COMMAND COMPLETE.

- c) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the UE with a CP-ACK message within TC1M followed by a CP-DATA message containing the correct RP-ACK RPDU. The SS waits a maximum of 25 s for the CP-ACK message.
- d) The SS sends a channel release message to the UE.
- e) Steps a) and b) are repeated. The SS is configured not to send the CP-ACK message. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 5 s after the last CP-DATA retransmission the SS initiates channel release. The 5 s is the appropriate time to wait to verify that the UE does not send more than the maximum CP-DATA retransmissions.
- f) Steps a) and b) are repeated. On receipt of the CP-DATA from the UE the SS sends a CP-ERROR message within TC1M containing a "Network Failure" cause. Then the SS initiates channel release.
- g) A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered. The UE is set up to send an SM to the SS.
- h) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the UE with a CP-ACK message within TC1M followed by a CP-DATA message containing the correct RP-ACK RPDU. The SS waits a maximum of 25 s for the CP-ACK message. Then the SS sends a channel release message to the UE.
- i) Step g) is repeated. The SS is configured not to send the CP-ACK message. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 15 s after the last CP-DATA retransmission the SS initiates channel release. The 15 s is the appropriate time to wait to verify that the UE does not send more than the maximum CP-DATA retransmissions (during a PDP context in progress).
- j) (void)
- k) The UE is set up to send an SM to the SS. On receipt of the SERVICE REQUEST the SS sends a SERVICE REJECT message with the reject cause set to "GPRS services not allowed". After 5 s the SS initiates channel release.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION	BCCH
2	-->		RRC CONNECTION REQUEST	CCCH
3	<--		RRC CONNECTION SETUP	CCCH
4	-->		RRC CONNECTION SETUP COMPLETE	DCCH
5	-->		SERVICE REQUEST	
6	<--		AUTHENTICATION AND CIPHERING REQUEST	
7	-->		AUTHENTICATION AND CIPHERING RESPONSE	
8	<--		SECURITY MODE COMMAND	
9	-->		SECURITY MODE COMPLETE	
10	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
11	<--		CP-ACK	Sent within TC1M after step 10
12	<--		CP-DATA	Contains RP-ACK RPDU
13	SS			Waits max 25 s for CP-ACK
14	-->		CP-ACK	
15	<--		RRC CONNECTION RELEASE	RRC connection is released.
16	-->		RRC CONNECTION RELEASE COMPLETE	
17	<--		SYSTEM INFORMATION	BCCH
18	-->		RRC CONNECTION REQUEST	CCCH
19	<--		RRC CONNECTION SETUP	CCCH
20	-->		RRC CONNECTION SETUP COMPLETE	DCCH
21	-->		SERVICE REQUEST	
22	<--		AUTHENTICATION AND CIPHERING REQUEST	
23	-->		AUTHENTICATION AND CIPHERING RESPONSE	

Step	Direction		Message	Comments
	UE	SS		
24	<--		SECURITY MODE COMMAND	
25	-->		SECURITY MODE COMPLETE	
26	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
27	SS			SS configured not to send CP-ACK
28	-->		CP-DATA	Retransmitted CP-DATA message within twice TC1M after step 26
29	UE			Depending on the maximum number of CP-DATA retransmissions implemented, step 28 may be repeated. The maximum number of retransmissions may however not exceed three.
30	<--		RRC CONNECTION RELEASE	RRC CONNECTION is released after a duration of TC1M + 5 s after the last CP-DATA retransmission.
31	-->		RRC CONNECTION RELEASE COMPLETE	
32	<--		SYSTEM INFORMATION	BCCH
33	-->		RRC CONNECTION REQUEST	CCCH
34	<--		RRC CONNECTION SETUP	CCCH
35	-->		RRC CONNECTION SETUP COMPLETE	DCCH
36	-->		SERVICE REQUEST	
37	<--		AUTHENTICATION AND CIPHERING REQUEST	
38	-->		AUTHENTICATION AND CIPHERING RESPONSE	
39	<--		SECURITY MODE COMMAND	
40	-->		SECURITY MODE COMPLETE	
41	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
42	<--		CP-ERROR	Sent within TC1M containing "Network Failure" cause.
43	<--		RRC CONNECTION RELEASE	RRC CONNECTION is released.
44	-->		RRC CONNECTION RELEASE COMPLETE	
45	SS			A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered.
46	UE			The UE is set up to send an SM
47			(void)	
48			(void)	
49	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
50	<--		CP-ACK	Sent within TC1M after step 49
51	<--		CP-DATA	Contains RP-ACK RPDU
52	SS			Waits max 25 s for CP-ACK
53	-->		CP-ACK	
54	<--		RRC CONNECTION RELEASE	RRC CONNECTION is released.
55	-->		RRC CONNECTION RELEASE COMPLETE	
56	SS			A PDP context is established with the SS and the state PDP-ACTIVE of session management is entered.
56a	UE			The UE is set up to send an SM
57			(void)	
58			(void)	
59	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
60	SS			SS configured not to send CP-ACK
61	-->		CP-DATA	Transmitted CP-DATA message within twice TC1M after step 59
62	UE			Depending on the maximum number of CP-DATA retransmissions implemented, step 61 may be repeated. The maximum number of retransmissions may however not exceed three.
63	<--		RRC CONNECTION RELEASE	RRC CONNECTION is released after a duration of TC1m + 15 s after the last CP-DATA retransmission.
64	-->		RRC CONNECTION RELEASE COMPLETE	
65-77			(void)	
78	-->		RRC CONNECTION REQUEST	initiate outgoing call
79	<--		RRC CONNECTION SETUP	
80	-->		RRC CONNECTION SETUP COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
81	-->		SERVICE REQUEST	Reject cause set to "GPRS services not allowed" Sent 5 s after SERVICE REJ
82	<--		SERVICE REJECT	
83	<--		RRC CONNECTION RELEASE	
84	-->		RRC CONNECTION RELEASE COMPLETE	
NOTE: Time values for SS wait times are chosen sufficiently high to be sure that the UE has enough time to respond to the different messages.				

## Specific Message Contents

### SMS SUBMIT TPDU

Information element	Comment Value
TP-UDL TP-UD (140 octets max)	as applicable maximum number of characters (text of message) as defined by the manufacturer (see ICS/IXIT)

#### 16.2.2.5 Test requirements

After step 9 UE shall send a CP-DATA containing RP-data. The RP-DATA shall contain SMS SUBMIT TPDU.

After step 26 UE shall retransmit a CP-DATA containing RP-data. The RP-DATA shall contain SMS SUBMIT TPDU.

After step 43 UE shall send the RRC CONNECTION RELEASE COMPLETE.

After step 46 UE shall send a CP-DATA containing RP-data. The RP-DATA shall contain SMS SUBMIT TPDU.

After step 61 UE shall repeat CP-DATA retransmissions as many times as the decided maximum number.

After step 82 UE shall not send CP-DATA.

### 16.2.3 Test of memory full condition and memory available notification:

The Memory Available Notification provides a means for the UE to notify the network that it has memory available to receive one or more short messages. The SMS status field in the USIM contains status information on the "memory available" notification flag.

#### 16.2.3.1 Definition

#### 16.2.3.2 Conformance requirement

1. When a mobile terminated message is Class 2, the UE shall ensure that the message has been transferred to the SMS data field in the USIM before sending an acknowledgement to the SC. The UE shall return a protocol error message if the short message cannot be stored in the USIM and there is other short message storage available in the UE. If all the short message storage in the UE is already in use, the UE shall return "memory capability exceeded".
2. When the UE rejects a short message due to lack of available memory capability the need to transfer notification shall be stored in the USIM.
3. If the memory capability becomes available because memory is cleared, the value of the memory capability exceeded notification flag in the USIM is read. If the flag is set, the UE notifies the network that memory capability is now available. After a positive acknowledgement from the network, the ME unsets the memory capability exceeded notification flag in the USIM.

## References

- 3GPP TS 23.040 clause 9.2.3.10, 3GPP TS 23.038 clause 4.

- 3GPP TS 23.040 clause 10.3 (operation 14).
- 3GPP TS 23.040 clause 10.3 (operation 14).

#### 16.2.3.3 Test purpose

1. To verify that the UE sends the correct acknowledgement when its memory in the USIM becomes full.
2. To verify that the UE sends the correct acknowledgement when its memory in the ME and the USIM becomes full, and sets the "memory exceeded" notification flag in the USIM.
3. To verify that the UE performs the "memory available" procedure when its message store becomes available for receiving short messages, and only at this moment.

#### 16.2.3.4 Method of test

##### Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in GMM-state "GMM-REGISTERED";
  - the SMS message storage shall be empty;
  - the UE shall be connected to the USIM simulator. The following shall be present in the USIM simulator:
    - EF<sub>SMS</sub> with at least one record;
    - EF<sub>SMSstatus</sub> with SMS "Memory Cap. Exceed" notification flag set to "memory available";
    - Service no. 10 (SMS) in EF<sub>UST</sub> set to allocated and activated.
  - for storing of Class 1 Short Messages the UE shall be set up to store Short Messages in the ME memory (by way of MMI, as described in ICS/IXIT statement).

##### Related ICS/IXIT Statements

Support for Short message MT/PP.

Whether SMS messages are stored in the USIM and/or the ME.

The value of timer TC1M.

##### Test procedure

- a) step a) of clause 16.2.5.3 (test of Class 2 Short Messages) is repeated until the UE sends a negative acknowledgement (RP-ERROR). The USIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the USIM.
- b) a Class 1 Short Message is sent to the UE.
- c) step b) is repeated until the UE sends a negative acknowledgement (RP-ERROR). The USIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the USIM.
- d) a Short Message is sent to the UE with the DCS field of the SMS-DELIVER TPDU set to 0.
- e) the SS prompts the operator to read a short message and to remove it from the message store of the UE.
- f) the SS waits for a RRC CONNECTION REQUEST from the UE, and sends a RRC CONNECTION SETUP.

- g) after the SS receives a RRC CONNECTION SETUP COMPLETE, the SS authenticates the UE and activates ciphering.
- h) the SS answers to the RP-SMMA from the UE with a CP-DATA containing a RP-ACK RPDU.
- i) after the UE has acknowledged the CP-DATA with a CP-ACK, the SS releases the RRC connection. The USIM simulator shall indicate if the "memory capability exceeded" notification flag has been unset on the USIM.
- j) step e) is repeated.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		SERVICE REQUEST	
3	<--		AUTHENTICATION AND CIPHERING REQUEST	
4	-->		AUTHENTICATION AND CIPHERING RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 2 Short Message
8	SS			Waits max 25 s for CP-ACK
9	-->		CP-ACK	
10	SS			Waits max 60 s for RP-ACK RPDU
11	-->		CP-DATA	Contains RP-ACK RPDU
12	<--		CP-ACK	Within TC1M after step 11
13	<--		RRC CONNECTION RELEASE	RRC connection is released. Step 1-13 is repeated until UE sends a negative acknowledgement (RP-ERROR) in step 11. The RP-ERROR RPDU cause field shall be "Protocol error, unspecified" if there is message capability in the USIM, or "Memory capability exceeded" if there is no message capability in the USIM. If the total memory store of the UE is full, the ME shall set the "memory capability exceeded" notification flag on the USIM.
14	-->		RRC CONNECTION RELEASE COMPLETE	
15			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
16	-->		SERVICE REQUEST	
17	<--		AUTHENTICATION AND CIPHERING REQUEST	
18	-->		AUTHENTICATION AND CIPHERING RESPONSE	
19	<--		SECURITY MODE COMMAND	
20	-->		SECURITY MODE COMPLETE	
21	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 1 Short Message
22	SS			Waits max 25 s for CP-ACK
23	-->		CP-ACK	
24	SS			Waits max 60 s for RP-ACK RPDU
25	-->		CP-DATA	Shall contain RP-ACK RPDU if there is memory capability in the ME. If not it shall contain RP-ERROR RPDU which cause field shall be "memory capability exceeded". If the total memory store of the UE now becomes full at this step, the ME shall set the "memory cap. exceed" notification flag on the USIM.
26	<--		CP-ACK	Within TC1M after step 25
27	<--		RRC CONNECTION RELEASE	RRC connection is released. Step 19-36 is repeated until the UE sends an RP-ERROR. The USIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the USIM.
28	-->		RRC CONNECTION RELEASE COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
29			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
30	-->		SERVICE REQUEST	
31	<--		AUTHENTICATION AND CIPHERING REQUEST	
32	-->		AUTHENTICATION AND CIPHERING RESPONSE	
33	<--		SECURITY MODE COMMAND	
34	-->		SECURITY MODE COMPLETE	
35	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) with TP-DCS set to 0
36	SS			Waits max 25 s for CP-ACK
37	-->		CP-ACK	
38	SS			Waits max 60 s for RP-ACK RPDU
39	-->		CP-DATA	Shall contain RP-ERROR RPDU with error cause "memory capability exceeded".
40	<--		CP-ACK	Within TC1M after step 39
41	<--		RRC CONNECTION RELEASE	RRC connection is released.
42	-->		RRC CONNECTION RELEASE COMPLETE	
43	SS			Prompts the operator to remove one of the short messages from the message store of the UE.
44	<--		SYSTEM INFORMATION	BCCH
45	-->		RRC CONNECTION REQUEST	CCCH
46	<--		RRC CONNECTION SETUP	CCCH
47	-->		RRC CONNECTION SETUP COMPLETE	DCCH
48	-->		SERVICE REQUEST	
49	<--		SERVICE ACCEPT	
50	-->		CP-DATA	Contains RP-SMMA RPDU
51	<--		CP-ACK	
52	<--		CP-DATA	Contains RP-ACK RPDU
53	-->		CP-ACK	Acknowledge of CP-DATA containing the RP-ACK RPDU. The ME shall unset the "memory capability exceeded" notification flag on the USIM.
54	<--		RRC CONNECTION RELEASE	RRC connection is released. The USIM simulator shall indicate if the "memory capability exceeded" notification flag has been unset on the USIM.
55	-->		RRC CONNECTION RELEASE COMPLETE	
56	SS			Prompts the operator to remove one of the short messages from the message store of the UE.
57	UE			Shall not attempt to send a RP-SMMA RPDU. This is verified by checking that the UE does not send a CHANNEL REQUEST message with the establishment cause "Other services which can be completed with an SDCCH"

NOTE: Time values for SS wait time are chosen sufficiently high to be sure that the UE has enough time to respond to the different messages.

## Specific Message Contents

## SMS-DELIVER TPDU in step 7

Information element	Comment Value
TP-DCS	default alphabet, class 2 "11110010"B

## SMS-DELIVER TPDU in step 21

TP-DCS	default alphabet, class 1 "11110001"B
--------	---------------------------------------

## SMS-DELIVER TPDU in step 35

TP-DCS	default alphabet "00000000"B
--------	------------------------------

#### 16.2.3.5 Test requirements

After UE sends a negative acknowledgement (RP-ERROR) in step 11, the USIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the USIM.

After UE sends a negative acknowledgement (RP-ERROR) in step 23, the USIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the USIM.

After step 53 the ME shall unset the "memory capability exceeded" notification flag on the USIM.

After step 56 UE shall not attempt to send a RP-SMMA RPDU.

### 16.2.4 Test of the status report capabilities and of SMS-COMMAND:

This test applies to UEs which support the status report capabilities.

#### 16.2.4.1 Definition

#### 16.2.4.2 Conformance requirement

The SMS offers the SC the capabilities of informing the UE of the status of a previously sent mobile originated short message. This is achieved by the SC returning a status report TPDU (SMS-STATUS-REPORT) to the originating UE.

SMS-COMMAND enables an UE to invoke an operation at the SC.

The UE shall increment TP-MR by 1 for each SMS-SUBMIT or SMS-COMMAND being submitted.

#### References

- 3GPP TS 23.040 clause 3.2.9.
- 3GPP TS 23.040 clause 9.2.3.6.

#### 16.2.4.3 Test purpose

- 1) To verify that the UE is able to accept a SMS-STATUS-REPORT TPDU.
- 2) To verify that the UE is able to use the SMS-COMMAND functionality correctly and sends an SMS-COMMAND TPDU with the correct TP-Message-Reference.

#### 16.2.4.4 Method of test

##### Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in GMM-state "GMM-REGISTERED".

##### Related ICS/IXIT Statements

Support of SMS MO/PP and MT/PP.

## Test procedure

- a) The UE is made to send a Mobile Originated short message setting TP-SRR as in steps a) to d) of test 16.2.2 (SMS Mobile originated).
- b) The SS sends a CP-DATA message containing a RP-DATA RPDU itself containing an SMS-STATUS-REPORT TPDU.
- c) The SS sends a RRC CONNECTION RELEASE message.
- d) The UE is made to send an SMS-COMMAND message enquiring about the previously submitted short message.
- e) Void.
- f) The SS acknowledges the CP-DATA message from the UE with a CP-ACK followed by a CP-DATA message containing an RP-ACK RPDU.
- g) After receiving the CP-ACK from the UE, the SS releases the RRC connection by using a RRC CONNECTION RELEASE message.
- h) The UE is made to send an SMS-COMMAND message requiring to delete the previously submitted short message.
- i) steps e) to g) are repeated.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION	BCCH
2	-->		RRC CONNECTION REQUEST	CCCH
3	<--		RRC CONNECTION SETUP	CCCH
4	-->		RRC CONNECTION SETUP COMPLETE	DCCH
5	-->		SERVICE REQUEST	
6	<--		AUTHENTICATION AND CIPHERING REQUEST	
7	-->		AUTHENTICATION AND CIPHERING RESPONSE	
8	<--		SECURITY MODE COMMAND	
9	-->		SECURITY MODE COMPLETE	
10	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
11	<--		CP-ACK	Sent within TC1M after step 10
12	<--		CP-DATA	Contains RP-ACK RPDU
13		SS		Waits max 25 s for CP-ACK
14	-->		CP-ACK	
15	<--		RRC CONNECTION RELEASE	RRC connection is released.
16	-->		RRC CONNECTION RELEASE COMPLETE	
17			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
18	-->		SERVICE REQUEST	
19	<--		AUTHENTICATION AND CIPHERING REQUEST	
20	-->		AUTHENTICATION AND CIPHERING RESPONSE	
21	<--		SECURITY MODE COMMAND	
22	-->		SECURITY MODE COMPLETE	
23	<--		CP-DATA	Contains RP-DATA RPDU (SMS-STATUS-REPORT TPDU)
24	-->		CP-ACK	
25	-->		CP-DATA	Contains RP-ACK RPDU
26	<--		CP-ACK	
27	<--		RRC CONNECTION RELEASE	
28	-->		RRC CONNECTION RELEASE COMPLETE	

Step	Direction		Message	Comments
	UE	SS		
29	UE			The UE is made to send an SMS-COMMAND message enquiring about the previously submitted SM
30	<--		SYSTEM INFORMATION	BCCH
31	-->		RRC CONNECTION REQUEST	CCCH
32	<--		RRC CONNECTION SETUP	CCCH
33	-->		RRC CONNECTION SETUP COMPLETE	DCCH
34	-->		SERVICE REQUEST	
35	<--		AUTHENTICATION AND CIPHERING REQUEST	
36	-->		AUTHENTICATION AND CIPHERING RESPONSE	
37	<--		SECURITY MODE COMMAND	
38	-->		SECURITY MODE COMPLETE	
39	-->		CP-DATA	Contains RP-DATA RPDU (SMS-COMMAND TPDU) which shall contain the correct TP-MR
40	<--		CP-ACK	
41	<--		CP-DATA	Contains RP-ACK RPDU
42	-->		CP-ACK	
43	<--		RRC CONNECTION RELEASE	
44	-->		RRC CONNECTION RELEASE COMPLETE	
45	UE		The UE is made to send an SMS-COMMAND	message requiring to delete the previously submitted SM.
46	-->		RRC CONNECTION REQUEST	CCCH
47	<--		RRC CONNECTION SETUP	CCCH
48	-->		RRC CONNECTION SETUP COMPLETE	DCCH
49	-->		SERVICE REQUEST	
50	<--		AUTHENTICATION AND CIPHERING REQUEST	
51	-->		AUTHENTICATION AND CIPHERING RESPONSE	
52	<--		SECURITY MODE COMMAND	
53	-->		SECURITY MODE COMPLETE	
54	-->		CP-DATA	Contains RP-DATA RPDU (SMS-COMMAND TPDU) which shall contain the correct TP-MR
55	<--		CP-ACK	
56	<--		CP-DATA	Contains RP-ACK RPDU
57	-->		CP-ACK	
58	<--		RRC CONNECTION RELEASE	
59	-->		RRC CONNECTION RELEASE COMPLETE	

Specific Message Contents

SMS SUBMIT TPDU

Information element	Comment Value
TP-SRR	status report is requested "1"B

SMS-STATUS-REPORT TPDU (SS to UE in step 23):

Information element	Comment Value
TP-MR	same as previous SMS-SUBMIT
TP-MMS	no more messages "1"B
TP-SRQ	result of SMS-SUBMIT "0"B
TP-RA	same as the Destination address of the SMS-SUBMIT
TP-ST	SM received "00000000"B

first SMS-COMMAND TPDU (UE to SS in step 39)

Information element	Comment Value
TP-MR	TP-MR in previous SMS-SUBMIT plus "1" status report requested "1"B Enquiry relating to previously submitted short message "00000000"B not checked (TP-MR in previous SMS-SUBMIT)
TP-SRR	
TP-CT	
TP-MN	

second SMS-COMMAND TPDU (UE to SS in step 54)

Information element	Comment Value
TP-MR	TP-MR in previous SMS-COMMAND plus "1" Delete previously submitted short message "00000010"B not checked (TP-MR in previous SMS-SUBMIT)
TP-CT	
TP-MN	

#### 16.2.4.5 Test requirements

After step 23 UE accept a SMS-STATUS-REPORT TPDU.

After step 39 UE shall send a SMS-COMMAND TPDU with the correct TP-Message-Reference.

After step 54 UE shall send a SMS-COMMAND TPDU with the correct TP-Message-Reference.

### 16.2.5 Test of message class 0 to 3

#### 16.2.5.1 Short message class 0

##### 16.2.5.1.1 Definition

##### 16.2.5.1.2 Conformance requirement

When a mobile terminated message is class 0 and the UE has the capability of indicating short messages, the UE shall indicate the message immediately and send an acknowledgement to the SC when the message has successfully reached the UE irrespective of whether there is memory available in the USIM or ME. The message shall not be automatically stored in the USIM or ME.

#### References

3GPP TS 23.038, clause 4.

##### 16.2.5.1.3 Test purpose

To verify that the UE will accept and indicate but not store a class 0 message, and that it will accept and indicate a class 0 message if its message store is full.

NOTE: failure of this test in a UE could cause it to reject a class 0 message when its SMS memory becomes full. This could lead to unwanted repetitions between the UE and the service centre.

##### 16.2.5.1.4 Method of test

#### Initial conditions

- System Simulator:
- 1 cell, default parameters.
- User Equipment:

- the UE shall be in GMM-state "GMM-REGISTERED";
- the UE message store shall be empty.

#### Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

#### Test procedure

- a) The SS sends a class 0 message by using the method described in step a) of clause 16.2.1 but with the TPDU described in this clause.
- b) The UE message store shall be filled (for example by using the method of clause 16.2.3 test of the memory available notification) with the same SMS-DELIVER TPDU except that TP-DCS is set to class 1.
- c) The SS sends a class 0 message as in step a).

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108  Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 0 Short Message  Contains RP-ACK RPDU.  The content of the short message shall be indicated by the ME. The UE shall not store the message. This can be checked by verifying that it is impossible to retrieve any short messages from the UE message store. The UE message store shall be filled (for example by using the method of 16.2.3) with Class 1 SMS-DELIVER TPDU.  See 3GPP TS34.108
2	-->		SERVICE REQUEST	
3	<--		AUTHENTICATION AND CIPHERING REQUEST	
4	-->		AUTHENTICATION AND CIPHERING RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	
8	-->		CP-ACK	
9	-->		CP-DATA	
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13	UE			
14		SS		
15			Mobile terminated establishment of Radio Resource Connection	
16	-->		SERVICE REQUEST	
17	<--		AUTHENTICATION AND CIPHERING REQUEST	
18	-->		AUTHENTICATION AND CIPHERING RESPONSE	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 0 Short Message  Contains RP-ACK RPDU.
19	<--		SECURITY MODE COMMAND	
20	-->		SECURITY MODE COMPLETE	
21	<--		CP-DATA	
22	-->		CP-ACK	
23	-->		CP-DATA	
24	<--		CP-ACK	
25	<--		RRC CONNECTION RELEASE	

Step	Direction		Message	Comments
	UE	SS		
26	-->		RRC CONNECTION RELEASE COMPLETE	The content of the short message shall be indicated by the ME.
27		UE		

### Specific Message Contents

SMS-DELIVER TPDU (containing a class 0 message) (SS to UE)

Information element	Comment Value
TP-DCS	default alphabet, class 0 "1111 0000"B

SMS-DELIVER TPDU (containing a class 1 message to fill the UE message store) (SS to UE)

Information element	Comment Value
TP-DCS	default alphabet, class 1 "1111 0001"B

#### 16.2.5.1.5 Test requirements

After step 7 UE shall accept and indicate but not store a class 0 message.

After step 21 UE shall accept and indicate a class 0 message.

#### 16.2.5.2 Test of class 1 short messages

This test shall apply to UEs which support:

- storing of received Class 1 Short Messages; and
- indicating of stored Short Messages.

##### 16.2.5.2.1 Definition

##### 16.2.5.2.2 Conformance requirement

When a mobile terminated message is class 1, the UE shall send an acknowledgement to the SC when the message has successfully reached the UE and can be stored, either in the ME or in the USIM.

### References

3GPP TS 23.038 clause 4.

##### 16.2.5.2.3 Test purpose

This procedure verifies that the UE acts correctly on receiving a class 1 message, i.e. that it stores the message in the ME or USIM and sends an acknowledgement (at RP and CP-Layer).

##### 16.2.5.2.4 Method of test

### Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:

- the UE shall be in GMM-state "GMM-REGISTERED";
- the UE message store shall be empty;
- for storing of class 1 Short Messages, the UE shall be set up to store Short Messages in the ME memory (by way of MMI, as described in ICS/IXIT statement).

**Related ICS/IXIT Statements**

Support for Short message MT/PP.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

**Test procedure**

- a) The SS delivers a Short Message of class 1 to the UE as specified in clause 16.2.1, step a).
- b) The Short Message is recalled (e.g. by means of the MMI).

**Expected sequence**

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108  Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 1 Short Message  Contains RP-ACK RPDU.  The short message shall be recalled and indicated at the UE.
2	-->		SERVICE REQUEST	
3	<--		AUTHENTICATION AND CIPHERING REQUEST	
4	-->		AUTHENTICATION AND CIPHERING RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	
8	-->		CP-ACK	
9	-->		CP-DATA	
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13	UE			

**Specific Message Contents**

SMS-DELIVER TPDU (containing a class 1 message) (SS to UE)

Information element	Comment	Value
TP-DCS	default alphabet, class 1	"1111 0001"B

**16.2.5.2.5 Test requirements**

After step 7 UE shall store the message in the ME or USIM and send an acknowledgement.

### 16.2.5.3 Test of class 2 short messages

#### 16.2.5.3.1 Definition

Class 2 Short Messages are defined as USIM specific, and the UE shall ensure that a message of this class is stored on the USIM.

#### 16.2.5.3.2 Conformance requirement

When a mobile terminated message is Class 2, the UE shall ensure that the message has been correctly transferred to the SMS data field in the USIM before sending an acknowledgement to the SC. The UE shall return a "protocol error, unspecified" error message if the short message cannot be stored in the USIM and there is other short message storage available at the UE. If all the short message storage at the UE is already in use, the UE shall return "memory capacity exceeded".

#### Reference(s)

3GPP TS 23.040 clause 9.2.3.10; 3GPP TS 23.038 clause 4. 3GPP TS 34.108 clause 8.3.2.28.

#### 16.2.5.3.3 Test purpose

This procedure verifies that the UE acts correctly on receiving a class 2 message, i.e. that it stores the message correctly in the USIM, and if this is not possible, returns a protocol error message, with the correct error cause, to the network.

There are 2 cases:

- 1) if the UE supports storing of short messages in the USIM and in the ME, and storage in the ME is not full, and the short message cannot be stored in the USIM, the error cause shall be "protocol error, unspecified";
- 2) if the UE supports storing of short messages in the USIM and not in the ME, and storage in the ME is not full, and the short message cannot be stored in the USIM, the error cause shall be "memory capacity exceeded".

NOTE: If the UE supports storing of short messages in the USIM and the ME, and storage in the ME is full, and the short message cannot be stored in the USIM, the error cause shall be "memory capacity exceeded". This case is not tested in this test.

#### 16.2.5.3.4 Method of test

##### Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in GMM-state "GMM-REGISTERED";
  - the ME message store shall be empty;
  - the ME shall be connected to the USIM simulator. The following shall be present in the USIM simulator:
    - EF<sub>SMS</sub> with at least two free records and one full record;
    - EF<sub>SMSstatus</sub>, with SMS "Memory Cap. Exceed" notification flag set to "memory available";
    - Service no. 10 (SMS) in EF<sub>UST</sub> set to allocated and activated;
    - for storing of Class 1 Short Messages the UE shall be set up to store Short Messages in the ME memory (by way of MMI, as described in ICS/IXIT statement).

## Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

## Test procedure

- a) The SS delivers a Short Message of class 2 to the UE as specified in clause 16.2.1, step b).
- b) Following an attempt by the ME to store the short message in a free record of EF<sub>SMS</sub> in the USIM, the USIM simulator returns the status response "OK" ("90 00").
- c) Step a) is repeated.
- d) Following an attempt by the ME to store the short message in a free record of EF<sub>SMS</sub> in the USIM, the USIM simulator returns the status response "memory problem" ("92 40").
- e) The USIM simulator indicates if an attempt was made in steps a) and c) to store the messages and if the messages are stored according to the requirement.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108  Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 2 Short Message  The ME shall correctly store the short message in a free record of EFSMS in the USIM, i.e. -the ME shall use a free record - the first byte of the record shall indicate "message received by UE from network" - the TS-Service-Centre-Address shall be correctly stored - the TPDU shall be identical to that sent by the SS - bytes following the TPDU shall be set to "FF"  The USIM simulator returns the status response "OK" ("90 00"). The USIM simulator shall indicate if an attempt was made by the ME to store the short message in the USIM.  Contains RP-ACK RPDU.  See 3GPP TS34.108
2		-->	SERVICE REQUEST	
3		<--	AUTHENTICATION AND CIPHERING REQUEST	
4		-->	AUTHENTICATION AND CIPHERING RESPONSE	
5		<--	SECURITY MODE COMMAND	
6		-->	SECURITY MODE COMPLETE	
7		<--	CP-DATA	
8		-->	CP-ACK	
9		ME		
10		USIM		
11		-->	CP-DATA	
12		<--	CP-ACK	
13		<--	RRC CONNECTION RELEASE	
14		-->	RRC CONNECTION RELEASE COMPLETE	
15			Mobile terminated establishment of Radio Resource Connection	
16		-->	SERVICE REQUEST	
17		<--	AUTHENTICATION AND CIPHERING REQUEST	
18		-->	AUTHENTICATION AND CIPHERING RESPONSE	
19		<--	SECURITY MODE COMMAND	

Step	Direction		Message	Comments
	UE	SS		
20	-->		SECURITY MODE COMPLETE	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 2 Short Message
21	<--		CP-DATA	
22	-->		CP-ACK	The ME shall attempt to store the short message in a free record of EFSMS in the USIM. The USIM simulator returns the status response "memory problem" ("92 40"). The USIM simulator shall indicate if an attempt was made by the ME to store the short message in the USIM.
23	ME			
24	USIM			
25	-->		CP-DATA	Contains RP-ERROR RPDU with error cause "protocol error, unspecified" if the UE supports storing of short messages in the ME, or error cause "memory capacity exceeded" if not.
26	<--		CP-ACK	
27	<--		RRC CONNECTION RELEASE	
28	-->		RRC CONNECTION RELEASE COMPLETE	

### Specific Message Contents

SMS-DELIVER TPDU (containing a class 2 message) (SS to UE)

Information element	Comment	Value
TP-DCS	default alphabet, class 2	"1111 0010"B

#### 16.2.5.3.5 Test requirements

After step 10 UE shall confirm that the short message is stored in the USIM and send CP-DATA containing RP-ACK RPDU.

After step 24 UE shall confirm that the short message cannot be stored in the USIM and send CP-DATA containing RP-ERROR RPDU. If UE supports storing of short message in the ME, the error cause of RP-ERROR RPDU shall be "protocol error, unspecified", and if not the error cause of RP-ERROR RPDU shall be "memory capacity exceeded"

#### 16.2.5.4 Test of class 3 short messages

For further study.

### 16.2.6 Test of short message type 0 (R99 and REL-4 UE)

#### 16.2.6.1 Definition and applicability

This tests that the UE correctly acknowledges the receipt of the short message type 0 to the SC in Packet Switched mode. It is highly recommended that the UE discards the contents of the short message type 0.

This test shall apply to all R99 and REL-4 UEs supporting receipt of short messages in PS mode.

#### 16.2.6.2 Conformance requirement

When a mobile terminated message is type 0, the UE shall acknowledge receipt of the short message to the SC but may discard its contents.

**Note:** It is highly recommended that the UE discards the type 0 short message. This means that the UE is able to receive the type 0 short message irrespective of whether there is memory available in the (U)SIM or ME or not, the UE does not indicate the receipt of the type 0 short message to the user, and the message is not stored in the (U)SIM or ME.

## Reference(s)

3GPP TS 23.040, 9.2.3.9.

## 16.2.6.3 Test purpose

To verify that the UE will acknowledge receipt of the short message to the SC. The UE should discard its contents.

NOTE: failure of this test in a UE could cause it to reject a type 0 message when the network is trying to reach the UE. This could lead to unwanted repetitions between the UE and the service centre.

## 16.2.6.4 Method of test

## Initial conditions

## System Simulator:

1 cell, default parameters.

## User Equipment:

the UE shall be in GMM-state "GMM-REGISTERED";

## Related ICS/IXIT Statements

Support for Short Message MT/PP.

The value of timer TC1M.

## Foreseen Final State of UE

Idle, updated.

## Test Procedure

The SS sends a type 0 message by using the method described in step a) of section 16.2.1 but with the TPDU described in this section.

## Maximum Duration of Test

1 minute

## Expected Sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108  Contains RP-DATA RPDU (SMS DELIVER TPDU), type 0 Short Message  Contains RP-ACK TP-Protocol-Identifier (TP-PID).
2	-->		SERVICE REQUEST	
3	<--		AUTHENTICATION AND CIPHERING REQUEST	
4	-->		AUTHENTICATION AND CIPHERING RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	
8	-->		CP-ACK	
9	-->		CP-DATA	
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13	UE			

## Specific Message Contents:

## SMS-DELIVER TPDU (containing a type 0 message) (SS to UE):

Information element	Comment Value
TP-MIT	SMS-DELIVER "00"B
TP-MMS	more messages are waiting in SC "0"B
TP-RP	no reply path "0"B
TP-UDHI	TP-UD contains only the SM"0"B
TP-SRI	no status report returned0
TP-OA	an international number coded E.164
TP-PID	Type 0: "01000000"B
TP-DCS	default alphabet "0000 0000"B
TP-SCTS	any legal value (cf. 3GPP TS 23.040)
TP-UDL	160
TP-UD (140 octets)	text of message (160 characters)

16.2.6a Test of short message type 0 ( $\geq$  REL-5 UE)

## 16.2.6a.1 Definition and applicability

This tests that the UE correctly acknowledges the receipt of the short message type 0 to the SC in Packet Switched mode. The UE discards the contents of the short message type 0.

This test shall apply to all  $\geq$  REL-5 UEs supporting receipt of short messages in PS mode.

## 16.2.6a.2 Conformance requirement

When a mobile terminated message is type 0, the UE shall acknowledge receipt of the short message to the SC but shall discard its contents. This means that

- the UE shall be able to receive the type 0 short message irrespective of whether there is memory available in the (U)SIM or ME or not,

- the UE shall not indicate the receipt of the type 0 short message to the user,
- the short message shall neither be stored in the (U)SIM nor ME.

#### Reference(s)

3GPP TS 23.040, 9.2.3.9.

#### 16.2.6a.3 Test purpose

To verify that the UE will acknowledge receipt of the short message to the SC. The UE shall discard its contents. This means that

- the UE shall be able to receive the type 0 short message irrespective of whether there is memory available in the (U)SIM or ME or not,
- the UE shall not indicate the receipt of the type 0 short message to the user,
- the short message shall neither be stored in the (U)SIM nor ME.

NOTE: failure of this test in a UE could cause it to reject a type 0 message when the network is trying to reach the UE. This could lead to unwanted repetitions between the US and the service centre. In addition service affecting restrictions could happen to the customer.

#### 16.2.6a.4 Method of test

##### Initial conditions

##### System Simulator:

1 cell, default parameters.

##### User Equipment:

the UE shall be in GMM-state "GMM-REGISTERED";

the ME- and (U)SIM message store shall be empty.

##### Related ICS/IXIT Statements

Support for Short Message MT/PP.

Whether SMS messages are stored in the USIM and/or the ME.

UE capable of displaying short messages

The value of timer TC1M.

##### Foreseen Final State of UE

Idle, updated.

##### Test Procedure

- a) The SS sends a type 0 short message by using the method described in step a) of clause 16.2.1 but with the TPDU described in this section.
- b) The ME- and (U)SIM short message store shall be filled (for example by using the method of clause 16.2.3 test of the memory available notification).
- c) The SS sends a type 0 short message as in step a).

## Maximum Duration of Test

5 minutes

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		SERVICE REQUEST	
3	<--		AUTHENTICATION AND CIPHERING REQUEST	
4	-->		AUTHENTICATION AND CIPHERING RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), type 0 Short Message
8	-->		CP-ACK	
9	-->		CP-DATA	Contains RP-ACK TP-Protocol-Identifier (TP-PID).
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13	UE			The UE shall discard the type 0 short message. This means that the UE does not indicate the receipt of the type 0 short message to the user. The UE shall not store the message in the (U)SIM or ME. This can be checked by verifying that it is impossible to retrieve any short messages from the ME- and (U)SIM message store.
14	SS			The ME- and (U)SIM message store shall be filled (for example by using the method of 16.1.3).
15			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		SERVICE REQUEST	
3	<--		AUTHENTICATION AND CIPHERING REQUEST	
4	-->		AUTHENTICATION AND CIPHERING RESPONSE	
16	-->		PAGING RESPONSE	
17	<--		AUTHENTICATION REQUEST	
18	-->		AUTHENTICATION RESPONSE	
19	<--		SECURITY MODE COMMAND	
20	-->		SECURITY MODE COMPLETE	
21	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), type 0 Short Message
22	-->		CP-ACK	
23	-->		CP-DATA	Contains RP-ACK TP-Protocol-Identifier (TP-PID).
24	<--		CP-ACK	
25	<--		RRC CONNECTION RELEASE	
26	-->		RRC CONNECTION RELEASE COMPLETE	
27	UE			The UE shall discard the type 0 short message. This means that the UE does not indicate the receipt of the type 0 short message to the user. The UE shall not store the message in the (U)SIM or ME. This can be checked by verifying that it is impossible to retrieve any short messages from the ME- and (U)SIM message store.

Specific Message Contents:

SMS-DELIVER TPDU (containing a type 0 message) (SS to UE):

Information element	Comment Value
TP-MIT	SMS-DELIVER "00"B
TP-MMS	more messages are waiting in SC "0"B
TP-RP	no reply path "0"B
TP-UDHI	TP-UD contains only the SM"0"B
TP-SRI	no status report returned0
TP-OA	an international number coded E.164
TP-PID	Type 0: "01000000"B
TP-DCS	default alphabet "0000 0000"B
TP-SCTS	any legal value (cf. 3GPP TS 23.040)
TP-UDL	160
TP-UD (140 octets)	text of message (160 characters)

## 16.2.7 Test of the replace mechanism for SM type 1-7

### 16.2.7.1 Definition

### 16.2.7.2 Conformance requirement

On receipt of a short message, the UE shall check to see if the associated Protocol Identifier contains a Replace Short Message Type code. If such a code is present, then the UE will check the associated originating address (TP-OA) and replace any existing stored message having the same Protocol Identifier code and originating address with the new short message.

### Reference(s)

3GPP TS 23.040; clause 9.2.3.9.

### 16.2.7.3 Test purpose

This procedure verifies the correct implementation of the replace mechanism for Replace Short Messages.

### 16.2.7.4 Method of test

#### Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in GMM-state "GMM-REGISTERED";
  - the UE message store shall be empty.

#### Related ICS/IXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

## Test procedure

- a) Two different numbers n and m are drawn randomly between 1 and 7. Two different addresses for TP-Originating-Address (TPOA1 and TPOA2) are drawn.
- b) The SS delivers a short message to the UE as specified in clause 16.2.1 step a). In the SMS-DELIVER TPDU, the TP-Protocol-Identifier parameter is "Replace Short Message Type n", the TP-Originating-Address is TPOA1, and the RP-Originating-Address is RPOA.
- c) Step b) is repeated but with a different TP-Originating-Address (TPOA2), and different contents of TP-User-Data in the SMS-DELIVER TPDU. The other parameters are the same as in step b).
- d)
- e) Step c) is repeated but with the TP-Protocol-Identifier equal to "Replace Short Message Type m", and contents of TP-User-Data different from the former two messages. The other parameters are the same as in step c).
- f) Step e) is repeated but the contents of TP-User-Data are different from that used in step e).
- g) The SS prompts the operator to indicate the Short Messages stored in the UE.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
2	-->		SERVICE REQUEST	
3	<--		AUTHENTICATION AND CIPHERING REQUEST	
4	-->		AUTHENTICATION AND CIPHERING RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7		<--	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type n", TP-OA is TPOA1 and RP-OA is RPOA
8	-->		CP-ACK	Contains RP-ACK RPDU.
9	-->		CP-DATA	
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
14	-->		SERVICE REQUEST	
15	<--		AUTHENTICATION AND CIPHERING REQUEST	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type n", TP-OA is TPOA2 and RP-OA is RPOA1, TP-UD different from step 7
16	-->		AUTHENTICATION AND CIPHERING RESPONSE	
17	<--		SECURITY MODE COMMAND	
18	-->		SECURITY MODE COMPLETE	
19		<--	CP-DATA	
20	-->		CP-ACK	
21	-->		CP-DATA	Contains RP-ACK RPDU.
22	<--		CP-ACK	
23	<--		RRC CONNECTION RELEASE	
24	-->		RRC CONNECTION RELEASE COMPLETE	
25			(void)	
26			(void)	
27			(void)	
28			(void)	
29			(void)	

Step	Direction		Message	Comments
	UE	SS		
30			(void)	
31			(void)	
32			(void)	
33			(void)	
34			(void)	
35			(void)	
36			(void)	
37			(void)	See 3GPP TS34.108
38	-->		SERVICE REQUEST	
39	<--		AUTHENTICATION AND CIPHERING REQUEST	
40	-->		AUTHENTICATION AND CIPHERING RESPONSE	
41	<--		SECURITY MODE COMMAND	
42	-->		SECURITY MODE COMPLETE	
43	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP- PID is "Replace Short Message Type m", TP-OA is TPOA2 and RP-OA is RPOA, TP-UD different from step 7 and 19
44	-->		CP-ACK	
45	-->		CP-DATA	Contains RP-ACK RPDU.
46	<--		CP-ACK	
47	<--		RRC CONNECTION RELEASE	
48	-->		RRC CONNECTION RELEASE COMPLETE	
49			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108
50	-->		SERVICE REQUEST	
51	<--		AUTHENTICATION AND CIPHERING REQUEST	
52	-->		AUTHENTICATION AND CIPHERING RESPONSE	
53	<--		SECURITY MODE COMMAND	
54	-->		SECURITY MODE COMPLETE	
55	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP- PID is "Replace Short Message Type m", TP-OA is TPOA2 and RP-OA is RPOA, TP-UD different from step 43
56	-->		CP-ACK	
57	-->		CP-DATA	Contains RP-ACK RPDU.
58	<--		CP-ACK	
59	<--		RRC CONNECTION RELEASE	
60	-->		RRC CONNECTION RELEASE COMPLETE	
61		SS		Prompts the operator to indicate the Short Messages stored in the UE. Only the Short Messages delivered in step 7, 19 and 55 shall be retrievable and indicated

### Specific Message Contents

#### SMS-DELIVER TPDU

Information element	Comment/Value
TP-MMS TP-PID	no more messages are waiting in SC "1"B binary 01000xxx, xxx represents n resp. m (see test method description)

#### 16.2.7.5 Test requirements

After step 60 only the Short Messages delivered in step 7, 19 and 55 shall be retrieved and indicated.

## 16.2.8 Test of the reply path scheme

### 16.2.8.1 Definition

### 16.2.8.2 Conformance requirement

When a replying UE receives an original mobile terminated short message it has:

- originating SME = TP-Originating Address in the SMS-DELIVER TPDU;
- original SC = RP-Originating Address in the RP-MT-DATA.

When submitting the reply mobile originated short message, the replying UE should use parameters as follows:

- TP-Destination Address in SMS-SUBMIT TPDU = originating SME;
- RP-Destination Address in RP-MO-DATA = original SC.

### Reference(s)

3GPP TS 23.040 Annex D clauses D.5 and D.6.

### 16.2.8.3 Test purpose

This procedure verifies that the UE is able to send a Reply Short Message back to the correct originating SME even if in the meantime it receives another Short Message.

### 16.2.8.4 Method of test

#### Initial conditions

- System Simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in GMM-state "GMM-REGISTERED";
  - the UE message store shall be empty.

#### Related ICS/IXIT Statements

Support for Short message MT/PP.

Support for Short message MO/PP.

The value of timer TC1M.

#### Test procedure

- a) The SS delivers a Short Message as specified in clause 16.2.1, step b) with TP-Reply-Path set to 1.
- b) Step a) is repeated but with:
  - different TP-Originating-Address for the originating SME;
  - different RP-Originating-Address for the original SC; and
  - different message contents TP-User-Data.
- c) UE sends the Reply Short Message corresponding to one of two received Short Messages (e.g. by means of the MMI).

d) step c) is repeated for the other Short Message.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108  Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-RP set to 1 Sent within TC1M after step 7 Contains RP-ACK RPDU.
2	-->		SERVICE REQUEST	
3	<--		AUTHENTICATION AND CIPHERING REQUEST	
4	-->		AUTHENTICATION AND CIPHERING RESPONSE	
5	<--		SECURITY MODE COMMAND	
6	-->		SECURITY MODE COMPLETE	
7	<--		CP-DATA	
8	-->		CP-ACK	
9	-->		CP-DATA	
10	<--		CP-ACK	
11	<--		RRC CONNECTION RELEASE	
12	-->		RRC CONNECTION RELEASE COMPLETE	
13			Mobile terminated establishment of Radio Resource Connection	See 3GPP TS34.108  Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-OA, RP-OA and TP-UD different from step 7 Sent within TC1M after step 7 Contains RP-ACK RPDU.  UE sends the Reply Short Message corresponding to one of two received Short Messages. BCCH CCCH DCCH  Contains RP-DATA RPDU (SMS SUBMIT TPDU) RP-DA = RP-OA corresponding to the message TP-DA = TP-OA corresponding to the message Sent within TC1M after step 35 Contains RP-ACK RPDU Waits max 25 s for CP-ACK  RRC connection is released.  UE sends the Reply Short Message corresponding to other Short Message. BCCH CCCH
14	-->		SERVICE REQUEST	
15	<--		AUTHENTICATION AND CIPHERING REQUEST	
16	-->		AUTHENTICATION AND CIPHERING RESPONSE	
17	<--		SECURITY MODE COMMAND	
18	-->		SECURITY MODE COMPLETE	
19	<--		CP-DATA	
20	-->		CP-ACK	
21	-->		CP-DATA	
22	<--		CP-ACK	
23	<--		RRC CONNECTION RELEASE	
24	-->		RRC CONNECTION RELEASE COMPLETE	
25	UE			
26	<--		SYSTEM INFORMATION	
27	-->		RRC CONNECTION REQUEST	
28	<--		RRC CONNECTION SETUP	
29	-->		RRC CONNECTION SETUP COMPLETE	
30	-->		SERVICE REQUEST	
31	<--		AUTHENTICATION AND CIPHERING REQUEST	
32	-->		AUTHENTICATION AND CIPHERING RESPONSE	
33	<--		SECURITY MODE COMMAND	
34	-->		SECURITY MODE COMPLETE	
35	-->		CP-DATA	
36	<--		CP-ACK	
37	<--		CP-DATA	
38	SS			
39	-->		CP-ACK	
40	<--		RRC CONNECTION RELEASE	
41	-->		RRC CONNECTION RELEASE COMPLETE	
42	UE			
43	<--		SYSTEM INFORMATION	
44	-->		RRC CONNECTION REQUEST	

Step	Direction		Message	Comments
	UE	SS		
45	<--		RRC CONNECTION SETUP	CCCH
46	-->		RRC CONNECTION SETUP COMPLETE	DCCH
47	-->		SERVICE REQUEST	
48	<--		AUTHENTICATION AND CIPHERING REQUEST	
49	-->		AUTHENTICATION AND CIPHERING RESPONSE	
50	<--		SECURITY MODE COMMAND	
51	-->		SECURITY MODE COMPLETE	
52	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU) RP-DA = RP-OA corresponding to the Message TP-DA = TP-OA corresponding to the message
53	<--		CP-ACK	Sent within TC1M after step 52
54	<--		CP-DATA	Contains RP-ACK RPDU
55	SS			Waits max 25 s for CP-ACK
56	-->		CP-ACK	
57	<--		RRC CONNECTION RELEASE	RRC connection is released.
58	-->		RRC CONNECTION RELEASE COMPLETE	

### Specific Message Contents

#### SMS-DELIVER TPDU

Information element	Comment Value
TP-MMS	no more messages are waiting in SC "1"B
TP-RP	Reply Path exists "1"B

#### 16.2.8.5 Test requirements

After step 34 UE shall send the Reply Short Message corresponding to one of two previously received short messages.

After step 51 UE shall send the Reply Short Message corresponding to the other of two previously received short messages.

### 16.2.9 Multiple SMS mobile originated

#### 16.2.9.1 UE in idle mode

This test is not applicable for R99.

#### 16.2.9.2 UE in active mode

This test is not applicable for R99.

### 16.2.10 Test of capabilities of simultaneously receiving a short message whilst sending a mobile originated short message

#### 16.2.10.1 Definition

#### 16.2.10.2 Conformance requirements

An active UE shall be able to receive short message TPDU (SMS-SUBMIT) at any time, independently of whether or not there is in SMS mobile originated.

## Reference

3GPP TS 23.040 clause 3.1.

## 16.2.10.3 Test purpose

The test verifies that the UE is capable of simultaneously receiving a network originated SM whilst sending a mobile originated SM.

## 16.2.10.4 Method of test

## Initial Conditions

- System simulator:
  - 1 cell, default parameters.
- User Equipment:
  - the UE shall be in GMM-state "GMM-REGISTERED";
  - the SMS message storage shall be empty.

## Related ICS/IXIT Statements

Support for Short message MO/PP and MT/PP.

Support for state PDP-ACTIVE of session management.

The value of timer TC1M.

Whether SMS messages are stored in the USIM and/or the ME.

Maximum length (characters) of a mobile originated short message.

## Test procedure

- a) The SS is configured to receive a mobile originated SM. In clause 16.2.2 steps a) and b) are repeated and, using the end of the CP-DATA message from the UE as a trigger, the SS sends a SM to the UE. In this case a new transaction identifier shall be used in the CP messages of SMS mobile terminated.

## Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION	BCCH
2	-->		RRC CONNECTION REQUEST	CCCH
3	<--		RRC CONNECTION SETUP	CCCH
4	-->		RRC CONNECTION SETUP COMPLETE	DCCH
5	-->		SERVICE REQUEST	
6	<--		AUTHENTICATION AND CIPHERING REQUEST	
7	-->		AUTHENTICATION AND CIPHERING RESPONSE	
8	<--		SECURITY MODE COMMAND	
9	-->		SECURITY MODE COMPLETE	
10	-->		CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
11	SS			The SS sends an SM to the UE triggered by the end of the CP-DATA message from the UE
12	<--		CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)

Step	Direction		Message	Comments
	UE	SS		
13	UE			The UE shall correctly receive the SM and indicate that a message has arrived. In the MO case the UE shall send the CP-ACK message with transaction identifier assigned to this transfer. In the MT case the UE shall send a CP-ACK message and a CP-DATA message containing the RP-ACK RPDU. The transaction identifier shall be the same as chosen by the SS for the MT transfer.
NOTE: Time values for SS wait times are chosen sufficiently high to be sure that the UE has enough time to respond to the different messages.				

## Specific Message Contents

### SMS SUBMIT TPDU

Information element	Comment Value
TP-UDL TP-UD (140 octets max)	as applicable maximum number of characters (text of message) as defined by the manufacturer (see ICS/IXIT)

#### 16.2.10.5 Test requirements

After step 12 UE shall correctly receive the SM and indicate that a message has arrived.

## 16.3 Short message service cell broadcast

### 16.3.1 Definition

### 16.3.2 Conformance requirements

In idle mode, the UE have the ability to ignore repeat broadcasts of CBS messages already received (message has not changed since it was last broadcast i.e. sequence number has not changed within the message's indicated geographical area);

A UE supporting Cell Broadcast Service (CBS) shall be capable to receive BMC messages in the Idle mode.

### Reference

- 3GPP TS 23.041 clause 8.
- 3GPP TS 25.324 clause 11.

### 16.3.3 Test purpose

This test verifies that an UE supporting SMS-CB is able to receive SMS-CB messages and is able to ignore repeated broadcasts of CBS messages.

### 16.3.4 Method of test

#### Initial conditions

- System Simulator:
  - 1 cell, default parameters;
  - the SS provides a BCCH/CCCH to support the UE in idle mode;
  - periodic location updating is disabled.

- User Equipment:
  - the UE shall be in the idle updated state.

#### Related ICS/IXIT Statements

Support for short message transmission cell broadcast.

#### Test procedure

Three Cell Broadcast (CB) messages are sent by the SS on the CTCH with message codes 0,1,1 in serial number fields respectively.

#### Expected sequence

Since the SMS-CB messages are sent continuously, a table is not applicable in this test.

#### Specific Message Contents:

##### Cell broadcast test message content

Information element	Comment Value
Message Type	CBS Message "1"B (see 3GPP TS 25.324, clause 11.1)
Message ID	
Serial Number	
- Geographical scope	"00"B
- Message code	see test procedure "000000000"B or "000000001"B
- Update number	as applicable
Data Coding Scheme	Default alphabet, English "0000001"B
CB Data	max 1246 octets

#### 16.3.5 Test requirements

In consequence of test the UE shall ignore third message and store two messages.

## 16.4 Default message contents:

### 16.4.1 Default message contents for SM-CP protocol

#### CP-DATA

Protocol Discriminator	SMS messages ("1001"B)
Transaction Identifier	
TIO	any value from the set {0, ..., 6}
TI flag	0
Message type	00000001
CP-User data	
length indicator	
RPDU	max 248 octets

## CP-ACK

Protocol Discriminator	SMS messages ("1001"B)
Transaction Identifier	
TIO	
TI flag	
Message type	

## CP-ERROR

Protocol Discriminator	SMS messages ("1001"B)	
Transaction Identifier		
TIO		
TI flag		
Message type		00010000
CP-Cause		see 3GPP TS 24.011, clause 8.1.4.2
Cause value		

## 16.4.2 Default message contents for SM-RP protocol

## RP-DATA

Information element	Comment Value
RP-Message Type	"001"B (SS->UE) or "000"B(UE->SS)
RP-Message Reference	see 3GPP TS 24.011, clause 8.2.3
RP-Originator Address	see 3GPP TS 24.011, clause 8.2.5.1
RP-Destination Address	see 3GPP TS 24.011, clause 8.2.5.2
RP-User Data	see 3GPP TS 24.011, clause 8.2.5.3
Length indicator	max 233 octets
TP-DATA	

## RP-ACK

Information element	Comment Value
RP-Message Type	"010"B (UE->SS) or "011"B(SS->UE)
RP-Message Reference	see 3GPP TS 24.011, clause 8.2.3
RP-User Data	see 3GPP TS 24.011, clause 8.2.5.3 : optional, may be present or not
RP-User Data IEI	"1000001"B
Length indicator	max 232 octets
TP-Data	

## RP-ERROR

Information element	Comment Value
RP-Message Type	"100"B (UE->SS) or "101"B(SS->UE)
RP-Message Reference	see 3GPP TS 24.011, clause 8.2.3
RP-Cause	see 3GPP TS 24.011, clause 8.2.5.4
RP-User Data	see 3GPP TS 24.011, clause 8.2.5.3: optional, may be present or not
RP-User Data IEI	"1000001"B
Length indicator	max 232 octets
TP-Data	

## RP-SMMA UE-&gt;SS)

Information element	Comment Value
RP-Message Type	"110"B (UE->SS)
RP-Message Reference	see 3GPP TS 24.011, clause 8.2.3

### 16.4.3 Default message contents for SM-TP protocol

#### SMS DELIVER TPDU

Information element	Comment Value
TP-MTI	SMS DELIVER "00"B
TP-MMS	more messages are waiting in SC "0"B
TP-RP	no reply path "0"B
TP-UDHI	TP-UD contains only the SM"0"B
TP-SRI	no status report returned"0"B
TP-OA	an international number coded E.164
TP-PID	default "00000000"B
TP-DCS	default alphabet "00000000"B
TP-SCTS	any legal value (cf. 3GPP TS 23.040)
TP-UDL	
TP-UD	max 140 octets

#### SMS SUBMIT TPDU

Information element	Comment Value
TP-MTI	SMS SUBMIT"01"B
TP-RD	SC shall accept same SMS-SUBMIT "0"B
TP-VPF	TP-VP field not present "00"B
TP-RP	no reply path "0"B
TP-UDHI	TP-UD contains only the SM "00"B
TP-SRR	no request of status report "00"B
TP-MR	
TP-DA	an international number coded E164
TP-PID	default "00000000"B
TP-DCS	default alphabet "00000000"B
TP-VP	
TP-UDL	
TP-UD	max 140 octets

#### SMS COMMAND TPDU

Information element	Comment Value
TP-MTI	SMS-COMMAND"10"B
TP-UDHI	TP-UD contains only the SM "00"B
TP-SRR	status report not requested "0"B
TP-MR	
TP-PID	default "00000000"B
TP-CT	
TP-MN	
TP-DA	an international number coded E164
TP-CDL	
TP-CD	

## SMS STATUS REPORT TPDU

Information element	Comment Value
TP-MTI	SMS-STATUS-REPORT"10"B no more messages "1"B result of SMS-SUBMIT "0"B
TP-MMS	
TP-SRQ	
TP-MR	the destination address of the previous SM MO any legal value (cf. 3GPP TS 23.040, clause 9.2.3.11) any legal value (cf. 3GPP TS 23.040, clause 9.2.3.13) see 3GPP TS 23.040, clause 9.2.3.15
TP-RA	
TP-SCTS	
TP-DT	
TP-ST	

## 17 User Equipment features (MMI, VHE, MexE, SAT)

### 17.1 Test of autocalling restrictions

#### 17.1.1 General

It is essential that all autocalling apparatus is prevented from continuously dialling a given number, to avoid machines repeatedly disturbing PSTN subscribers in error, or numerous repeat attempts to unobtainable numbers which cause waste of valuable network resources. Therefore autocalling restrictions are defined by TS 22.001.

The tests shall be performed using all of the call methods specified by the supplier in the IXIT statement TS 34.123-2. The supplier shall state any autocalling procedures implemented and how many times they can be repeated to a single number and the minimum re-attempt interval(s), i.e. the complete re-try schedule or algorithm with parameter values. The supplier shall further describe any automatic methods for making repeated calls to a single number. The supplier shall also state in the IXIT statement the number of B-party numbers that can be stored on the list of blacklisted numbers as described in TS 22.001, annex E.

For an external R-interface the supplier shall state in the IXIT statement the procedure for autocalling restrictions for that interface and the possible parameter settings for the number of times the LTE can make a re-attempt and the minimum accepted time between re-attempts accepted by the UE. The conditions for clearing the autocalling constraints shall be stated in the IXIT statement.

For external interfaces the LTE must be programmed so that it clearly attempts to violate the autocalling constraints.

For all the tests in this clause the call setup procedure uses the Generic Setup Procedure for Circuit Switched connection as specified in TS 34.108 clause 7. A Radio Access Bearer to set up shall be selected from one of the speech or CS data bearers within the capability of the UE as specified in the ICS statement. Unless otherwise indicated, this procedure shall only run to the transmission by the SS or UE of the SETUP message (CC).

#### 17.1.2 Constraining the access to a single number (TS 22.001 category 3)

##### 17.1.2.1 Definition

This test checks that when an auto-dialled call to a B-party number fails due to a category 3 cause, only one retry to that number is permitted.

During this test the SETUP messages shall contain the same B-party number.

No manual intervention shall be performed except to initiate and end the test.

##### 17.1.2.2 Conformance requirement

A repeat call attempt may be made when a call attempt is unsuccessful for the reasons listed below (as defined in TS 24.008).

These reasons are classified in three major categories:

1. "Busy destination";
2. "Unobtainable destination - temporary";
3. "Unobtainable destination - permanent/long term".

NOTE: Cause values for each category are defined in TS 22.001, annex E.

The table below describes a repeat call restriction pattern to any B number. This pattern defines a maximum number (n) of call repeat attempts; when this number n is reached, the associated B number shall be blacklisted by the UE until a manual re-set at the UE is performed in respect of that B number. When a repeat attempt to any one B number fails, or is blacklisted, this does not prevent calls being made to other B numbers.

For the categories 1 and 2 above, n shall be 10; for category 3, n shall be 1.

Call attempt	Minimum duration between call attempts
Initial call attempt	-
1st repeat attempt	5 s
2nd repeat attempt	1 min
3rd repeat attempt	1 min
4th repeat attempt	1 min
5th repeat attempt	3 min
.	
.	
nth repeat attempt	3 min

Reference:

3GPP TS 22.001 annex E.

#### 17.1.2.3 Test purpose

To ensure the correct behaviour of the UE to TS 22.001 Category 3.

#### 17.1.2.4 Method of test

Initial condition.

There shall be no numbers in the list of blacklisted numbers in the UE. The time set between the first re-attempt and the next re-attempt is set to the minimum value possible. The number of re-attempts is set to the lowest possible number, greater than 1, that is supported by the UE. The autocalling function is invoked for the B-party number to be used during the test.

Related ICS/IXIT Statement(s)

ICS: TBD.

IXIT: Description of auto calling management:

- selection of the auto calling;
- indication that the call failed and a re-try is attempted;
- indication that a call finally failed.

## Test Procedure

Step	Direction		Message	Comments
	UE	SS		
1	UE			"called number" entered
2		→	GENERIC SETUP PROCEDURE MOBILE ORIGINATED, CS (Up to SETUP)	Establishment cause indicates "originating call".
3		←	RELEASE COMPLETE	Cause value from category 3 of TS 22.001, Annex E.
4		←	RRC CONNECTION RELEASE	
5		→	RRC CONNECTION RELEASE COMPLETE	The signalling link is released
6				The UE is invoking the auto calling function. The time between step 4 and 7 must be minimum 5 sec.
7		→	GENERIC SETUP PROCEDURE MOBILE ORIGINATED, CS (Up to SETUP)	Establishment cause indicates "originating call".
8		←	RELEASE COMPLETE	Cause value from category 3 of TS 22.001, Annex E.
9		←	RRC CONNECTION RELEASE	
10		→	RRC CONNECTION RELEASE COMPLETE	The main signalling link is released
11	UE			Clear the auto calling constraint after a minimum of 2 minutes from step 9.

## 17.1.2.5 Test requirements

The time between step 4 and 7 must be minimum 5 s.

No further call attempt shall be made after step 9.

## 17.1.3 Constraining the access to a single number (TS 22.001 categories 1 and 2)

## 17.1.3.1 Definition

This test checks that when an auto-dialled call to a B-party number fails due to a category 2 cause, the time between of retries complies with the requirements, and the number of retries does not exceed that declared by the UE manufacturer, and is never more than 10.

During this test the SETUP messages shall contain the same B-party number.

No manual intervention shall be performed except to initiate and end the test.

## 17.1.3.2 Conformance requirement

The UE must fulfil the requirements for category 1 and 2, see clause 17.1.2.2.

Reference:

3GPP TS 22.001 annex E.

## 17.1.3.3 Test purpose

To ensure the correct behaviour of the UE to TS 22.001 Categories 1 and 2.

## 17.1.3.4 Method of test

## Initial condition

There shall be no numbers in the list of blacklisted numbers in the UE. The re-try scheme is set to give the shortest possible intervals between re-tries. The number of re-attempts is set to the maximum possible number (N), that is supported by the UE. The autocalling function is invoked for the B-party number to be used during the test.

## Related ICS/IXIT Statement(s)

ICS: TBD

IXIT: Description of auto calling management:

- selection of the auto calling;
- indication that the call failed and a re-try is attempted;
- indication that a call finally failed.

## Test Procedure

A, UE originated, generic call setup is performed up to the SETUP message. The SS then releases the establishment with a cause value from category 1 or 2 (TS 22.001, annex E).

The UE is continuously making new generic call setup attempts invoked by the auto calling function after each RRC CONNECTION RELEASE from the SS.

Step	Direction		Message	Comments
	UE	SS		
1	UE			"called number" entered
2	→		GENERIC SETUP PROCEDURE MOBILE ORIGINATED, CS (Up to SETUP)	Establishment cause indicates "originating call".
3	←		RELEASE COMPLETE	Cause value from category 1 or 2 of TS 22.001, Annex E. This shall be chosen randomly, from both categories. Cause no. 27 shall be excluded if the UE has implemented in category 3 of TS 22.001, as declared in IXIT statement
4	←		RRC CONNECTION RELEASE	The UE is invoking the auto calling function. 1: At the first re-attempt the time between step 4 and 7 must be minimum 5 sec. 2: At the 2 <sup>nd</sup> , 3 <sup>rd</sup> and 4 <sup>th</sup> re-attempt the time between step 4 and 7 must be minimum 1 min. 3: At the 5 <sup>th</sup> to 10 <sup>th</sup> re-attempt the time between step 4 and 7 must be minimum 3 min.
5				
6	→		RRC CONNECTION RELEASE COMPLETE	The signalling link is released
7	→		GENERIC SETUP PROCEDURE MOBILE ORIGINATED, CS (Up to SETUP)	Establishment cause indicates "originating call".
8	←		RELEASE COMPLETE	Cause value from category 1 or 2 of TS 22.001, Annex E. This shall be chosen randomly, from both categories. Cause no. 27 shall be excluded if the UE has implemented in category 3 of TS 22.001, as declared in PIXIT statement
9	←		RRC CONNECTION RELEASE	The signalling link is released.
10	→		RRC CONNECTION RELEASE COMPLETE	
11				The auto calling function shall repeat step 5 to 9 (N-1) times. The UE shall not make more than maximum 10 re-attempts.
12	UE			Clear the auto calling constraint by manual intervention after a minimum of 4 minutes from step 11. Following the final completion of step 11 the UE initiate a call prior to manual intervention.

### 17.1.3.5 Test requirements

1: At the first re-attempt the time between step 4 and 7 must be minimum 5 sec. 2: At the 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> re-attempt the time between step 4 and 7 must be minimum 1 min. 3: At the 5<sup>th</sup> to 10<sup>th</sup> re-attempt the time between step 4 and 7 must be minimum 3 min.

The UE shall not make more than maximum 10 re-attempts.

## 17.1.4 Behaviour of the UE when its list of blacklisted numbers is full

### 17.1.4.1 Definition and applicability

This tests that the UE does not allow autocalling when its list of blacklisted numbers is full.

The number of B-party numbers that can be stored in the list of blacklisted numbers, as stated in the IXIT statement, is M.

This test shall only apply to UE that are capable of autocalling more than M B-party numbers.

### 17.1.4.2 Conformance requirement

The number of B numbers that can be held in the blacklist is at the manufacturers discretion but there shall be at least 8. However, when the blacklist is full the UE shall prohibit further automatic call attempts to any one number until the blacklist is manually cleared at the UE in respect of one or more B numbers.

## Reference

TS 22.001, Annex E.

### 17.1.4.3 Test purpose

To ensure the correct behaviour of the UE when its list of blacklisted numbers is full.

### 17.1.4.4 Method of test

#### Initial condition

The list of blacklisted numbers, in the UE, shall be full. This may be achieved as described in the procedure in clause 17.1.2, applied to M B-party numbers.

#### Related ICS/IXIT Statement(s)

PICS: TBD.

PIXIT: Description of auto calling management:

- selection of the auto calling;
- indication that the call failed and a re-try is attempted;
- indication that a call finally failed.

#### Test Procedure

The autocalling function is invoked for a B-party number that is not in the list of blacklisted numbers.

Clear the autocalling constraint by manual intervention after a minimum of 10 s.

### 17.1.4.5 Test requirements

The UE must not initiate a call.

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## 18 Multi-Layer Functional Tests

The present clause specifies the multi-layer functional test cases that are not covered by the interoperability radio bearer test cases in clause 14 or by any other test cases in the present document.

### 18.1 Radio Bearer Tests for 1.28 Mcps TDD option

#### 18.1.1 General information for radio bearer tests (1.28 Mcps TDD)

The purpose of these radio bearer test cases is to test properly the Reference Radio Bearer configurations included in TS34.108 [9], clause 6.11 for 1.28 Mcps TDD option.

The applicability of radio bearer tests is dependent on the UE uplink and downlink radio access capabilities and UE support tele- and bearer-services. See TS 34.123-2, annex B for applicability of the specific test cases.

##### 18.1.1.1 Generic radio bearer test procedure

#### Initial conditions

UE in idle mode

## Test procedure

- a) The SS setup the reference radio bearer configuration as specified in TS 34.108, clause 6.11 for the actual radio bearer test.
- b) The SS limits the UE allowed uplink transport format combinations according to the "Restricted UL TFCIs", as specified for the sub-test of the actual radio bearer test, using the RRC transport format combination control procedure.
- c) The SS closes the test loop using UE test loop mode 1 and setting the UL RLC SDU size parameter, for all radio bearers under test, according to the "UL RLC SDU size" value as specified for the sub-test of the actual radio bearer test.
- d) The SS transmits, for all radio bearers under test, an RLC SDU having the size equal to the "Test data size" as specified for the sub-test of the actual radio bearer test. See note 1.
- e) The SS checks that, for all radio bearers under test, the content of the received RLC SDU has the correct content and is received having the correct transport format. See TS 34.109 [10] clause 5.3.2.6.2 for details regarding the UE loopback of RLC SDUs.
- f) The SS opens the UE test loop.
- g) Steps b) to f) are repeated for all sub-tests
- h) The SS may optionally release the radio bearer.
- i) The SS may optionally deactivate the radio bearer test mode.

NOTE: For the case when the reference radio bearer configuration under test uses RLC transparent mode in downlink then the radio bearer test case shall use a DL RLC SDU size (defined by the "Test data size" parameter) equal to the DL RLC PDU size. This is due to that the UE test loop function has no ability to perform reassembly of segmented DL RLC SDUs while the RLC is operated in transparent mode. See [7] TS 25.322 for details regarding UE operation in RLC transparent mode.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1	<--		SYSTEM INFORMATION (BCCH)	Broadcast
2	<--		PAGING (PCCH)	Paging
3	-->		RRC CONNECTION REQUEST (CCCH)	RRC
4	<--		RRC CONNECTION SETUP (CCCH)	RRC
5	-->		RRC CONNECTION SETUP COMPLETE (DCCH)	RRC
6	-->		PAGING RESPONSE (DCCH)	RR
7	<--		ACTIVATE RB TEST MODE (DCCH)	TC
8	-->		ACTIVATE RB TEST MODE COMPLETE (DCCH)	TC
9	<--		RADIO BEARER SETUP (DCCH)	RRC
10	-->		RADIO BEARER SETUP COMPLETE (DCCH)	RRC
11	<--		TRANSPORT FORMAT COMBINATION CONTROL	RRC Transport format combinations is limited to "Restricted UL TFCIs", as specified for the sub-test
12	<--		CLOSE UE TEST LOOP	TC UE test mode 1 RLC SDU size is for every active radio bearer set to "UL RLC SDU size", as specified for the sub-test.
13	-->		CLOSE UE TEST LOOP COMPLETE (DCCH)	TC
14	<--		DOWNLINK RLC SDU	Send test data using the downlink transport format combination under test
15	-->		UPLINK RLC SDU	
16	<--		OPEN UE TEST LOOP	TC
17	-->		OPEN UE TEST LOOP COMPLETE	TC
18			Repeat steps 11 to 17 for every sub-test.	
19			RB RELEASE	RRC Optional step
20	<--		DEACTIVATE RB TEST MODE	TC Optional step
21	-->		DEACTIVATE RB TEST MODE COMPLETE	TC Optional step

## 18.1.2 Combinations on DPCH

### 18.1.2.1 Stand-alone UL:1.7 DL:1.7 kbps SRBs for DCCH

Implicitly tested.

### 18.1.2.2 Stand-alone UL:3.4 DL:3.4 kbps SRBs for DCCH

Implicitly tested.

### 18.1.2.3 Stand-alone UL:13.6 DL:13.6 kbps SRBs for DCCH

Implicitly tested.

### 18.1.2.4 Conversational / speech / UL:12.2 DL:12.2 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

#### 18.1.2.4.1 Conformance requirement

The UE shall be able to establish the UTRAN requested radio bearers within the UE's signaled radio access capabilities.

The UE shall correctly transfer user data from peer to peer RLC entities according to the requested radio bearer configuration.

#### Reference(s)

3GPP TS 25.331, clause 8.2.1

3GPP TS 25.2xx series (Physical Layer)

3GPP TS 25.321 (MAC)

3GPP TS 25.322 (RLC)

#### 18.1.2.4.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.11.5.4.1.4.

#### 18.1.2.4.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	0x81(alt. 1x0)	0x103	0x60	0x148
	TF1, bits	1x39	1x103	1x60	1x148
	TF2, bits	1x81	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	1x0	0x103	0x60	0x148
	TF1, bits	1x39	1x103	1x60	1x148
	TF2, bits	1x81	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 103 bits RB7: 60 bits	RB5: 39 bits RB6: No data RB7: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 81 bits RB6: 103 bits RB7: 60 bits	RB5: 81 bits RB6: 103 bits RB7: 60 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See 14.1.1 for test procedure.

#### 18.1.2.4.4 Test requirements

See 18.1.1.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x39).
  - for sub-test 2: RB5/TF2 (1x81); RB6/TF1 (1x103); and RB7/TF1 (1x60).
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 or RB7.
  - for sub-test 2: an RLC SDU on each of RB5, RB6 and RB7 having the same content as sent by SS

#### 18.1.2.5 Conversational / speech / UL:10.2 DL:10.2 kbps / CS RAB + UL:3.4 DL: 3.4 kbps SRBs for DCCH

##### 18.1.2.5.1 Conformance requirement

See clause 18.1.2.4.1.

##### 18.1.2.5.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.11.5.4.1.5.

##### 18.1.2.5.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	0x65(alt. 1x0)	0x99	0x40	0x148
	TF1, bits	1x39	1x99	1x40	1x148
	TF2, bits	1x65	N/A	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, RB7, DCCH)
UL_TFC0	(TF0, TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0, TF0)
UL_TFC2	(TF2, TF1, TF1, TF0)
UL_TFC3	(TF0, TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	RB7 (RAB subflow #3)	DCCH
TFS	TF0, bits	1x0	0x99	0x40	0x148
	TF1, bits	1x39	1x99	1x40	1x148
	TF2, bits	1x65	N/A	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, RB7, DCCH)
DL_TFC0	(TF0, TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0, TF0)
DL_TFC2	(TF2, TF1, TF1, TF0)
DL_TFC3	(TF0, TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCS under test	Uplink TFCS Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 99 bits RB7: 40 bits	RB5: 39 bits RB6: No data RB7: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5	RB5: 65 bits RB6: 99 bits RB7: 40 bits	RB5: 65 bits RB6: 99 bits RB7: 40 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 18.1.1.1 for test procedure.

#### 18.1.2.5.4 Test requirements

See 18.1.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x39).
  - for sub-test 2: RB5/TF2 (1x65); RB6/TF1 (1x99); and RB7/TF1 (1x40).

3. At step 15 the UE shall return

- for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6 or RB7.
- for sub-test 2: an RLC SDU on each of RB5, RB6 and RB7 having the same content as sent by SS.

### 18.1.2.6 Conversational / speech / UL:7.95 DL:7.95 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH

#### 18.1.2.6.1 Conformance requirement

See clause 18.1.2.4.1.

#### 18.1.2.6.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.11.5.4.1.6.

#### 18.1.2.6.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x75 (alt. 1x0)	0x84	0x148
	TF1, bits	1x39	1x84	1x148
	TF2, bits	1x75	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x84
	TF1, bits	1x39	1x84
	TF2, bits	1x75	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 84 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 75 bits RB6: 84 bits	RB5: 75 bits RB6: 84 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 18.1.1.1 for test procedure.

#### 18.1.2.6.4 Test requirements

See 18.1.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x39).
  - for sub-test 2: RB5/TF2 (1x75) and RB6/TF1 (1x84).
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
  - for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS.

#### 18.1.2.7 Conversational / speech / UL:7.4 DL:7.4 kbps / CS RAB+ UL:3.4 DL:3.4 kbps SRBs for DCCH

##### 18.1.2.7.1 Conformance requirement

See clause 18.1.2.4.1.

##### 18.1.2.7.2 Test purpose

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.11.5.4.1.7.

##### 18.1.2.7.3 Method of test

Uplink TFS:

	TFI	RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	0x61 (alt. 1x0)	0x87	0x148
	TF1, bits	1x39	1x87	1x148
	TF2, bits	1x61	N/A	N/A

Uplink TFCS:

TFCI	(RB5, RB6, DCCH)
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

		RB5 (RAB subflow #1)	RB6 (RAB subflow #2)	DCCH
TFS	TF0, bits	1x0	0x87	0x148
	TF1, bits	1x39	1x87	1x148
	TF2, bits	1x61	N/A	N/A

Downlink TFCS:

TFCI	(RB5, RB6, DCCH)
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 87 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 61 bits RB6: 87 bits	RB5: 61 bits RB6: 87 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 18.1.1.1 for test procedure.

#### 18.1.2.7.4 Test requirements

See 18.1.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x39).
  - for sub-test 2: RB5/TF2 (1x61) and RB6/TF1 (1x87).

3. At step 15 the UE shall return

- for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
- for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS

**18.1.2.8 Conversational / speech / UL:6.7 DL:6.7 kbps / CS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH**

**18.1.2.8.1 Conformance requirement**

See clause 18.1.2.4.1.

**18.1.2.8.2 Test purpose**

To verify radio bearer establishment and correct data transfer for reference radio bearer configuration as specified in TS 34.108, clause 6.11.5.4.1.8.

**18.1.2.8.3 Method of test**

Uplink TFS:

	<b>TFI</b>	<b>RB5 (RAB subflow #1)</b>	<b>RB6 (RAB subflow #2)</b>	<b>DCCH</b>
TFS	TF0, bits	0x58 (alt. 1x0)	0x76	0x148
	TF1, bits	1x39	1x76	1x148
	TF2, bits	1x58	N/A	N/A

Uplink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, DCCH)</b>
UL_TFC0	(TF0, TF0, TF0)
UL_TFC1	(TF1, TF0, TF0)
UL_TFC2	(TF2, TF1, TF0)
UL_TFC3	(TF0, TF0, TF1)
UL_TFC4	(TF1, TF0, TF1)
UL_TFC5	(TF2, TF1, TF1)

Downlink TFS:

	<b>RB5 (RAB subflow #1)</b>	<b>RB6 (RAB subflow #2)</b>	<b>DCCH</b>
TFS	TF0, bits	1x0	0x76
	TF1, bits	1x39	1x76
	TF2, bits	1x58	N/A

Downlink TFCS:

<b>TFCI</b>	<b>(RB5, RB6, DCCH)</b>
DL_TFC0	(TF0, TF0, TF0)
DL_TFC1	(TF1, TF0, TF0)
DL_TFC2	(TF2, TF1, TF0)
DL_TFC3	(TF0, TF0, TF1)
DL_TFC4	(TF1, TF0, TF1)
DL_TFC5	(TF2, TF1, TF1)

Sub-tests:

Sub-test	Downlink TFCs under test	Uplink TFCs Under test	Implicitely tested	Restricted UL TFCIs	UL RLC SDU size (note)	Test data size (note)
1	DL_TFC1	UL_TFC1	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC1, UL_TFC3, UL_TFC4	RB5: 39 bits RB6: 76 bits	RB5: 39 bits RB6: No data
2	DL_TFC2	UL_TFC2	DL_TFC0, DL_TFC3, UL_TFC0, UL_TFC3	UL_TFC0, UL_TFC2, UL_TFC3, UL_TFC5,	RB5: 58 bits RB6: 76 bits	RB5: 58 bits RB6: 76 bits
NOTE: See TS 34.109 [10] clause 5.3.2.6.2 for details regarding loopback of RLC SDUs.						

See clause 18.1.1.1 for test procedure.

#### 18.1.2.8.4 Test requirements

See clause 18.1.1.1 for definition of step 10 and step 15.

1. At step 10 the UE shall send RADIO BEARER SETUP COMPLETE.
2. At step 15 the UE transmitted transport format shall be
  - for sub-test 1: RB5/TF1 (1x39).
  - for sub-test 2: RB5/TF2 (1x58) and RB6/TF1 (1x76).
3. At step 15 the UE shall return
  - for sub-test 1: an RLC SDU on RB5 having the same content as sent by SS; and no data shall be received on RB6.
  - for sub-test 2: an RLC SDU on each of RB5 and RB6 having the same content as sent by SS

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## Annex A (normative): Default RRC Message Contents

The default RRC message contents are provided in clause 9 of 3GPP TS 34.108 [9].

Annex B:  
Void

## Annex C (Normative): Generic Test Procedures to Check UE's State

This section described procedures to check the state of UE. These procedures will only be used in the final step of all RRC test cases. All procedures described in this section shall return an indication to the calling test entity whether or not the UE is in the designated state. In order to use these procedures, the test entity shall call for the test procedure in the test sequence. The test entity shall use the following syntax to call for the desire test procedure:

Call [test procedure index]

where the values of *test procedure index* are defined as:-

- C.1 indicates generic test procedure to test that UE is in Idle Mode state.
- C.2 indicates generic test procedure to test that UE is in CELL\_FACH state.
- C.3 indicates generic test procedure to test that UE is in CELL\_DCH state.
- C.4 indicates generic test procedure to test that UE is in CELL\_PCH state.
- C.5 indicates generic test procedure to test that UE is in URA\_PCH state.

### C.1 Verify that UE is in Idle Mode State

#### C.1.1 Conformance requirement

A UE in idle mode, CELL\_PCH state or URA\_PCH state shall receive the paging information for all its monitored paging occasions.

When the UE receives a PAGING TYPE 1 message, it shall perform the actions as specified below.

If the UE is in idle mode, for each occurrence of the IE "Paging record" included in the message the UE shall:

- 1> if the IE "Used paging identity" is a CN identity:
  - 2> compare the IE "UE identity" with all of its allocated CN UE identities:
    - 2> if one match is found:
      - 3> indicate reception of paging; and
      - 3> forward the IE "CN domain identity", the IE "UE identity" and the IE "Paging cause" to the upper layers.
  - 1> otherwise:
    - 2> ignore that paging record.

In the UE, the initial direct transfer procedure shall be initiated, when the upper layers request establishment of a signalling connection. This request also includes a request for the transfer of a NAS message.

Upon initiation of the initial direct transfer procedure when the UE is in idle mode, the UE shall:

...

- 1> perform an RRC connection establishment procedure;

...

The UE shall initiate the procedure when upper layers in the UE requests the establishment of a signalling connection and the UE is in idle mode (no RRC connection exists...

Upon initiation of the procedure, the UE shall:

...

1> submit the RRC CONNECTION REQUEST message for transmission on the uplink CCCH;

...

### C.1.2 Reference

3GPP TS 25.331 clause 8.1.2.3, 8.1.3.2 and 8.1.8.2.

### C.1.3 Test purpose

To test the UE is in idle mode state by confirming that UE responds with RRC CONNECTION REQUEST message after SS pages UE using UE's CN domain identity.

### Test Procedure

SS sends a PAGING TYPE 1 using CN domain identity. If UE is in idle mode state, UE shall respond with RRC CONNECTION REQUEST message. Then SS shall transmit RRC CONNECTION SETUP message to request UE to move to CELL\_DCH. UE shall configure the dedicated channels and then transmit RRC CONNECTION SETUP COMPLETE message. UE shall then transmit INITIAL DIRECT TRANSFER message. Then SS transmit RRC CONNECTION RELEASE message to UE. UE shall transmit RRC CONNECTION RELEASE COMPLETE message to SS.

### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	PAGING TYPE 1 (PCCH)	Using CN domain identity as stored in the TEST USIM
2		→	RRC CONNECTION REQUEST (CCCH)	
3		←	RRC CONNECTION SETUP (CCCH)	Transit to CELL_DCH state
4		→	RRC CONNECTION SETUP COMPLETE (DCCH)	
5		→	INITIAL DIRECT TRANSFER (DCCH)	RR (PAGING RESPONSE) Or GMM (Service Request)
6		←	RRC CONNECTION RELEASE (DCCH)	
7		→	RRC CONNECTION RELEASE COMPLETE (DCCH)	The UE shall enter idle state.

### Specific message contents

None.

### C.1.4 Test result

If the UE transmits a RRC CONNECTION SETUP message in step 2, the UE is in idle mode state prior to the start of this test procedure, otherwise UE is not in idle mode state.

## C.2 Verify that UE is in CELL\_FACH State

### C.2.1 Conformance requirement

The UE shall receive and act on an RRC CONNECTION RELEASE message in states CELL\_DCH and CELL\_FACH.

When the UE receives the first RRC CONNECTION RELEASE message; and

1> if the message is received on the CCCH, and IE "U-RNTI" is present and has the same value as the variable U\_RNTI; or

1> if the message is received on DCCH:

the UE shall:

- 1> in state CELL\_FACH:
  - 2> if the RRC CONNECTION RELEASE message was received on the DCCH:
    - 3> set the IE "RRC transaction identifier" in the RRC CONNECTION RELEASE COMPLETE message to the value of "RRC transaction identifier" in the entry for the RRC CONNECTION RELEASE message in the table "Accepted transactions" in the variable TRANSACTIONS;
    - 3> submit an RRC CONNECTION RELEASE COMPLETE message to the lower layers for transmission using AM RLC on the DCCH to the UTRAN.
    - 3> when the successful transmission of the RRC CONNECTION RELEASE COMPLETE message has been confirmed by the lower layers:
      - 4> release all its radio resources; and
      - 4> indicate the release of the established signalling connections (as stored in the variable ESTABLISHED\_SIGNALLING\_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED\_RABS) to upper layers; and
      - 4> clear any entry for the RRC CONNECTION RELEASE message in the tables "Accepted transactions" and "Rejected transactions" in the variable TRANSACTIONS;
      - 4> clear the variable ESTABLISHED\_SIGNALLING\_CONNECTIONS;
      - 4> clear the variable ESTABLISHED\_RABS;
      - 4> pass the value of the IE "Release cause" received in the RRC CONNECTION RELEASE message to upper layers;
      - 4> enter idle mode;
      - 4> perform the actions specified in TS 25.331 subclause 8.5.2 when entering idle mode.
  - 3> and the procedure ends.

### C.2.2 Reference

3GPP TS 25.331 clause 8.1.4.3.

### C.2.3 Test purpose

To test that the UE is in CELL\_FACH state by confirming that UE transmits RRC CONNECTION RELEASE COMPLETE using AM RLC on the UL DCCH when it receives a RRC CONNECTION RELEASE sent by SS using UM RLC on the DL DCCH.

### Test Procedure

SS sends an RRC CONNECTION RELEASE using UM RLC on the DL DCCH. UE shall respond with RRC CONNECTION RELEASE COMPLETE using AM RLC on the UL DCCH

### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	RRC CONNECTION RELEASE (DCCH)	
2		→	RRC CONNECTION RELEASE COMPLETE (DCCH-AM)	The UE shall enter idle state.

### Specific message contents

None.

## C.2.4 Test result

If UE transmits a RRC CONNECTION RELEASE COMPLETE message using AM RLC in step 2, the UE is in CELL\_FACH state prior to the start of this procedure, otherwise, the UE is not in CELL\_FACH state.

# C.3 Verify that UE is in CELL\_DCH State

## C.3.1 Conformance requirement

The UE shall receive and act on an RRC CONNECTION RELEASE message in states CELL\_DCH and CELL\_FACH.

When the UE receives the first RRC CONNECTION RELEASE message; and

- 1> if the message is received on the CCCH, and IE "U-RNTI" is present and has the same value as the variable U\_RNTI; or
- 1> if the message is received on DCCH:

the UE shall:

- 1> in state CELL\_DCH:
  - 2> initialise the counter V308 to zero;
  - 2> set the IE "RRC transaction identifier" in the RRC CONNECTION RELEASE COMPLETE message to the value of "RRC transaction identifier" in the entry for the RRC CONNECTION RELEASE message in the table "Accepted transactions" in the variable TRANSACTIONS;
  - 2> submit an RRC CONNECTION RELEASE COMPLETE message to the lower layers for transmission using UM RLC on the DCCH to the UTRAN;
  - 2> if the IE "Rplmn information" is present:
    - 3> the UE may:
      - 4> store the IE on the ME together with the PLMN id for which it applies;
    - 3> the UE may then:
      - 4> utilise this information, typically indicating where a number of BCCH frequency ranges of a RAT may be expected to be found, during subsequent Rplmn selections of the indicated PLMN.
  - 2> start timer T308 when the RRC CONNECTION RELEASE COMPLETE message is sent on the radio interface.

## C.3.2 Reference

3GPP TS 25.331 clause 8.1.4.3.

## C.3.3 Test purpose

To test that the UE is in CELL\_DCH state by confirming that UE transmits RRC CONNECTION RELEASE COMPLETE using UM RLC on the UL DCCH when it receives a RRC CONNECTION RELEASE sent by SS using UM RLC on the DL DCCH.

## Test Procedure

SS sends an RRC CONNECTION RELEASE using UM RLC on the DL DCCH. UE shall respond with RRC CONNECTION RELEASE COMPLETE using UM RLC on the UL DCCH.

Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	RRC CONNECTION RELEASE (DCCH)	
2		→	RRC CONNECTION RELEASE COMPLETE (DCCH-UM)	The UE shall enter idle state.

Specific message contents

None.

C.3.4 Test result

If UE transmits a RRC CONNECTION RELEASE COMPLETE message using UM RLC in step 2, the UE is in CELL\_DCH state prior to the start of this procedure, otherwise, the UE is not in CELL\_DCH state.

## C.4 Verify that UE is in CELL\_PCH State

C.4.1 Conformance requirement

A UE in URA\_PCH state shall initiate the URA update procedure in the following cases:

- 1> URA reselection:
- 2> if the UE detects that the current URA assigned to the UE, stored in the variable URA\_IDENTITY, is not present in the list of URA identities in system information block type 2 ...

System information block	Area scope	UE mode/state when block is valid	UE mode/state when block is read	Scheduling information	Modification of system information	Additional comment
System information block type 2	Cell	URA_PCH	URA_PCH	Specified by the IE "Scheduling information"	Value tag	

...

A UE in idle mode, CELL\_PCH state or URA\_PCH state shall receive the paging information for all its monitored paging occasions. When the UE receives a PAGING TYPE 1 message, it shall perform the actions as specified below.

If the UE is in connected mode, for each occurrence of the IE "Paging record" included in the message the UE shall:

- 1> if the IE "Used paging identity" is a UTRAN identity and if this U-RNTI is the same as the U-RNTI allocated to the UE:
  - 2> if the optional IE "CN originated page to connected mode UE" is included:
    - 3> indicate reception of paging; and
    - 3> forward the IE "CN domain identity", the IE "Paging cause" and the IE "Paging record type identifier" to the upper layers.
  - 2> otherwise:
    - 3> perform a cell update procedure with cause "paging response".
  - 2> ignore any other remaining IE "Paging record" that may be present in the message.
- 1> otherwise:

2> ignore that paging record.

#### C.4.2 Reference

3GPP TS 25.331 clause 7.2.2, 8.3.1.2, 8.1.1.1.2.

#### C.4.3 Test purpose

To confirm that the UE does not read SIB 2 when it receives a PAGING TYPE 1 message that notifies the UE about the modification of the system information.

Subsequently, to confirm that the UE performs a cell update procedure after receiving a PAGING TYPE 1 message containing UE's UTRAN identity.

#### Test Procedure

Firstly, SS shall modify the URA identity in the SIB 2. Then SS shall transmit a PAGING TYPE 1 message to UE to notify UE of the modification of the system information. Then SS wait for x seconds to see if UE send any uplink messages. Next SS shall transmit a PAGING TYPE 1 message to page UE. UE shall transmit a CELL UPDATE message. When SS receives the CELL UPDATE message, SS sends RRC CONNECTION RELEASE message to UE on downlink CCCH.

#### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION BLOCK TYPE 2	SS changes the URA identity to be different from the one stored in the UE.
2		←	PAGING TYPE 1	If UE replies to this message, the test fails. SS monitors the uplink activities for 15 s( See Note).
3		←	PAGING TYPE 1	This message contains the UTRAN identity of the UE.
4		→	CELL UPDATE	Check that the cell update cause is set to "paging response".
5		←	RRC CONNECTION RELEASE (CCCH)	

Note: The SS shall wait until UE can read all SIBs and can listen to the PCCH on the paging occasion.

SIB Repetition (1280 ms in TS34.108) \* 2 + Maximum DRX cycle length(  $2^9 * 10$  ms) \* 2 = 2.56 + 10.24 < 15 s

#### Specific message contents

##### System Information Block type 2 (Step 1)

Information Element	Value/remark
- URA identity list - URA identity	Set to a value different from the one store in the UE.

##### PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Message Type	
Paging record list	Not Present
BCCH modification info	Not Present
- MIB Value Tag	2
- BCCH modification time	Not Present

## PAGING TYPE 1 (Step 3)

Information Element	Value/remark
Message Type	
Paging record list	
- Paging record	
- CHOICE Used paging identity	UTRAN identity
- U-RNTI	Same as the identity of the UE.
- CN originated page to connected mode UE	Not Present
BCCH modification info	Not Present

## CELL UPDATE (Step 4)

Use the same message sub-type found in clause 9 of TS 34.108.

## RRC CONNECTION RELEASE (Step 5)

Use the same message sub-type found in clause 9 of TS 34.108.

## C.4.4 Test result

After step 2, the UE shall not transmit URA UPDATE message to indicate to the SS of the change in the URA identity, otherwise the UE is not in CELL\_PCH state.

After step 3, the UE shall transmit CELL UPDATE message with cell update cause set to "paging response" to SS, otherwise the UE is not in CELL\_PCH state.

## C.5 Verify that UE is in URA\_PCH State

## C.5.1 Conformance requirement

A UE in URA\_PCH state shall initiate the URA update procedure in the following cases:

1> URA reselection:

3> if the UE detects that the current URA assigned to the UE, stored in the variable URA\_IDENTITY, is not present in the list of URA identities in system information block type 2 ...

System information block	Area scope	UE mode/state when block is valid	UE mode/state when block is read	Scheduling information	Modification of system information	Additional comment
System information block type 2	Cell	URA_PCH	URA_PCH	Specified by the IE "Scheduling information"	Value tag	

## C.5.2 Reference

3GPP TS 25.331 clause 7.2.2, 8.3.1.2, 8.1.1.1.2.

## C.5.3 Test purpose

To confirm that the UE reads SIB 2 when it receives a PAGING TYPE 1 message that notifies the UE about the modification of the system information.

## Test Procedure

Firstly, SS shall modify the URA identity in the SIB 2. Then SS shall transmit a PAGING TYPE 1 message to UE to notify UE of the modification of the system information. UE shall transmit a URA UPDATE message. When SS receives the URA UPDATE message, SS sends RRC CONNECTION RELEASE message to UE on downlink CCCH.

### Expected sequence

Step	Direction		Message	Comments
	UE	SS		
1		←	SYSTEM INFORMATION BLOCK TYPE 2	SS changes the URA identity to be different from the one stored in the UE.
2		←	PAGING TYPE 1	Check that the URA update cause is set to "change of URA".
3		→	URA UPDATE	
4		←	RRC CONNECTION RELEASE (CCCH)	

### Specific message contents

#### System Information Block type 2 (Step 1)

Information Element	Value/remark
- URA identity list - URA identity	Set to a value different from the one store in the UE.

#### PAGING TYPE 1 (Step 2)

Information Element	Value/remark
Message Type	
Paging record list	Not Present
BCCH modification info	Not Present
- MIB Value Tag	2
- BCCH modification time	Not Present

#### URA UPDATE (Step 3)

Use the same message sub-type found in clause 9 of TS 34.108.

#### RRC CONNECTION RELEASE (Step 4)

Use the same message sub-type found in clause 9 of TS 34.108.

### C.5.4 Test result

After step 2, the UE shall transmit URA UPDATE message with URA update cause set to "change of URA" to SS, otherwise the UE is not in URA\_PCH state.

## Annex D (informative): Change history

Meeting -1st- Level	Doc-1st-Level	CR	Rev	Subject	Cat	Version - Current	Version -New	Doc-2nd- Level
TP-08				Approval of the specification		2.0.0	3.0.0	
TP-09	TP-000135	001		Idle mode test cases	F	3.0.0	3.1.0	T1-000165
TP-09	TP-000135	002		Section 8, RRC Tests: RLCSize	C	3.0.0	3.1.0	T1-000169
TP-09	TP-000135	003		Section 8, RRC Tests: HFN	C	3.0.0	3.1.0	T1-000170
TP-09	TP-000135	004		Section 8, RRC Tests: RLCPParam	C	3.0.0	3.1.0	T1-000171
TP-09	TP-000135	005		Section 8, RRC Tests: RBIdentity	C	3.0.0	3.1.0	T1-000172
TP-09	TP-000135	006		Section 8, RRC Tests: TrCHParam	C	3.0.0	3.1.0	T1-000173
TP-09	TP-000135	007		Section 8, RRC Tests: UECapability	C	3.0.0	3.1.0	T1-000174
TP-09	TP-000135	008		Section 8, RRC Tests: RBMapping	C	3.0.0	3.1.0	T1-000175
TP-09	TP-000135	009		Section 8, RRC Tests: PagingCause	C	3.0.0	3.1.0	T1-000176
TP-09	TP-000135	010		Section 8, RRC Tests: RRConnRelease-TM	B	3.0.0	3.1.0	T1-000177
TP-09	TP-000135	011		Section 8, RRC Tests: SignallingRelease	B	3.0.0	3.1.0	T1-000178
TP-09	TP-000135	012		Section 8, RRC Tests: CipheringAndIntegrity	C	3.0.0	3.1.0	T1-000179
TP-09	TP-000135	013		Section 8, RRC Tests: Countercheck_rev	B	3.0.0	3.1.0	T1-000180
TP-09	TP-000135	014		Section 8, RRC Tests: RLCInfo	C	3.0.0	3.1.0	T1-000181
TP-09	TP-000135	015		Section 8, RRC Tests: CompressedMode	C	3.0.0	3.1.0	T1-000182
TP-09	TP-000135	016		Section 8, RRC Tests: SIB	F	3.0.0	3.1.0	T1-000183
TP-09	TP-000135	017		Section 8, RRC Tests: PhyCH	D	3.0.0	3.1.0	T1-000184
TP-09	TP-000135	018		Section 8, RRC Tests: Measurement	C	3.0.0	3.1.0	T1-000185
TP-09	TP-000135	019		Section 8, RRC Tests: FailureCases	C	3.0.0	3.1.0	T1-000186
TP-09	TP-000135	020		Section 8, RRC Tests: TFCS	C	3.0.0	3.1.0	T1-000187
TP-09	TP-000135	021		Section 8, RRC Tests: DPCHFrameOffset	C	3.0.0	3.1.0	T1-000188
TP-09	TP-000135	022		Section 8, RRC Tests: ReEstablishmentTimer	C	3.0.0	3.1.0	T1-000189
TP-09	TP-000135	023		Section 8, RRC Tests: InterFrequencyHardHandOver	F	3.0.0	3.1.0	T1-000206
TP-09	TP-000135	024		clause 12.4.1.5 "Routing area updating / abnormal cases / attempt counter check / miscellaneous reject causes"	C	3.0.0	3.1.0	T1-000211
TP-09	TP-000135	025		SM test cases	C	3.0.0	3.1.0	T1-000208
TP-09	TP-000135	026		MM: Authentication	F	3.0.0	3.1.0	T1-000207
TP-09	TP-000135	027		Update of radio bearer test cases (aligned to GSMA ISG version 1.3)	F	3.0.0	3.1.0	T1-000213
TP-09	TP-000135	028		MAC tests	B	3.0.0	3.1.0	T1-000218
TP-09	TP-000135	029		PDCP tests	B	3.0.0	3.1.0	T1-000166
TP-09	TP-000135	030		BMC tests	B	3.0.0	3.1.0	T1-000167
TP-09	TP-000135	031		RRC updates	F	3.0.0	3.1.0	T1-000168
TP-09	TP-000135	032		clause 12.6.1.2 "Authentication rejected"	F	3.0.0	3.1.0	T1-000210
TP-09	TP-000135	033		clause 12.6 "PS authentication and ciphering"	C	3.0.0	3.1.0	T1-000209
TP-10	TP-000218	034		Application of integrity mode protection to signalling message by default	F	3.1.0	3.2.0	T1-000297
TP-10	TP-000218	035		New test cases for CS intersystem handover	B	3.1.0	3.2.0	T1-000300
TP-10	TP-000218	036		CR to 34.123-1, Annex B, Mapping of test cases to core specification versions	D	3.1.0	3.2.0	T1-000319
TP-10	TP-000218	037		Application of ciphering during conformance testing and changes to integrity mode protection related messages	C	3.1.0	3.2.0	T1-000286
TP-10	TP-000218	038		Idle Mode test cases in chapter 6	F	3.1.0	3.2.0	T1-000288
TP-10	TP-000218	039		Update to RLC test cases	F	3.1.0	3.2.0	T1-000301
TP-10	TP-000218	040		Technical Corrections to RRC test cases in clause 8	F	3.1.0	3.2.0	T1-000292
TP-10	TP-000218	041		Updates to clause 8 and Annex A due to RAN2 core specifications modifications	C	3.1.0	3.2.0	T1-000293
TP-10	TP-000218	042		Editorial modification for CC test cases (Clause 10)	D	3.1.0	3.2.0	T1-000289
TP-10	TP-000218	043		Update of radio bearer test cases	F	3.1.0	3.2.0	T1-000290
TP-10	TP-000218	044		Update of Session Management test cases	B	3.1.0	3.2.0	T1-000298
TP-10	TP-000218	045		Modification to the "Authentication rejected by the UE" test case	F	3.1.0	3.2.0	T1-000308
TP-10	TP-000218	046		Update to 16. SMS test specification	F	3.1.0	3.2.0	T1-000309
TP-10	TP-000218	047		Correction to MM tests	D	3.1.0	3.2.0	T1-000310
TP-11	TP-010021	048		Idle mode test cases	F	3.2.0	3.3.0	T1-010076
TP-11	TP-010021	049		Updates to clause 8 of TS 34.123-1 version 3.2.0	F	3.2.0	3.3.0	T1-010106
TP-11	TP-010021	050		Update to GMM test case.	F	3.2.0	3.3.0	T1-010086
TP-11	TP-010021	051		Update to 16. SMS test specification	D	3.2.0	3.3.0	T1-010090
TP-11	TP-010021	052		Annex B: Update of versions of core specifications	F	3.2.0	3.3.0	T1-010091
TP-12	TP-010121	053		Idle mode tests	F	3.3.0	3.4.0	T1-010167
TP-12	TP-010121	054		Clause 7.2: Update of RLC tests to 25.322 v3.5.0	F	3.3.0	3.4.0	T1-010170
TP-12	TP-010121	055		Corrections to Clause 7.2: RLC test case updates	F	3.3.0	3.4.0	T1-010171
TP-12	TP-010121	056		Corrections to clause 7.3 PDCP	F	3.3.0	3.4.0	T1-010173

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TP-12	TP-010121	057		Corrections to clause 7.4 BMC	F	3.3.0	3.4.0	T1-010174
TP-12	TP-010121	058		7.1 Update to MAC test cases	F	3.3.0	3.4.0	T1-010175
TP-12	TP-010121	059		Modifications to the functional testing of CPCH related UE test cases	C	3.3.0	3.4.0	T1-010176
TP-12	TP-010121	060		Transmission RLC discard	F	3.3.0	3.4.0	T1-010178
TP-12	TP-010121	061		Updates to RRC test case	F	3.3.0	3.4.0	T1-010179
TP-12	TP-010121	062		Deletion of intersystem handover tests GERAN to UTRAN	F	3.3.0	3.4.0	T1-010181
TP-12	TP-010121	063		Corrections to CC test cases	F	3.3.0	3.4.0	T1-010183
TP-12	TP-010121	064		Corrections to Emergency call test cases	F	3.3.0	3.4.0	T1-010184
TP-12	TP-010121	065		Corrections to test of autocalling restrictions	F	3.3.0	3.4.0	T1-010185
TP-12	TP-010121	066		Corrections to call re-establishment tests in CC	F	3.3.0	3.4.0	T1-010187
TP-12	TP-010121	067		MM test case update	F	3.3.0	3.4.0	T1-010189
TP-12	TP-010121	068		CR to 34.123-1	F	3.3.0	3.4.0	T1-010193
TP-12	TP-010121	069		SMS Update	F	3.3.0	3.4.0	T1-010194
TP-12	TP-010121	070		SMS test specification	F	3.3.0	3.4.0	T1-010196
TP-12	TP-010121	071		Update to GMM test cases	F	3.3.0	3.4.0	T1-010235
TP-12	TP-010121	072		GMM service request test cases	F	3.3.0	3.4.0	T1-010236
TP-12	TP-010121	073		GMM authentication reject test cases	F	3.3.0	3.4.0	T1-010237
TP-12	TP-010121	074		Modifications to Clause 12 (GMM)	F	3.3.0	3.4.0	T1-010202
TP-12	TP-010121	075		Correction in test case 11.1, because of problems in core-specs	F	3.3.0	3.4.0	T1-010203
TP-12	TP-010121	076		Procedure and Expected Sequence Corrections to 11.1.2.	F	3.3.0	3.4.0	T1-010204
TP-12	TP-010121	077		Adding section for multi-layer functional testing	D	3.3.0	3.4.0	T1-010207
TP-12	TP-010121	078		Update of interoperability radio bearer test cases	F	3.3.0	3.4.0	T1-010208
TP-12	TP-010121	079		CR to TS 34.123-1 Update of Table B/1	D	3.3.0	3.4.0	T1-010217
TP-13	TP-010186	080		Parameters update and Editorial corrections in clauses 7.2.3.1, 7.2.3.2.1, 7.2.3.2.3, 7.2.3.2.4	F	3.4.0	3.5.0	T1-010292
TP-13	TP-010186	081		Corrections to Clause 13 General Tests	F	3.4.0	3.5.0	T1-010293
TP-13	TP-010186	082		Modification in "Method of Test" for RBS test cases in Clause 14	F	3.4.0	3.5.0	T1-010294
TP-13	TP-010186	083		Editorial modification for References	F	3.4.0	3.5.0	T1-010295
TP-13	TP-010186	084		Clause 7.3, PDCP tests	F	3.4.0	3.5.0	T1-010378
TP-13	TP-010186	085		Idle mode: Merge of T1S-010180 and 188	F	3.4.0	3.5.0	T1-010297
TP-13	TP-010186	086		clause 7.4 BMC: editorial correction	F	3.4.0	3.5.0	T1-010379
TP-13	TP-010186	087		Clause 7.1, MAC test cases	F	3.4.0	3.5.0	T1-010299
TP-13	TP-010186	088		Corrections to RLC test case 7.2.2.2	F	3.4.0	3.5.0	T1-010300
TP-13	TP-010186	089		Corrections to RLC test case 7.2.2.3	F	3.4.0	3.5.0	T1-010301
TP-13	TP-010186	090		Corrections to RLC test case 7.2.2.8	F	3.4.0	3.5.0	T1-010302
TP-13	TP-010186	091		Corrections to RLC test case 7.2.2.10	F	3.4.0	3.5.0	T1-010303
TP-13	TP-010186	092		Corrections to RLC test case 7.2.2.9	F	3.4.0	3.5.0	T1-010304
TP-13	TP-010186	093		Corrections to RLC test case 7.2.2.12	F	3.4.0	3.5.0	T1-010305
TP-13	TP-010186	094		Corrections to RLC test case 7.2.2.29	F	3.4.0	3.5.0	T1-010306
TP-13	TP-010186	095		Corrections to RLC test case 7.2.2.30	F	3.4.0	3.5.0	T1-010307
TP-13	TP-010186	096		Corrections to RLC test case 7.2.2.33	F	3.4.0	3.5.0	T1-010308
TP-13	TP-010186	097		Corrections to RLC test case 7.2.2.34	F	3.4.0	3.5.0	T1-010309
TP-13	TP-010186	098		Updates to clause 8 and Annex A	F	3.4.0	3.5.0	T1-010310
TP-13	TP-010186	099		RRC tests (section 8)	F	3.4.0	3.5.0	T1-010311
TP-13	TP-010186	100		InterSystemHandover tests (section 8.3.7)	F	3.4.0	3.5.0	T1-010312
TP-13	TP-010186	101		Update on Mobility Management	F	3.4.0	3.5.0	T1-010313
TP-13	TP-010186	102		Addition of a SM test case for UE in GSM	F	3.4.0	3.5.0	T1-010314
TP-13	TP-010186	103		Clause 12 "Elementary procedure for Packet Switched Mobility Management"(GMM)	F	3.4.0	3.5.0	T1-010315
TP-13	TP-010186	104		Update of radio bearer test cases	F	3.4.0	3.5.0	T1-010316
TP-13	TP-010186	105		SMS test specification	F	3.4.0	3.5.0	T1-010317
TP-13	TP-010186	106		RACH Test Procedures for 1.28 Mcps TDD (Rel-4)	F	3.4.0	4.0.0	T1-010318
TP-13	TP-010186	107		Corrections to RLC test case 7.2.2.14	F	3.4.0	3.5.0	T1-010319
TP-13	TP-010186	108		Corrections to RLC test case 7.2.2.7 and 7.2.2.13	F	3.4.0	3.5.0	T1-010320
TP-13	TP-010186	109		RLC acknowledge mode test cases 7.2.3.14 and 7.2.3.34	F	3.4.0	3.5.0	T1-010321
TP-13	TP-010186	110		Merging of Rel4 and R99 protocol test specifications	F	3.4.0	4.0.0	T1-010272
TP-13	TP-010189	112		Update of Annex B	F	3.4.0	3.5.0	----
TP-14	TP-010261	113		Clause 7.3: PDCP testing: additional configuration information	F	4.0.0	4.1.0	T1-010406
TP-14	TP-010261	114		Clause 7.4: BMC testing: update for BMC testing	F	4.0.0	4.1.0	T1-010407
TP-14	TP-010261	115		Clause 7.2: Update of UM and AM RLC test cases	F	4.0.0	4.1.0	T1-010408
TP-14	TP-010261	116		Idle mode tests (34.123-1)	F	4.0.0	4.1.0	T1-010409
TP-14	TP-010261	117		Removal of TBD Power Levels in section 6	F	4.0.0	4.1.0	T1-010410
TP-14	TP-010261	118		Idle Mode Test Parameters for Multi-mode environment (2G/3G) TDD	F	4.0.0	4.1.0	T1-010411
TP-14	TP-010261	119		Traffic Volume Measurement test cases (34.123-1 section 8.4)	F	4.0.0	4.1.0	T1-010412
TP-14	TP-010261	120		New interRAT test cases	F	4.0.0	4.1.0	T1-010413

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TP-14	TP-010261	121		Corrections to Annex A	F	4.0.0	4.1.0	T1-010414
TP-14	TP-010261	122		Clause 12 Packet Switched Mobility Management	F	4.0.0	4.1.0	T1-010415
TP-14	TP-010261	123		Update to GMM test cases	F	4.0.0	4.1.0	T1-010416
TP-14	TP-010261	124		Update of interoperability radio bearer test cases for FDD.	F	4.0.0	4.1.0	T1-010417
TP-14	TP-010261	125		Update to SMS test specification	F	4.0.0	4.1.0	T1-010418
TP-14	TP-010261	126		Corrections to RRC test cases	F	4.0.0	4.1.0	T1-010419
TP-14	TP-010261	127		RRC Connection Management Procedure Tests for the TDD options	F	4.0.0	4.1.0	T1-010420
TP-14	TP-010261	128		Annex A Default RRC Message Contents for 1.28Mcps TDD Mode	F	4.0.0	4.1.0	T1-010421
TP-14	TP-010261	129		Radio Bearer Tests for 1.28 Mcps TDD Mode	F	4.0.0	4.1.0	T1-010422
TP-15	TP-020041	130		Correction to Annex A	F	4.1.0	4.2.0	T1-020037
TP-15	TP-020041	131		Update of Idle mode tests	F	4.1.0	4.2.0	T1-020038
TP-15	TP-020041	132		Update to GMM test cases	F	4.1.0	4.2.0	T1-020039
TP-15	TP-020041	133		Corrections to RRC test cases, 8.2.2 onwards	F	4.1.0	4.2.0	T1-020040
TP-15	TP-020041	134		Corrections to Annex A	F	4.1.0	4.2.0	T1-020041
TP-15	TP-020041	135		Clause 7.3, PDCP testing: Update	F	4.1.0	4.2.0	T1-020042
TP-15	TP-020041	136		Corrections to clause 8.1	F	4.1.0	4.2.0	T1-020043
TP-15	TP-020041	137		Correction to RRC test cases	F	4.1.0	4.2.0	T1-020044
TP-15	TP-020041	138		Corrections to Measurement test cases	F	4.1.0	4.2.0	T1-020045
TP-15	TP-020042	139		Additional test case for packet	F	4.1.0	4.2.0	T1-020046
TP-15	TP-020041	140		Changes to MAC conformance test 7.1.1.1	F	4.1.0	4.2.0	T1-020047
TP-15	TP-020041	141		Changes to MAC conformance test 7.1.1.2	F	4.1.0	4.2.0	T1-020048
TP-15	TP-020041	142		Changes to MAC conformance test 7.1.1.3	F	4.1.0	4.2.0	T1-020049
TP-15	TP-020041	143		Changes to MAC conformance test 7.1.1.4	F	4.1.0	4.2.0	T1-020050
TP-15	TP-020041	144		Changes to MAC conformance test 7.1.1.5	F	4.1.0	4.2.0	T1-020051
TP-15	TP-020041	145		Changes to MAC conformance test 7.1.1.8	F	4.1.0	4.2.0	T1-020052
TP-15	TP-020041	146		Changes to MAC conformance test 7.1.2.2.1	F	4.1.0	4.2.0	T1-020053
TP-15	TP-020041	147		Changes to MAC conformance test 7.1.2.4	F	4.1.0	4.2.0	T1-020054
TP-15	TP-020041	148		Changes to MAC conformance test 7.1.2.5	F	4.1.0	4.2.0	T1-020055
TP-15	TP-020041	149		Changes to MAC conformance test 7.1.3.1	F	4.1.0	4.2.0	T1-020056
TP-15	TP-020041	150		Changes to RLC conformance test 7.2.3.20	F	4.1.0	4.2.0	T1-020057
TP-15	TP-020041	151		Changes to RLC conformance test 7.2.3.25	F	4.1.0	4.2.0	T1-020058
TP-15	TP-020041	152		Modifications on Session Management test case 11.1.1.1	F	4.1.0	4.2.0	T1-020059
TP-15	TP-020041	153		Modifications on Session Management test case 11.1.2	F	4.1.0	4.2.0	T1-020060
TP-15	TP-020041	154		Section 8.1 Connection Management Procedure (TDD both modes)	F	4.1.0	4.2.0	T1-020061
TP-15	TP-020041	155		Modification on Session Management test case 11.1.3.2	F	4.1.0	4.2.0	T1-020062
TP-15	TP-020041	156		Modifications of MM test cases	F	4.1.0	4.2.0	T1-020063
TP-15	TP-020042	157		Update of RB test cases	F	4.1.0	4.2.0	T1-020064
TP-15	TP-020041	158		Section 8.2 Radio Bearer Control Procedure (TDD both modes)	F	4.1.0	4.2.0	T1-020065
TP-15	TP-020041	159		Correction of MAC conformance test 7.1.2.1.1	F	4.1.0	4.2.0	T1-020089
TP-15	TP-020041	160		Correction of MAC conformance test 7.1.2.3.1	F	4.1.0	4.2.0	T1-020090
TP-15	TP-020042	161		Additional Measurement Control and Report test cases	F	4.1.0	4.2.0	T1-020111
TP-15	TP-020042	162		Clause 8.4.1 Measurement Control and Report	F	4.1.0	4.2.0	T1-020112
TP-15	TP-020042	163		Additional test cases for inter-RAT measurements and UE internal measurements	F	4.1.0	4.2.0	T1-020113
TP-15	TP-020042	164		Addition of test case for Inter-RAT measurement, event 3C, in CELL_DCH state using sparse compressed mode pattern	F	4.1.0	4.2.0	T1-020114
TP-15	TP-020042	165		Clause 6.1.2.8 Cell reselection : Equivalent PLMN	F	4.1.0	4.2.0	T1-020115
TP-15	TP-020042	166		Additional test cases for shared networks	F	4.1.0	4.2.0	T1-020116
TP-15	TP-020042	167		Deletion of Equivalent PLMN list in UE	F	4.1.0	4.2.0	T1-020117
TP-15	TP-020042	168		ePLMN list storage at power off	F	4.1.0	4.2.0	T1-020118
TP-15	TP-020042	169		Interaction of ePLMNs and forbidden PLMNs	F	4.1.0	4.2.0	T1-020119
TP-15	TP-020042	170		PLMN interaction with Manual Mode	F	4.1.0	4.2.0	T1-020120
TP-15	TP-020042	171		Clause 8.3 HCS cell reselection	F	4.1.0	4.2.0	T1-020121
TP-15	TP-020042	172		Clause 8.3.7.13 Inter system handover from UTRAN/To GSM/ success / call under establishment	F	4.1.0	4.2.0	T1-020122
TP-15	TP-020042	173		Additional test cases for Physical Channel Reconfiguration from CELL_FACH to CELL_PCH or URA_PCH	F	4.1.0	4.2.0	T1-020123
TP-15	TP-020042	174		Additional test cases for Transport channel Reconfiguration from CELL_FACH to CELL_PCH or URA_PCH	F	4.1.0	4.2.0	T1-020124
TP-15	TP-020042	175		Additional test case for RRC connection establishment on another frequency	F	4.1.0	4.2.0	T1-020125
TP-15	TP-020042	176		Additional test case for UE response to changes of System Information data and structure	F	4.1.0	4.2.0	T1-020126
TP-16	TP-020143	177		Modifications of MM test cases	F	4.2.0	4.3.0	T1-020302
TP-16	TP-020143	178		Update to GMM test cases	F	4.2.0	4.3.0	T1-020303

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TP-16	TP-020143	179		Correction to clause 8.3 except for Package 1 of TS34.123-1	F	4.2.0	4.3.0	T1-020304
TP-16	TP-020143	180		Update of L2/PDCP testing in alignment to March version 2002	F	4.2.0	4.3.0	T1-020305
TP-16	TP-020142	181		Correction to MAC conformance test 7.1.2.4a	F	4.2.0	4.3.0	T1-020306
TP-16	TP-020142	182		Correction to MAC conformance test 7.1.2.5	F	4.2.0	4.3.0	T1-020307
TP-16	TP-020142	183		Correction to MAC conformance test 7.1.2.1.1	F	4.2.0	4.3.0	T1-020308
TP-16	TP-020142	184		Correction to MAC conformance test 7.1.1.1	F	4.2.0	4.3.0	T1-020309
TP-16	TP-020142	185		General clarification of MAC testing conditions	F	4.2.0	4.3.0	T1-020310
TP-16	TP-020142	186		Correction to MAC conformance test 7.1.1.8	F	4.2.0	4.3.0	T1-020311
TP-16	TP-020142	187		Correction to MAC conformance test 7.1.1.5	F	4.2.0	4.3.0	T1-020312
TP-16	TP-020142	188		Correction to MAC conformance test 7.1.1.4	F	4.2.0	4.3.0	T1-020313
TP-16	TP-020142	189		Correction to MAC conformance test 7.1.1.3	F	4.2.0	4.3.0	T1-020314
TP-16	TP-020142	190		Correction to MAC conformance test 7.1.1.2	F	4.2.0	4.3.0	T1-020315
TP-16	TP-020142	191		Correction to test 7.2.3.12	F	4.2.0	4.3.0	T1-020316
TP-16	TP-020142	192		Correction to test 7.2.3.18	F	4.2.0	4.3.0	T1-020317
TP-16	TP-020142	193		Correction to test 7.2.3.4	D	4.2.0	4.3.0	T1-020318
TP-16	TP-020143	194		Correction to RLC test case 7.2.3.28	F	4.2.0	4.3.0	T1-020319
TP-16	TP-020142	195		Clause 6; Updates to test cases for idle mode operations	F	4.2.0	4.3.0	T1-020320
TP-16	TP-020142	196		Correction to clause 8.2 for Package 1 of TS34.123-1	F	4.2.0	4.3.0	T1-020321
TP-16	TP-020143	197		Clarification of messages sequences in MM test case 9.4.1.	F	4.2.0	4.3.0	T1-020322
TP-16	TP-020142	198		Correction to test cases 9.2.3 and 9.2.4	F	4.2.0	4.3.0	T1-020323
TP-16	TP-020143	199		Update to CC test cases	F	4.2.0	4.3.0	T1-020324
TP-16	TP-020143	200		Removal of TC9.5.3 MM connection / establishment in non-security mode	F	4.2.0	4.3.0	T1-020325
TP-16	TP-020142	201		Correction of layer 2 setting for TM RBs , segmentation indication	F	4.2.0	4.3.0	T1-020326
TP-16	TP-020142	202		Clause 14: Update of radio bearer test cases 14.2.39.x and 14.2.40 (introducing new RB test method)	F	4.2.0	4.3.0	T1-020327
TP-16	TP-020142	203		Clause 14; Update of stand-alone signalling radio bearer test cases	F	4.2.0	4.3.0	T1-020328
TP-16	TP-020143	204		Correction of abbreviations reference	F	4.2.0	4.3.0	T1-020329
TP-16	TP-020143	205		Correction to clause 8.2 except for Package 1 of TS34.123-1	F	4.2.0	4.3.0	T1-020330
TP-16	TP-020143	206		Correction to clause 8.4 except for Package 1 of TS34.123-1	F	4.2.0	4.3.0	T1-020331
TP-16	TP-020143	207		Correction to Annex.A of TS34.123-1	F	4.2.0	4.3.0	T1-020332
TP-16	TP-020143	208		Addition of generic test procedure to Annex C of TS 34.123-1	F	4.2.0	4.3.0	T1-020333
TP-16	TP-020143	209		Additional test cases according to T1S-020098 Hard Handover	F	4.2.0	4.3.0	T1-020334
TP-16	TP-020143	210		Additional test cases according to T1S-020099 State Transition	F	4.2.0	4.3.0	T1-020335
TP-16	TP-020143	211		New test case for Incompatible Simultaneous Security Reconfiguration	F	4.2.0	4.3.0	T1-020336
TP-16	TP-020143	212		New test case for Signalling Connection Release test case	F	4.2.0	4.3.0	T1-020337
TP-16	TP-020143	213		Interfrequency Measurement for Events 2B and 2E – Correction to 8.4.1.25	F	4.2.0	4.3.0	T1-020338
TP-16	TP-020143	214		Correction to HCS Cell Reselection tests	F	4.2.0	4.3.0	T1-020339
TP-16	TP-020143	215		Changes to radio bearer tests in clause 14.4 Combinations on SCCPCH	F	4.2.0	4.3.0	T1-020340
TP-16	TP-020142	216		Section 8.3.1 Connection Mobility Procedure TDD	F	4.2.0	4.3.0	T1-020341
TP-16	TP-020143	217		Test case for approved new bearers	F	4.2.0	4.3.0	T1-020342
TP-16	TP-020142	218		Correction to clause 8.4 for Package 1 of TS34.123-1	F	4.2.0	4.3.0	T1-020343
TP-16	TP-020142	219		Correction to clause 8.3 for Package 1 of TS34.123-1	F	4.2.0	4.3.0	T1-020344
TP-16	TP-020142	220		Correction to clause 8.1 for package 1 of TS34.123-1	F	4.2.0	4.3.0	T1-020345
TP-16	TP-020142	221		Corrections to GMM test cases	F	4.2.0	4.3.0	T1-020346
TP-16	TP-020142	222		Corrections to SM test cases	F	4.2.0	4.3.0	T1-020347
TP-16	TP-020143	223		CR to clause 3.1	F	4.2.0	4.3.0	T1-020348
TP-16	TP-020143	224		Correction to RLC conformance test 7.2.2.1	F	4.2.0	4.3.0	T1-020349
TP-16	TP-020142	225		Correction to RLC conformance test 7.2.2.3	F	4.2.0	4.3.0	T1-020350
TP-16	TP-020142	226		Correction to RLC conformance test 7.2.2.6	F	4.2.0	4.3.0	T1-020351
TP-16	TP-020142	227		Correction to RLC conformance test 7.2.2.7	F	4.2.0	4.3.0	T1-020352
TP-16	TP-020142	228		Correction to RLC conformance test 7.2.3.5	F	4.2.0	4.3.0	T1-020353
TP-16	TP-020142	229		Correction to RLC conformance test 7.2.3.13	F	4.2.0	4.3.0	T1-020354
TP-16	TP-020142	230		Correction to RLC conformance test 7.2.3.6	F	4.2.0	4.3.0	T1-020355
TP-16	TP-020142	231		Correction to RLC conformance test 7.2.3.12	F	4.2.0	4.3.0	T1-020356
TP-16	TP-020142	232		Correction to RLC conformance test 7.2.3.14	F	4.2.0	4.3.0	T1-020357
TP-16	TP-020142	233		Correction to RLC conformance test 7.2.3.16	F	4.2.0	4.3.0	T1-020358
TP-16	TP-020142	234		Correction to RLC conformance test 7.2.3.17	F	4.2.0	4.3.0	T1-020359

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TP-16	TP-020142	235		Correction to RLC conformance test 7.2.3.19	F	4.2.0	4.3.0	T1-020360
TP-16	TP-020142	236		Correction to RLC conformance test 7.2.3.20	F	4.2.0	4.3.0	T1-020361
TP-16	TP-020142	237		Correction to RLC conformance test 7.2.3.23	F	4.2.0	4.3.0	T1-020362
TP-16	TP-020142	238		Correction to RLC conformance test 7.2.3.24	F	4.2.0	4.3.0	T1-020363
TP-16	TP-020142	239		Conformance test 7.2.3.15	F	4.2.0	4.3.0	T1-020364
TP-16	TP-020142	240		Clause 7.2.3.18 RLC test case	F	4.2.0	4.3.0	T1-020365
TP-16	TP-020143	241		Clause 7.2.3.29 RLC test case	F	4.2.0	4.3.0	T1-020366
TP-16	TP-020143	242		Clause 7.2.3.30 RLC test case	F	4.2.0	4.3.0	T1-020367
TP-16	TP-020143	243		Clause 7.2.3.31 RLC test case	F	4.2.0	4.3.0	T1-020368
TP-16	TP-020142	244		Correction to RLC conformance test 7.2.3.33	F	4.2.0	4.3.0	T1-020369
TP-16	TP-020143	245		Update of package 2: RB test cases according to new ref RB test method	F	4.2.0	4.3.0	T1-020414
TP-16	TP-020143	247		Update of clause 8.3.2 URA Update to be applicable to 3.84 Mcps TDD and 1.28 Mcps TDD	F	4.2.0	4.3.0	T1-020416
TP-16	TP-020143	248		New test for radio bearer	F	4.2.0	4.3.0	T1-020417
TP-16	TP-020143	249		Correction of conformance requirement in test case 11.1.4.3(34.123-1)	F	4.2.0	4.3.0	T1-020418
TP-16	TP-020143	250		Correction in test case 11.4.1 Error cases(34.123-1)	F	4.2.0	4.3.0	T1-020419
TP-16	TP-020142	251		Correction to MAC conformance test 7.1.1.2	F	4.2.0	4.3.0	T1-020410
TP-16	TP-020142	252		Correction to MAC conformance test 7.1.1.8	F	4.2.0	4.3.0	T1-020411
TP-16	TP-020142	253		Correction to RLC conformance test 7.2.3.34	F	4.2.0	4.3.0	T1-020412
TP-16	TP-020142	254		Correction to MAC conformance test 7.1.2.3.1	F	4.2.0	4.3.0	T1-020413
TP-16	TP-020164	255	1	Section 16.1.6 & 16.2.6: Addition of test of short message type 0 (CS/PS) Rel5	F	4.2.0	5.0.0	-
TP-16	TP-020145	256		Creation of 34.123-1 REL-5	F	4.2.0	5.0.0	T1-020404
				Correction of wrong heading in the specification	D	5.0.0	5.0.1	
TP-17	TP-020193	258	-	Corrections to Inter-frequency measurement test cases (8.4.1.24, 8.4.1.25, 8.4.1.26)	F	5.0.1	5.1.0	T1-020510
TP-17	TP-020193	259	-	Change to test case 8.4.1.31	F	5.0.1	5.1.0	T1-020511
TP-17	TP-020187	260	-	Corrections to clause 6.1.1.4 for Package 1 (Idle Mode)	F	5.0.1	5.1.0	T1-020512
TP-17	TP-020193	261	-	Corrections to clause 6.1.1.5 for Package 3 (Idle Mode)	F	5.0.1	5.1.0	T1-020513
TP-17	TP-020193	262	-	Corrections to clause 6.1.1.1 and 6.1.1.2 (Idle Mode)	F	5.0.1	5.1.0	T1-020514
TP-17	TP-020187	263	-	Addition of ITU Band 3 reference test frequencies to Table 6.3	F	5.0.1	5.1.0	T1-020515
TP-17	TP-020193	264	-	Correction to MAC clause 7.1.2.1	F	5.0.1	5.1.0	T1-020516
TP-17	TP-020187	265	-	Correction to MAC test cases 7.1.1.2 and 7.1.1.8	F	5.0.1	5.1.0	T1-020517
TP-17	TP-020187	266	-	Corrections to clause 7.2 for Package 1 test cases (RLC)	F	5.0.1	5.1.0	T1-020518
TP-17	TP-020187	267	-	Corrections to package1 test cases in clause 8.1 as T1S-020352rev1	F	5.0.1	5.1.0	T1-020519
TP-17	TP-020187	268	-	CR to package1 clause 8.2 of TS34.123-1	F	5.0.1	5.1.0	T1-020520
TP-17	TP-020187	269	-	Corrections to package 1 TCs in clause 8.4 of TS 34.123-1 as T1S-020355rev1	F	5.0.1	5.1.0	T1-020521
TP-17	TP-020187	270	-	Corrections to Clause 8.1.10 for Package 2 (System Information)	F	5.0.1	5.1.0	T1-020522
TP-17	TP-020187	271	-	Corrections to clause 8.3.7.1- 8.3.7.4 for Package 2 test cases (Inter System HO)	F	5.0.1	5.1.0	T1-020523
TP-17	TP-020193	272	-	Corrections to non-package1&2 clause 8.1	F	5.0.1	5.1.0	T1-020524
TP-17	TP-020193	273	-	CR to non-package1&2 clause 8.2 of TS34.123-1 (merging T1S-020469 and TC 8.2.6.21 and 8.2.6.22 of T1S-020407)	F	5.0.1	5.1.0	T1-020525
TP-17	TP-020187	274	-	Corrections to clause 6 for Package 2 (Idle Mode)	F	5.0.1	5.1.0	T1-020528
TP-17	TP-020187	275	-	Correction of package 2 test case in clause 8.3.1.4, SS cell update waiting timer	F	5.0.1	5.1.0	T1-020531
TP-17	TP-020187	276	-	Corrections to package1 test cases in clause 8.3	F	5.0.1	5.1.0	T1-020532
TP-17	TP-020187	277	-	CR to package2 clause 8.2 of TS34.123-1	F	5.0.1	5.1.0	T1-020533
TP-17	TP-020193	278	-	Corrections to non-package 1&2 TCs in clause 8.3 of TS 34.123-1	F	5.0.1	5.1.0	T1-020534
TP-17	TP-020193	279	-	Corrections to non-package 1&2 TCs in clause 8.4 of TS 34.123-1 (merging T1S-020458 and T1S-020363)	F	5.0.1	5.1.0	T1-020535
TP-17	TP-020193	280	-	Additional test case for timing re-initialised inter-frequency handover	F	5.0.1	5.1.0	T1-020536
TP-17	TP-020193	281	-	Corrections to reference compressed mode pattern	F	5.0.1	5.1.0	T1-020537
TP-17	TP-020193	282	-	Introduction of test cases for additional reference configuration on S-CCPCH and PRACH	F	5.0.1	5.1.0	T1-020542
TP-17	TP-020193	283	-	Removal of test cases for unidirectional streaming CS RABs above 64 kbps	F	5.0.1	5.1.0	T1-020543
TP-17	TP-020187	284	-	Clarification of package 1 and 2 RB test cases.	F	5.0.1	5.1.0	T1-020545
TP-17	TP-020187	285	-	Details of radio bearer tests in clause "14.4 Combinations on SCCPCH" and "14.5 Combinations on PRACH"	F	5.0.1	5.1.0	T1-020546
TP-17	TP-020193	286	-	Corrections to package 3 RB test cases 14.2.43.1, 14.2.49.1 and 14.2.51.1.	F	5.0.1	5.1.0	T1-020547

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TP-17	TP-020193	287	-	Addition of details for package 3 RB test cases	F	5.0.1	5.1.0	T1-020548
TP-17	TP-020193	288	-	Corrections to package 3 RB test cases 14.2.5a and 14.2.7a.	F	5.0.1	5.1.0	T1-020549
TP-17	TP-020193	289	-	Update of radio bearer test cases as per new RB test method	F	5.0.1	5.1.0	T1-020550
TP-17	TP-020193	290	-	Correction for test case 14.2.38.2	F	5.0.1	5.1.0	T1-020551
TP-17	TP-020193	291	-	Interactive or background / UL:32 DL:32 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH (40ms TTI).	F	5.0.1	5.1.0	T1-020552
TP-17	TP-020193	292	-	New Tests for Radio Bearers 14.2.38d and 14.2.57.	F	5.0.1	5.1.0	T1-020553
TP-17	TP-020193	293	-	New tests for radio bearers 23a, 38a, 38b, 38e, 51a & 51b	F	5.0.1	5.1.0	T1-020554
TP-17	TP-020194	294	-	Clause 8, editorial changes to table format	D	5.0.1	5.1.0	T1-020555
TP-17	TP-020187	295	-	Corrections and modifications to clause 9 of Package 2 test cases (MM)	F	5.0.1	5.1.0	T1-020556
TP-17	TP-020187	296	-	Corrections to package 2 test cases in clause 8.3 (T1S-020494rev1)	F	5.0.1	5.1.0	T1-020557
TP-17	TP-020187	297	-	Corrections to package 2 TCs in clause 8.4 of TS 34.123-1 (T1S-020495rev1)	F	5.0.1	5.1.0	T1-020558
TP-17	TP-020193	298	-	Additional test cases in clause 8 of TS34.123-1 as T1S-020365rev1	F	5.0.1	5.1.0	T1-020559
TP-17	TP-020187	299	-	Update of Conformance requirement in test case 11.1.1.1	F	5.0.1	5.1.0	T1-020560
TP-17	TP-020193	300	-	Minor corrections and editorial modifications in clause 11.2 PDP context modification procedure	F	5.0.1	5.1.0	T1-020561
TP-17	TP-020193	301	-	Addition of ICS/IXIT statement in Secondary PDP context activation procedures	F	5.0.1	5.1.0	T1-020563
TP-17	TP-020193	302	-	Editorial corrections in test case 11.2.3.1.	F	5.0.1	5.1.0	T1-020564
TP-17	TP-020193	303	-	Test case 11.1.2: Correction in 'Test procedure'	F	5.0.1	5.1.0	T1-020565
TP-17	TP-020187	304	-	Modifications and corrections of GMM test case	F	5.0.1	5.1.0	T1-020566
TP-17	TP-020193	305	-	Corrections to SMS test cases in clause 16.	F	5.0.1	5.1.0	T1-020567
TP-17	TP-020187	306	-	Clarifications in PDP Context deactivation test cases (revision of T1S020450)	F	5.0.1	5.1.0	T1-020568
TP-17	TP-020193	307	-	Update of clause 8.3 for TDD mode	F	5.0.1	5.1.0	T1-020579
TP-17	TP-020193	308	-	New tests for radio bearers 38c, 56 and 58	F	5.0.1	5.1.0	T1-020584
TP-17	TP-020193	309	-	CR to section 16.1.6 & 16.2.6: Addition of test of short message type 0 (CS/PS) R99 and REL-4	F	5.0.1	5.1.0	T1-020608
				Removal of revision marks and rename of history annex to 'annex D'		5.1.0	5.1.1	

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# History

<b>Document history</b>		
V5.0.1	June 2002	Publication
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