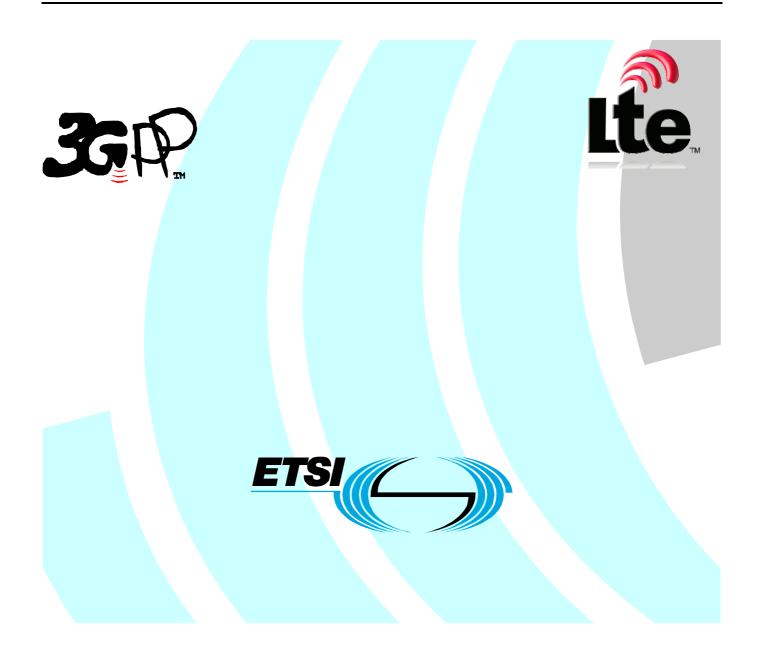
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# Foreword

This Technical Specification 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.

# 1 Scope

The present document specifies requirements for support of Radio Resource Management for the FDD and TDD modes of [Evolved UTRA]. These requirements include requirements on measurements in UTRAN and the UE as well as requirements on node dynamical behaviour and interaction, in terms of delay and response characteristics.

# 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*.
- [1] 3GPP TS 36.304: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) procedures in idle mode"
- [2] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC) protocol specification".
- [3] 3GPP TS 36.213: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures"
- [4] 3GPP TS 36.214: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer; Measurements"
- [5] 3GPP TS 36.101: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception"
- [6] 3GPP TS 25.302: "Services provided by the Physical Layer".
- [7] 3GPP TS 25.331: "RRC Protocol Specification".
- [8] 3GPP TS 45.008: "Radio subsystem link control".
- [9] 3GPP TS 45.005: "Radio transmission and reception".
- [10] 3GPP TS 45.010: "Radio subsystem synchronization".
- [11] 3GPP2 C.S0024-B: "cdma2000 High Rate Packet Data Air Interface Specification".
- [12] 3GPP2 C.S0002-D: "Physical Layer Standard for cdma2000 Spread Spectrum Systems Release A".
- [13] 3GPP2 C.S0033-B: "Recommended Minimum Performance Standards for cdma2000 High Rate Packet Data Access Terminal".
- [14] 3GPP2 C.S0011-C: "Recommended Minimum Performance Standards for cdma2000 Spread Spectrum Mobile Stations".
- [15] 3GPP2 C.S0005-D: Upper Layer (Layer 3) Signaling Specification for cdma2000 Spread Spectrum Systems
- [16] 3GPP TS 36.211: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical Channels and Modulation"

- [17] 3GPP TS 36.321: "Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) protocol specification".
- [18] 3GPP TS 25.133: "Requirements for Support of Radio Resource Management (FDD)".
- [19] 3GPP TS 25.123: "Requirements for Support of Radio Resource Management (TDD)".
- [20] 3GPP TS 25.214: "Physical layer procedures (FDD)".
- [21] 3GPP TS 36. 212 "Evolved Universal Terrestrial Radio Access (E-UTRA); Multiplexing and channel coding".
- [22] 3GPP TS 36.302: "Evolved Universal Terrestrial Radio Access (E-UTRA); Services provided by the physical layer"
- [23] 3GPP TS 36.521-3: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 3: Radio Resource Management conformance testing".
- [24] 3GPP TS 36.355: "Evolved Universal Terrestrial Radio Access (E-UTRA); LTE Positioning Protocol (LPP)".
- [25] 3GPP TS 36.300: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2"

# 3 Definitions, symbols and abbreviations

# 3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [x] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [x].

# 3.2 Symbols

For the purposes of the present document, the following symbols apply:

[]	Values included in square bracket must be considered for further studies, because it means that a decision about that value was not taken.		
BW <sub>Channel</sub>	Channel bandwidth, defined in TS 36.101 subclause 3.2		
CPICH_Ec	Average energy per PN chip for the CPICH		
CPICH_Ec/Io	The ratio of the received energy per PN chip for the CPICH to the total received power spectral density at the UE antenna connector.		
Ec	Average energy per PN chip.		
Ês	Received energy per RE (power normalized to the subcarrier spacing) during the useful part of the symbol, i.e. excluding the cyclic prefix, at the UE antenna connector		
Іо	The total received power density, including signal and interference, as measured at the UE antenna connector.		
Ioc	The power spectral density (integrated in a noise bandwidth equal to the chip rate and normalized to the chip rate) of a band limited noise source (simulating interference from cells, which are not defined in a test procedure) as measured at the UE antenna connector.		
Iot	The received power spectral density of the total noise and interference for a certain RE (power integrated over the RE and normalized to the subcarrier spacing) as measured at the UE antenna connector		
$N_{oc}$	The power spectral density of a white noise source (average power per RE normalised		
	to the subcarrier spacing), simulating interference from cells that are not defined in a test procedure, as measured at the UE antenna connector		
$N_{PRS}$	Number of consecutive downlink positioning subframes as defined in subclause		
	6.10.4.3 in 3GPP TS 36.211		

#### 3GPP TS 36.133 version 9.4.0 Release 9

n <sub>PRB</sub>	Physical Resource Block number as defined in subclause 3.1 in 3GPP TS 36.211.
P <sub>CMAX</sub>	Configured UE transmitted power as defined in subclause 6.2.5 in 3GPP TS 36.101.
PRP	Received (linear) average power of the resource elements that carry E-UTRA PRS,
	measured at the UE antenna connector.
S	Defined in TS 36.304, subclause 5.2.3.2 for E-UTRAN
SCH_Ec/Ior	The ratio of the transmit energy per PN chip of the SCH to the total transmit power spectral density at the UTRA Node B antenna connector
SCH_RP	Received (linear) average power of the resource elements that carry E-UTRA
	synchronisation signal, measured at the UE antenna connector
$S_{ServingCcell}$	Defined in TS 36.304
Sintersearch	Defined in TS 25.304, subclause 5.2.6.1.5
Sintrasearch	Defined in TS 25.304, subclause 5.2.6.1.5 for UTRAN and in TS 36.304, subclause
	5.2.4.7 for E-UTRAN
Snonintrasearch	Defined in TS 36.304, subclause 5.2.4.7
SsearchRAT	Defined in TS 25.304, subclause 5.2.6.1.5
Thresh <sub>x, high</sub>	Defined in TS 36.304, subclause 5.2.4.7
Thresh <sub>x, low</sub>	Defined in TS 36.304, subclause 5.2.4.7
Thresh <sub>serving, low</sub>	Defined in TS 36.304, subclause 5.2.4.7
$T_{\mathrm{PRS}}$	Cell-specific positioning subframe configuration period as defined in subclause 6.10.4.3
	in 3GPP TS 36.211
$T_{\text{RE-ESTABLISH-REQ}}$	The RRC Re-establishment delay requirement, the time between the moment when erroneous CRCs are applied, to when the UE starts to send preambles on the PRACH.
Treselection	Defined in TS 25.304, subclause 5.2.6.1.5
Treselection <sub>RAT</sub>	Defined in TS 36.304, subclause 5.2.4.7
Treselection <sub>EUTRAN</sub>	Defined in TS 36.304, subclause 5.2.4.7
Treselection <sub>UTRAN</sub>	Defined in TS 36.304, subclause 5.2.4.7
Treselection <sub>GERAN</sub>	Defined in TS 36.304, subclause 5.2.4.7
T <sub>s</sub>	Basic time unit, defined in TS 36.211, clause 4

# 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [x] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [x].

E-UTRAN	Evolved UTRAN
FDD	Frequency Division Duplex
GERAN	GSM EDGE Radio Access Network
GSM	Global System for Mobile communication
HARQ	Hybrid Automatic Repeat Request
HO	Handover
HRPD	High Rate Packet Data
LPP	LTE Positioning Protocol
MAC	Medium Access Control
OCNG	OFDMA Channel Noise Generator
OFDM	Orthogonal Frequency Division Multiplexing
OFDMA	Orthogonal Frequency Division Multiple Access
OTDOA	Observed Time Difference of Arrival
PBCH	Physical Broadcast Channel
P-CCPCH	Primary Common Control Physical Channel
PCFICH	Physical Control Format Indicator CHannel
PDCCH	Physical Downlink Control CHannel
PDSCH	Physical Downlink Shared CHannel
PHICH	Physical Hybrid-ARQ Indicator CHannel
PLMN	Public Land Mobile Network
PRACH	Physical Random Access CHannel
PRS	Positioning Reference Signal
PUCCH	Physical Uplink Control CHannel
PUSCH	Physical Uplink Shared Channel
RSCP	Received Signal Code Power
RSRP	Reference Signal Received Power
RSRQ	Reference Signal Received Quality
RSSI	Received Signal Strength Indicator
RSTD	Reference Signal Time Difference
QAM	Quadrature Amplitude Modulation
RACH	Random Access Channel
RAT	Radio Access Technology
RNC	Radio Network Controller
RNTI	Radio Network Temporary Identifier
RRC	Radio Resource Control
RRM	Radio Resource Management
SCH	Synchronization Channel
SDU	Service Data Unit
SFN	System Frame Number
SI	System Information
SON	Self Optimized Network
TDD	Time Division Duplex
TTI	Transmission Time Interval
UE	User Equipment
UL	Uplink
UMTS	Universal Mobile Telecommunication System
UTRA	Universal Terrestrial Radio Access
UTRAN	Universal Terrestrial Radio Access Network

# 3.4 Test tolerances

The requirements given in the present document make no allowance for measurement uncertainty. The test specification 36.521-3 [23] defines the test tolerances. These test tolerances are individually calculated for each test. The test tolerances are then added to the limits in this specification to create test limits. The measurement results are compared against the test limits as defined by the shared risk principle.

Shared Risk is defined in [ETR 273 Part 1 sub-part 2 section 6.5].

# 4 E-UTRAN RRC\_IDLE state mobility

# 4.1 Cell Selection

After a UE has switched on and a PLMN has been selected, the Cell selection process takes place, as described in TS36.304. This process allows the UE to select a suitable cell where to camp on in order to access available services. In this process the UE can use stored information (*Stored information cell selection*) or not (*Initial cell selection*).

# 4.2 Cell Re-selection

### 4.2.1 Introduction

The cell reselection procedure allows the UE to select a more suitable cell and camp on it.

When the UE is in either *Camped Normally* state or *Camped on Any Cell* state on a cell, the UE shall attempt to detect, synchronise, and monitor intra-frequency, inter-frequency and inter-RAT cells indicated by the serving cell. For intra-frequency and inter-frequency cells the serving cell may not provide explicit neighbour list but carrier frequency information and bandwidth information only. UE measurement activity is also controlled by measurement rules defined in TS36.304, allowing the UE to limit its measurement activity.

## 4.2.2 Requirements

[Editor's Note: Requirements for multiple Tx antennas are still FFS. So far only 1Tx antenna case has been considered. The number of Tx antennas and possibly CP length may need to be provided per frequency layer. Details are FFS. Low mobility and high mobility requirements are still FFS]

The UE shall search every layer of higher priority at least every  $T_{higher\_priority\_search} = (60 * N_{layers})$  seconds, where  $N_{layers}$  is the total number of configured higher priority E-UTRA, UTRA FDD, UTRA TDD, CDMA2000 1x and HRPD carrier frequencies and is additionally increased by one if one or more groups of GSM frequencies is configured as a higher priority.

### 4.2.2.1 Measurement and evaluation of serving cell

The UE shall measure the RSRP and RSRQ level of the serving cell and evaluate the cell selection criterion S defined in [1] for the serving cell at least every DRX cycle.

The UE shall filter the RSRP and RSRQ measurements of the serving cell using at least 2 measurements. Within the set of measurements used for the filtering, at least two measurements shall be spaced by, at least DRX cycle/2.

If the UE has evaluated in  $N_{serv}$  consecutive DRX cycles that the serving cell does not fulfil the cell selection criterion S, the UE shall initiate the measurements of all neighbour cells indicated by the serving cell, regardless of the measurement rules currently limiting UE measurement activities.

If the UE in RRC\_IDLE has not found any new suitable cell based on searches and measurements using the intrafrequency, inter-frequency and inter-RAT information indicated in the system information for 10 s, the UE shall initiate cell selection procedures for the selected PLMN as defined in [1].

DRX cycle length [s]	N <sub>serv</sub> [number of DRX cycles]
0.32	4
0.64	4
1.28	2
2.56	2

Table 4.2.2.1-1: N<sub>serv</sub>

### 4.2.2.2 Void

### 4.2.2.3 Measurements of intra-frequency E-UTRAN cells

The UE shall be able to identify new intra-frequency cells and perform RSRP and RSRQ measurements of identified intra-frequency cells without an explicit intra-frequency neighbour list containing physical layer cell identities.

The UE shall be able to evaluate whether a newly detectable intra-frequency cell meets the reselection criteria defined in TS36.304 within  $T_{detect,EUTRAN\_Intra}$  when that Treselection=0. An intra frequency cell is considered to be detectable if:

- RSRP|<sub>dBm</sub> ≥ -124 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21, 33, 34, 35, 36, 37, 38, 39, 40 and RSRP  $\hat{E}s/Iot \ge -4$  dB,
- RSRP $|_{dBm} \ge -123 \text{ dBm}$  for Bands 9 and RSRP  $\hat{E}s/\text{Iot} \ge -4 \text{ dB}$ ,
- RSRP $|_{dBm} \ge -122 \text{ dBm}$  for Bands 2, 5, 7, 17 and RSRP  $\hat{E}s/Iot \ge -4 \text{ dB}$ ,
- RSRP<sub>dBm</sub> $\geq$  -121 dBm for Bands 3, 8, 12, 13, 14, 20 and RSRP  $\hat{E}$ s/Iot  $\geq$  -4 dB,
- SCH\_RP|<sub>dBm</sub> ≥ -124 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21, 33, 34, 35, 36, 37, 38, 39, 40 and SCH Ês/Iot ≥ -4 dB,
- SCH\_RP|<sub>dBm</sub> $\geq$ -123 dBm for Band 9 and SCH  $\hat{E}$ s/Iot  $\geq$  -4 dB,
- SCH\_RP  $|_{dBm} \ge -122$  dBm for Bands 2, 5, 7, 17 and SCH  $\hat{E}s/Iot \ge -4$  dB,
- SCH\_RP  $|_{dBm}$ ≥ -121 dBm for Bands 3, 8, 12, 13, 14, 20 and SCH Ês/Iot ≥ -4 dB.

The UE shall measure RSRP and RSRQ at least every  $T_{measure,EUTRAN_{Intra}}$  (see table 4.2.2.3-1) for intra-frequency cells that are identified and measured according to the measurement rules.

The UE shall filter RSRP and RSRQ measurements of each measured intra-frequency cell using at least 2 measurements. Within the set of measurements used for the filtering, at least two measurements shall be spaced by at least  $T_{measure,EUTRAN\_Intra}/2$ 

For an intra-frequency cell that has been already detected, but that has not been reselected to, the filtering shall be such that the UE shall be capable of evaluating that the intra-frequency cell has met reselection criterion defined [1] within  $T_{evaluate,E-UTRAN\_intra}$  when  $T_{reselection} = 0$  as specified in table 4.2.2.3-1 provided that the cell is at least 3dB better ranked. When evaluating cells for reselection, the side conditions for RSRP and SCH apply to both serving and non-serving intra-frequency cells.

If  $T_{reselection}$  timer has a non zero value and the intra-frequency cell is better ranked than the serving cell, the UE shall evaluate this intra-frequency cell for the  $T_{reselection}$  time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

DRX cycle length [s]	T <sub>detect,EUTRAN_Intra</sub> [s] (number of DRX cycles)	T <sub>measure,EUTRAN_Intra</sub> [s] (number of DRX cycles)	T <sub>evaluate,E-UTRAN_intra</sub> [s] (number of DRX cycles)
0.32	11.52 (36)	1.28 (4)	5.12 (16)
0.64	17.92 (28)	1.28 (2)	5.12 (8)
1.28	32(25)	1.28 (1)	6.4 (5)
2.56	58.88 (23)	2.56 (1)	7.68 (3)

Table 4.2.2.3-1 : T<sub>detect,EUTRAN\_Intra</sub>, T<sub>measure,EUTRAN\_Intra</sub> and T<sub>evaluate, E-UTRAN\_intra</sub>

#### 4.2.2.4 Measurements of inter-frequency E-UTRAN cells

The UE shall be able to identify new inter-frequency cells and perform RSRP or RSRQ measurements of identified inter-frequency cells if carrier frequency information is provided by the serving cell, even if no explicit neighbour list with physical layer cell identities is provided.

If  $Srxlev > S_{nonIntraSearchP}$  and  $Squal > S_{nonIntraSearchQ}$  then the UE shall search for inter-frequency layers of higher priority at least every  $T_{higher\_priority\_search}$  where  $T_{higher\_priority\_search}$  is described in section 4.2.2.

If  $Srxlev \leq S_{nonIntraSearchP}$  or Squal  $\leq S_{nonIntraSearchQ}$  then the UE shall search for and measure inter-frequency layers of higher, equal or lower priority in preparation for possible reselection. In this scenario, the minimum rate at which the UE is required to search for and measure higher priority layers shall be the same as that defined below.

The UE shall be able to evaluate whether a newly detectable inter-frequency cell meets the reselection criteria defined in TS36.304 within  $K_{carrier} * T_{detect,EUTRAN_Inter}$  if at least carrier frequency information is provided for inter-frequency neighbour cells by the serving cells when  $T_{reselection} = 0$  provided that the reselection criteria is met by a margin of at least 5dB for reselections based on ranking or 6dB for RSRP reselections based on absolute priorities or 4dB for RSRQ reselections based on absolute priorities.

The parameter  $K_{carrier}$  is the number of E-UTRA inter-frequency carriers indicated by the serving cell. An inter-frequency cell is considered to be detectable if:

- RSRP|<sub>dBm</sub> ≥ -124 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21, 33, 34, 35, 36, 37, 38, 39, 40 and RSRP  $\hat{E}s/Iot \ge -4$  dB,
- RSRP $|_{dBm} \ge -123 \text{ dBm}$  for Bands 9 and RSRP  $\hat{E}s/\text{Iot} \ge -4 \text{ dB}$ ,
- RSRP $|_{dBm} \ge -122 \text{ dBm}$  for Bands 2, 5, 7, 17 and RSRP  $\hat{E}s/Iot \ge -4 \text{ dB}$ ,
- RSRP<sub>dBm</sub> $\geq$  -121 dBm for Bands 3, 8, 12, 13, 14, 20 and RSRP  $\hat{E}$ s/Iot  $\geq$  -4 dB,
- SCH\_RP|<sub>dBm</sub>  $\geq$  -124 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21, 33, 34, 35, 36, 37, 38, 39, 40 and SCH Ês/Iot  $\geq$  -4 dB,
- SCH\_RP|<sub>dBm</sub> $\geq$ -123 dBm for Band 9 and SCH  $\hat{E}$ s/Iot  $\geq$  -4 dB,
- SCH\_RP  $|_{dBm} \ge -122$  dBm for Bands 2, 5, 7, 17 and SCH  $\hat{E}s/Iot \ge -4$  dB,
- SCH\_RP  $|_{dBm} \ge$  -121 dBm for Bands 3, 8, 12, 13, 14, 20 and SCH  $\hat{E}s/Iot \ge$  -4 dB.

When higher priority cells are found by the higher priority search, they shall be measured at least every  $T_{measure,E-}$ <sub>UTRAN\_Inter</sub>. If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection. However, the minimum measurement filtering requirements specified later in this section shall still be met by the UE before it makes any determination that it may stop measuring the cell. If the UE detects on a E-UTRA carrier a cell whose physical identity is indicated as not allowed for that carrier in the measurement control system information of the serving cell, the UE is not required to perform measurements on that cell.

The UE shall measure RSRP or RSRQ at least every  $K_{carrier} * T_{measure,EUTRAN_Inter}$  (see table 4.2.2.4-1) for identified lower or equal priority inter-frequency cells. If the UE detects on a E-UTRA carrier a cell whose physical identity is indicated

as not allowed for that carrier in the measurement control system information of the serving cell, the UE is not required to perform measurements on that cell.

The UE shall filter RSRP or RSRQ measurements of each measured higher, lower and equal priority inter-frequency cell using at least 2 measurements. Within the set of measurements used for the filtering, at least two measurements shall be spaced by at least  $T_{measure,EUTRAN\_Inter}/2$ .

The UE shall not consider a E-UTRA neighbour cell in cell reselection, if it is indicated as not allowed in the measurement control system information of the serving cell.

For an inter-frequency cell that has been already detected, but that has not been reselected to, the filtering shall be such that the UE shall be capable of evaluating that the inter-frequency cell has met reselection criterion defined TS 36.304 within  $K_{carrier} * T_{evaluate,E-UTRAN\_Inter}$  when  $T_{reselection} = 0$  as specified in table 4.2.2.4-1 provided that the reselection criteria is met by a margin of at least 5dB for reselections based on ranking or 6dB for RSRP reselections based on absolute priorities or 4dB for RSRQ reselections based on absolute priorities. When evaluating cells for reselection, the side conditions for RSRP and SCH apply to both serving and inter-frequency cells.

If  $T_{reselection}$  timer has a non zero value and the inter-frequency cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency cell for the  $T_{reselection}$  time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

DRX cycle length [s]	T <sub>detect,EUTRAN_Inter</sub> [s] (number of DRX cycles)	T <sub>measure,EUTRAN_Inter</sub> [s] (number of DRX cycles)	T <sub>evaluate,E</sub> - UTRAN_Inter [s] (number of DRX cycles)
0.32	11.52 (36)	1.28 (4)	5.12 (16)
0.64	17.92 (28)	1.28 (2)	5.12 (8)
1.28	32(25)	1.28 (1)	6.4 (5)
2.56	58.88 (23)	2.56 (1)	7.68 (3)

Table 4.2.2.4-1 : T<sub>detect,EUTRAN\_Inter</sub>, T<sub>measure,EUTRAN\_Inter</sub> and T<sub>evaluate,E-UTRAN\_Inter</sub>

### 4.2.2.5 Measurements of inter-RAT cells

If  $\frac{Srxlev}{S_{nonIntraSearchP}}$  and  $Squal > S_{nonIntraSearchQ}$  then the UE shall search for inter-RAT layers of higher priority at least every  $T_{higher\_priority\_search}$  where  $T_{higher\_priority\_search}$  is described in section 4.2.2

If  $Srxlev \leq S_{nonIntraSearchP}$  or Squal  $\leq S_{nonIntraSearchQ}$  then the UE shall search for and measure inter-RAT layers of higher, lower priority in preparation for possible reselection. In this scenario, the minimum rate at which the UE is required to search for and measure higher priority inter-RAT layers shall be the same as that defined below for lower priority RATs.

### 4.2.2.5.1 Measurements of UTRAN FDD cells

When the measurement rules indicate that UTRA FDD cells are to be measured, the UE shall measure CPICH Ec/Io and CPICH RSCP of detected UTRA FDD cells in the neighbour frequency list at the minimum measurement rate specified in this section. The parameter  $N_{UTRA\_carrier}$  is the number of carriers in the neighbour frequency list. The UE shall filter CPICH Ec/Io and CPICH RSCP measurements of each measured UTRA FDD cell using at least 2 measurements. Within the set of measurements used for the filtering, at least two measurements shall be spaced by at least half the minimum specified measurement period.

The UE shall evaluate whether newly detectable UTRA FDD cells have met the reselection criteria in TS 36.304 within time  $(N_{UTRA\_carrier}) * T_{detectUTRA\_FDD}$  when  $\frac{Srxlev}{S_{nonIntraSearchP}}$  or  $Squal \leq S_{nonIntraSearchQ}$  when  $Treselection_{RAT} = 0$  provided that the reselection criteria is met by a margin of at least 6dB.

 $\begin{array}{l} \mbox{Cells which have been detected shall be measured at least every } (N_{UTRA\_carrier}) * T_{measureUTRA\_FDD} \ \mbox{when } \frac{Srxlev}{S_{nonIntraSearchP}} \leq S_{nonIntraSearchP} \ \mbox{or Squal} \leq S_{nonIntraSearchP}. \end{array}$ 

When higher priority UTRA FDD cells are found by the higher priority search, they shall be measured at least every  $T_{measure,UTRA_FDD}$ . If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection. However, the minimum measurement filtering requirements specified later in this section shall still be met by the UE before it makes any determination that it may stop measuring the cell.

For a cell that has been already detected, but that has not been reselected to, the filtering shall be such that the UE shall be capable of evaluating that an already identified UTRA FDD cell has met reselection criterion defined in 3GPP TS 36.304 [1] within  $(N_{UTRA\_carrier}) * T_{evaluateUTRA\_FDD}$  when  $T_{reselection} = 0$  as speficied in table 4.2.2.5.1-1 provided that the reselection criteria is met by a margin of at least 6dB for reselections based on RSCP, or a margin of at least 3dB for reselections based on Ec/Io.

If  $T_{reselection}$  timer has a non zero value and the UTRA FDD cell is better ranked than the serving cell, the UE shall evaluate this UTRA FDD cell for the  $T_{reselection}$  time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

DRX cycle length [s]	T <sub>detect</sub> UTRA_FDD [S]	T <sub>measureUTRA_FDD</sub> [s] (number of DRX cycles)	T <sub>evaluateUTRA_FDD</sub> [s] (number DRX cycles)	of
0.32		5.12 (16)	15.36 (48)	
0.64	30	5.12 (8)	15.36 (24)	
1.28		6.4(5)	19.2 (15)	
2.56	60	7.68 (3)	23.04 (9)	

Table 4.2.2.5.1-1:  $T_{detectUTRA_FDD}$ ,  $T_{measureUTRA_FDD}$ , and  $T_{evaluateUTRA_FDD}$ 

#### 4.2.2.5.2 Measurements of UTRAN TDD cells

When the measurement rules indicate that UTRA TDD cells are to be measured, the UE shall measure P-CCPCH RSCP of detected UTRA TDD cells in the neighbour frequency list at the minimum measurement rate specified in this section. The parameter  $N_{UTRA\_carrier\_TDD}$  is the number of carriers used in the neighbour frequency list. The UE shall filter P-CCPCH RSCP measurements of each measured UTRA TDD cell using at least 2 measurements. Within the set of measurements used for the filtering, at least two measurements shall be spaced by at least half the minimum specified measurement period. P-CCPCH RSCP of UTRAN TDD cells shall not be filtered over a longer period than that specified in table 4.2.2.5.2-1.

The UE shall evaluate whether newly detectable UTRA TDD cells have met the reselection criteria in TS 36.304 within time  $(N_{UTRA\_carrier\_TDD}) * T_{detectUTRA\_TDD}$  when  $\frac{Srxlev}{S_{nonIntraSearchP}}$  or  $Squal \leq S_{nonIntraSearchQ}$  when  $T_{reselection} = 0$  provided that the reselection criteria is met by a margin of at least 6dB.

Cells which have been detected shall be measured at least every  $(N_{UTRA\_carrier\_TDD}) * T_{measureUTRA\_TDD}$  Srxlev  $\leq S_{nonIntraSearchP}$  or Squal  $\leq S_{nonIntraSearchP}$ .

When higher priority UTRA TDD cells are found by the higher priority search, they shall be measured at least every  $T_{measure,UTRA\_TDD}$ . If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection. However, the minimum measurement filtering requirements specified later in this section shall still be met by the UE before it makes any determination that it may stop measuring the cell.

For a cell that has been already detected, but that has not been reselected to, the filtering shall be such that the UE shall be capable of evaluating that an already identified UTRA TDD cell has met reselection criterion defined in [1] within  $N_{UTRA\_carrier\_TDD} *T_{evaluateUTRA\_TDD}$  when  $T_{reselection} = 0$  as specified in table 4.2.2.5.2-1 provided that the reselection criteria is met by a margin of at least 6dB.

If  $T_{reselection}$  timer has a non zero value and the UTRA TDD cell is better ranked than the serving cell, the UE shall evaluate this UTRA TDD cell for the  $T_{reselection}$  time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

DRX cycle length [s]	T <sub>detect</sub> UTRA_TDD [S]	T <sub>measureUTRA_TDD</sub> [s] (number of DRX cycles)	T <sub>evaluateUTRA_TDD</sub> [s] (number DRX cycles)	of
0.32		5.12 (16)	15.36 (48)	
0.64	30	5.12 (8)	15.36 (24)	
1.28		6.4(5)	19.2 (15)	
2.56	60	7.68 (3)	23.04 (9)	

Table 4.2.2.5.2-1: T<sub>detectUTRA\_TDD</sub>, T<sub>measureUTRA\_TDD</sub> and T<sub>evaluateUTRA\_TDD</sub>

### 4.2.2.5.3 Measurements of GSM cells

When the measurement rules defined in [1] indicate that E-UTRAN inter-frequencies or inter-RAT frequency cells are to be measured, the UE shall measure the signal level of the GSM BCCH carriers if the GSM BCCH carriers are indicated in the measurement control system information of the serving cell. GSM BCCH carriers of lower priority than the serving cell shall be measured at least every  $T_{measure,GSM}$  (see table 4.2.2.5.3-1).

When higher priority GSM BCCH carriers are found by the higher priority search, they shall be measured at least every  $T_{measure,GSM}$ , and the UE shall decode the BSIC of the GSM BCCH carrier. If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection, or to continuously verify the BSIC of the GSM BCCH carrier every 30s. However, the minimum measurement filtering requirements specified later in this section shall still be met by the UE before it makes any determination that it may stop measuring the cell.

The UE shall maintain a running average of 4 measurements for each GSM BCCH carrier. The measurement samples for each cell shall be as far as possible uniformly distributed over the averaging period.

If continuous GSM measurements are required by the measurement rules in [1], the UE shall attempt to verify the BSIC at least every 30 seconds for each of the 4 strongest GSM BCCH carriers. If a change of BSIC is detected for one GSM cell then that GSM BCCH carrier shall be treated as a new GSM neighbour cell. If the UE detects on a BCCH carrier a BSIC which is indicated as not allowed for that carrier in the measurement control system information of the serving cell, the UE is not required to perform BSIC re-confirmation for that cell.

The UE shall not consider the GSM BCCH carrier in cell reselection, if the UE cannot demodulate the BSIC of that GSM BCCH carrier. Additionally, the UE shall not consider a GSM neighbour cell in cell reselection, if it is indicated as not allowed in the measurement control system information of the serving cell.

If  $T_{reselection}$  timer has a non zero value and the GSM cell is better ranked than the serving cell, the UE shall evaluate this GSM cell for the  $T_{reselection}$  time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

DRX cycle length [s]	T <sub>measure,GSM</sub> [s] (number of DRX cycles)	
0.32	5.12 (16)	
0.64	5.12 (8)	
1.28	6.4(5)	
2.56	7.68 (3)	

### Table 4.2.2.5.3-1: T<sub>measure,GSM</sub>,

### 4.2.2.5.4

### Measurements of HRPD cells

In order to perform measurement and cell reselection to HRPD cell, the UE shall acquire the timing of HRPD cells.

When the measurement rules indicate that HRPD cells are to be measured, the UE shall measure CDMA2000 HRPD Pilot Strength of HRPD cells in the neighbour cell list at the minimum measurement rate specified in this section.

The parameter 'Number of HRPD Neighbor Frequency', which is transmitted on E-UTRAN BCCH, is the number of carriers used for all HRPD cells in the neighbour cell list.

If  $S_{\text{ServingCell}}$  of the E-UTRA serving cell is greater than  $S_{\text{nonintrasearch}}$ , the UE shall search for CDMA2000 HRPD layers of higher priority at least every  $T_{\text{higher_priority_search}}$  where  $T_{\text{higher_priority_search}}$  is defined in section 4.2.2.

For CDMA2000 HRPD cells which have been detected, the UE shall measure CDMA2000 HRPD Pilot Strength at least every (Number of HRPD Neighbor Frequency)\* $T_{measureHRPD}$ , when the  $S_{ServingCell}$  of the E-UTRA serving cell is less than or equal to  $S_{nonintrasearch}$ .

The UE shall be capable of evaluating that the CDMA2000 HRPD cell has met cell reselection criterion defined in [1] within  $T_{evaluateHRPD}$ .

Table 4.2.2.5.4-1 gives values of  $T_{measureHRPD}$  and  $T_{evaluateHRPD}$ .

DRX cycle length [s]	T <sub>measureHRPD</sub> [s] (number of DRX cycles)	T <sub>evaluateHRPD</sub> [s] (number of DRX cycles)
0.32	5.12 (16)	15.36 (48)
0.64	5.12 (8)	15.36 (24)
1.28	6.4 (5)	19.2 (15)
2.56	7.68 (3)	23.04 (9)

Table 4.2.2.5.4-1: TmeasureHRPD and TevaluateHRPD

If  $T_{reselection}$  timer has a non zero value and the CDMA2000 HRPD cell is better ranked than the serving cell, the UE shall evaluate this CDMA2000 HRPD cell for the  $T_{reselection}$  time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

#### 4.2.2.5.5 Measurements of cdma2000 1X

In order to perform measurement and cell reselection to cdma2000 1X cell, the UE shall acquire the timing of cdma2000 1X cells.

When the measurement rules indicate that cdma2000 1X cells are to be measured, the UE shall measure cdma2000 1x RTT Pilot Strength of cdma2000 1X cells in the neighbour cell list at the minimum measurement rate specified in this section.

The parameter 'Number of CDMA2000 1X Neighbor Frequency', which is transmitted on E-UTRAN BCCH, is the number of carriers used for all cdma2000 1X cells in the neighbour cell list.

If  $S_{\text{ServingCell}}$  of the E-UTRA serving cell is greater than  $S_{\text{nonintrasearch}}$ , the UE shall search for cdma2000 1X layers of higher priority at least every  $T_{\text{higher_priority_search}}$  where  $T_{\text{higher_priority_search}}$  is defined in section 4.2.2.

For CDMA2000 1X cells which have been detected, the UE shall measure CDMA2000 1xRTT Pilot Strength at least every (Number of CDMA2000 1X Neighbor Frequency)\* $T_{measureCDMA2000_1X}$ , when the  $S_{ServingCell}$  of the E-UTRA serving cell is less than or equal to  $S_{nonintrasearch}$ .

The UE shall be capable of evaluating that the cdma2000 1X cell has met cell reselection criterion defined in [1] within  $T_{evaluateCDMA2000_{1X}}$ .

Table 4.2.2.5.5-1 gives values of T<sub>measureCDMA2000\_1X</sub> and T<sub>evaluateCDMA2000\_1X</sub>.

DRX cycle length [s]	T <sub>measureCDMA2000_1X</sub> [s] (number of DRX cycles)	T <sub>evaluateCDMA2000_1X</sub> [s] (number of DRX cycles)
0.32	5.12 (16)	15.36 (48)
0.64	5.12 (8)	15.36 (24)
1.28	6.4 (5)	19.2 (15)
2.56	7.68 (3)	23.04 (9)

Table 4.2.2.5.5-1: T<sub>measureCDMA2000 1X and</sub> T<sub>evaluateCDMA2000 1X</sub>

If  $T_{reselection}$  timer has a non zero value and the CDMA2000 1X cell is better ranked than the serving cell, the UE shall evaluate this CDMA2000 1X cell for the  $T_{reselection}$  time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

### 4.2.2.6 Evaluation of cell re-selection criteria

The UE shall evaluate the intra-frequency, inter-frequency and inter-RAT cell reselection criteria defined in [1] at least every DRX cycle. When a non zero value of  $T_{reselection}$  is used, the UE shall only perform reselection on an evaluation which occurs simultaneously to, or later than the expiry of the  $T_{reselection}$  timer.

### 4.2.2.7 Maximum interruption in paging reception

UE shall perform the cell re-selection with minimum interruption in monitoring downlink channels for paging reception.

At intra-frequency and inter-frequency cell re-selection, the UE shall monitor the downlink of serving cell for paging reception until the UE is capable to start monitoring downlink channels of the target intra-frequency and inter-frequency cell for paging reception. The interruption time shall not exceed  $T_{SLEUTRA}$  + 50 ms.

At inter-RAT cell re-selection, the UE shall monitor the downlink of serving cell for paging reception until the UE is capable to start monitoring downlink channels for paging reception of the target inter-RAT cell. For E-UTRAN to UTRA cell re-selection the interruption time must not exceed  $T_{SI-UTRA} + 50$  ms. For E-UTRAN to GSM cell re-selection the interruption time must not exceed  $T_{BCCH} + 50$  ms.

 $T_{SI-EUTRA}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in [2] for a E-UTRAN cell.

 $T_{SI-UTRA}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in [7] for a UTRAN cell.

T<sub>BCCH</sub> is the maximum time allowed to read BCCH data from a GSM cell defined in [8].

These requirements assume sufficient radio conditions, so that decoding of system information can be made without errors and does not take into account cell re-selection failure.

At cell re-selection to HRPD, the UE shall monitor the downlink of serving cell for paging reception until the UE is capable of starting to monitor downlink channels for paging reception of the target HRPD cell. For HRPD cell reselection the interruption time must not exceed  $T_{SI-HRPD} + 50$  ms.

 $T_{SI-HRPD}$  is the time required for receiving all the relevant system information data according to the reception procedure and the upper layer (Layer 3) procedure delay of system information blocks defined in [11] in for HRPD cell.

At cell re-selection to cdma2000 1X, the UE shall monitor the downlink of serving cell for paging reception until the UE is capable of starting to monitor downlink channels for paging reception of the target cdma2000 1X cell. For cdma2000 1X cell re-selection the interruption time must not exceed  $T_{SI-cdma2000_1X} + 50$  ms.

 $T_{SI-cdma2000_1X}$  is the time required for receiving all the relevant system information data according to the reception procedure and the upper layer (Layer 3) procedure delay of system information blocks defined in [15] for cdma2000 1X cell.

### 4.2.2.8 void

### 4.2.2.9 UE measurement capability

For idle mode cell re-selection purposes, the UE shall be capable of monitoring at least:

- Intra-frequency carrier, and
- Depending on UE capability, 3 FDD E-UTRA inter-frequency carriers, and
- Depending on UE capability, 3 TDD E-UTRA inter-frequency carriers, and
- Depending on UE capability, 3 FDD UTRA carriers, and
- Depending on UE capability, 3 TDD UTRA carriers, and
- Depending on UE capability, 32 GSM carriers, and
- Depending on UE capability, 3 cdma2000 1x carriers, and
- Depending on UE capability, 3 HRPD carriers.

In addition to the requirements defined above, a UE supporting E-UTRA measurements in RRC\_IDLE state shall be capable of monitoring a total of at least 8 carrier frequency layers, which includes serving layer, comprising of any above defined combination of E-UTRA FDD, E-UTRA TDD, UTRA FDD, UTRA TDD, GSM (one GSM layer corresponds to 32 cells), cdma2000 1x and HRPD layers.

# 5 E-UTRAN RRC\_CONNECTED state mobility

Note: For the performance requirements specified hereafter, the state when no DRX is used is defined as follows:

- DRX parameters are not configured; or
- DRX parameters are configured and
  - drx-InactivityTimer is running; or
  - o drx-RetransmissionTimer is running; or
  - o mac-ContentionResolutionTimer is running; or
  - o a Scheduling Request sent on PUCCH is pending; or
  - an uplink grant for a pending HARQ retransmission can occur and there is data in the corresponding HARQ buffer; or
  - a PDCCH indicating a new transmission addressed to the C-RNTI of the UE has not been received after successful reception of a Random Access Response for the explicitly signaled preamble (only applicable to UEs in RRC\_CONNECTED).

#### Otherwise

- It is the state when DRX is used.

# 5.1 E-UTRAN Handover

### 5.1.1 Introduction

### 5.1.2 Requirements

### 5.1.2.1 E-UTRAN FDD – FDD

The requirements in this section are applicable to both intra-frequency and inter-frequency handovers.

### 5.1.2.1.1 Handover delay

Procedure delays for all procedures that can command a handover are specified in [2].

When the UE receives a RRC message implying handover the UE shall be ready to start the transmission of the new uplink PRACH channel within  $D_{handover}$  seconds from the end of the last TTI containing the RRC command.

Where:

 $D_{handover}$  equals the maximum RRC procedure delay to be defined in section 11.2 in 3GPP TS 36.331 [2] plus the interruption time stated in section 5.1.2.1.2.

### 5.1.2.1.2 Interruption time

The interruption time is the time between end of the last TTI containing the RRC command on the old PDSCH and the time the UE starts transmission of the new PRACH, excluding the RRC procedure delay. This requirement applies when UE is not required to perform any synchronisation procedure before transmitting on the new PRACH.

When intra-frequency or inter-frequency handover is commanded, the interruption time shall be less than Tinterrupt

$$T_{interrupt} = T_{search} + T_{IU} + 20 ms$$

Where:

 $T_{search}$  is the time required to search the target cell when the target cell is not already known when the handover command is received by the UE. If the target cell is known, then  $T_{search} = 0$  ms. If the target cell is unknown and signal quality is sufficient for successful cell detection on the first attempt, then  $T_{search} = 80$  ms. Regardless of whether DRX is in use by the UE,  $T_{search}$  shall still be based on non-DRX target cell search times.

 $T_{IU}$  is the interruption uncertainty in acquiring the first available PRACH occasion in the new cell.  $T_{IU}$  can be up to 30 ms.

NOTE: The actual value of T<sub>IU</sub> shall depend upon the PRACH configuration used in the target cell.

In the interruption requirement a cell is known if it has been meeting the relevant cell identification requirement during the last 5 seconds otherwise it is unknown. Relevant cell identification requirements are described in Section 8.1.2.2.1 for intra-frequency handover and Section 8.1.2.3.1 for inter-frequency handover.

### 5.2.2.2 E-UTRAN FDD – TDD

The requirements in this section are applicable to handover from FDD to TDD. The requirements in this section shall apply to UE supporting FDD and TDD.

The requirements in section 5.2.2.4 apply for this section.

5.2.2.2.1 (Void)

5.2.2.2.2 (Void)

### 5.2.2.3 E-UTRAN TDD – FDD

The requirements in this section are applicable to handover from TDD to FDD. The requirements in this section shall apply to UE supporting FDD and TDD.

The requirements in section 5.1.2.1 apply for this section.

5.2.2.3.1	(Void)	
5.2.2.3.2	(Void)	

### 5.2.2.4 E-UTRAN TDD – TDD

The requirements in this section are applicable to both intra-frequency and inter-frequency handovers.

### 5.2.2.4.1 Handover delay

Procedure delays for all procedures that can command a handover are specified in 3GPP TS 36.331 [2].

When the UE receives a RRC message implying handover, the UE shall be ready to start the transmission of the new uplink PRACH channel within  $D_{handover}$  seconds from the end of the last TTI containing the RRC command.

Where:

 $D_{handover}$  equals the maximum RRC procedure delay to be defined in section 11.2 in 3GPP TS36.331 [2] plus the interruption time stated in section 5. 2.2.4.2.

#### 5.2.2.4.2 Interruption time

The interruption time is the time between end of the last TTI containing the RRC command on the old PDSCH and the time the UE starts transmission of the new PRACH, excluding the RRC procedure delay. This requirement applies when UE is not required to perform any synchronisation procedure before transmitting on the new PRACH.

When intra-frequency or inter-frequency handover is commanded, the interruption time shall be less than Tinterrupt

$$T_{interrupt} = T_{search} + T_{IU} + 20 ms$$

Where

 $T_{search}$  is the time required to search the target cell when the target cell is not already known when the handover command is received by the UE. If the target cell is known, then  $T_{search} = 0$  ms. If the target cell is unknown and signal quality is sufficient for successful cell detection on the first attempt, then  $T_{search} = 80$  ms. Regardless of whether DRX is in use by the UE,  $T_{search}$  shall still be based on non-DRX target cell search times.

 $T_{IU}$  is the interruption uncertainty in acquiring the first available PRACH occasion in the new cell.  $T_{IU}$  can be up to 30 ms.

NOTE: The actual value of T<sub>IU</sub> shall depend upon the PRACH configuration used in the target cell.

In the interruption requirement a cell is known if it has been meeting the relevant cell identification requirement during the last 5 seconds otherwise it is unknown. Relevant cell identification requirements are described in Section 8.1.2.2.2 for intra-frequency handover and Section 8.1.2.3.4 for inter-frequency handover.

# 5.3 Handover to other RATs

### 5.3.1 E-UTRAN - UTRAN FDD Handover

### 5.3.1.1 Introduction

The purpose of inter-RAT handover from E-UTRAN to UTRAN FDD is to change the radio access mode from E-UTRAN to UTRAN FDD. The handover procedure is initiated from E-UTRAN with a RRC message that implies a hard handover as described in [2].

#### 5.3.1.1.1 Handover delay

When the UE receives a RRC message implying handover to UTRAN the UE shall be ready to start the transmission of the new UTRA uplink DPCCH within  $D_{handover}$  seconds from the end of the last E-UTRAN TTI containing the RRC MOBILITY FROM E-UTRA command.

where:

- D<sub>handover</sub> equals the RRC procedure delay, which is 50 ms plus the interruption time stated in section 5.3.1.1.2.

#### 5.3.1.1.2 Interruption time

The interruption time is the time between the end of the last TTI containing the RRC command on the E-UTRAN PDSCH and the time the UE starts transmission on the uplink DPCCH in UTRAN FDD, excluding the RRC procedure delay. The interruption time depends on whether the target cell is known to the UE or not.

The target cell is known if it has been measured by the UE during the last 5 seconds otherwise it is unknown. The UE shall always perform a UTRA synchronisation procedure as part of the handover procedure.

If the target cell is known the interruption time shall be less than Tinterrupt1

$$T_{interrupt1} = T_{IU} + T_{sync} + 50 + 10 * F_{max} ms$$

If the target cell is unknown the interruption time shall be less than Tinterrupt2

$$T_{interrupt2} = T_{IU} + T_{sync} + 150 + 10 * F_{max} ms$$

This requirement shall be met, provided that there is one target cell in the MOBILITY FROM E-UTRA command. Performance requirements for E-UTRA to UTRA soft handover are not specified. When UE is connected to an E-UTRA cell, UTRA SFN timing measurements are not reported. This implies that the timing of the DPCH of the UTRA target cells in the active set cannot be configured by UTRAN to guarantee that all target cells fall within the UE reception window of  $T_0$ +/- 148 chips.

Where:

 $T_{IU}$ is the interruption uncertainty when changing the timing from the E-UTRAN to the new UTRAN<br/>cell.  $T_{IU}$  can be up to one UTRA frame (10 ms). $F_{max}$ denotes the maximum number of radio frames within the transmission time intervals of all<br/>transport channels that are multiplexed into the same CCTrCH on the UTRA target cell. $T_{sync}$ is the time required for measuring the downlink DPCCH channel as stated in 3GPP TS 25.214<br/>section 4.3.1.2 [20]. In case higher layers indicate the usage of a post-verification period  $T_{sync}=0$ <br/>ms. Otherwise  $T_{sync}=40$  ms.

The phase reference is the primary CPICH.

The requirements in this section assume that N312 has the smallest possible value i.e. only one insync is required.

### 5.3.2 E-UTRAN - UTRAN TDD Handover

### 5.3.2.1 Introduction

The purpose of inter-RAT handover from E-UTRAN to UTRAN TDD is to change the radio access mode from E-UTRAN to UTRAN TDD. The handover procedure is initiated from E-UTRAN with a RRC message that implies a hard handover as described in [2].

### 5.3.2.2 Requirements

The requirements in this section shall apply to UE supporting E-UTRAN and UTRAN TDD.

### 5.3.2.2.1 Handover delay

When the UE receives a RRC message implying E-UTRAN/UTRAN TDD handover the UE shall be ready to start the transmission of the new uplink DPCH or the SYNC-UL within  $D_{handover}$  seconds from the end of the last TTI containing the RRC MOBILITY FROM E-UTRA command.

Where:

- D<sub>handover</sub> equals the RRC procedure delay, which is 50 ms plus the interruption time stated in section 5.3.2.2.

### 5.3.2.2.2 Interruption time

The interruption time is the time between the end of the last TTI containing the RRC command on the E-UTRAN PDSCH and the time the UE starts transmission on the uplink DPCH or the SYNC-UL in UTRAN TDD, excluding the RRC procedure delay. The interruption time depends on whether the target cell is known to the UE or not.

The UE shall always perform a UTRA synchronisation procedure as part of the handover procedure.

If the target cell has been measured by the UE during the last 5 seconds, the interruption time shall be less than  $T_{interrupt1}$ 

 $T_{interrupt1} = T_{offset} + T_{UL} + 30*F_{SFN} + 20 + 10*F_{max} ms$ 

If the target cell has not been measured by the UE during the last 5 seconds, the interruption time shall be less than  $T_{interrupt2}$ 

$$T_{interrupt2} = T_{offset} + T_{UL} + 30*F_{SFN} + 180 + 10*F_{max} ms$$

Where:

T <sub>offset</sub>	Equal to 10 ms, the frame timing uncertainty between the old cell and the target cell and the time that can elapse until the appearance of a Beacon channel
T <sub>UL</sub>	Equal to 10 ms, the time that can elapse until the appearance of the UL timeslot in the target cell
F <sub>SFN</sub>	Equal to 1 if SFN decoding is required and equal to 0 otherwise
$F_{\text{max}}$	denotes the maximum number of radio frames within the transmission time intervals of all transport channels that are multiplexed into the same CCTrCH.

The interruption time requirements for an unknown target cell shall apply only if the signal quality of the unknown target cell is sufficient for successful synchronisation with one attempt.

# 5.3.3 E-UTRAN - GSM Handover

### 5.3.3.1 Introduction

The purpose of inter-RAT handover from E-UTRAN to GSM is to transfer a connection between the UE and E-UTRAN to GSM. The handover procedure is initiated from E-UTRAN with a RRC message (MOBILITY FROM E-UTRA). The procedure is described in in 3GPP TS 36.331 [2].

### 5.3.3.2 Requirements

The requirements in this section shall apply to UE supporting E-UTRAN and GSM.

The requirements given below in Tables 5.3.3.2.1-1 and 5.3.3.2.2-1 for the case where the UE has not synchronised to the GSM cell before receiving the RRC MOBILITY FROM E-UTRA command are valid when the signal quality of the GSM cell is sufficient for successful synchronisation with one attempt. If the UE is unable to synchronise to the GSM cell on the first attempt, it shall continue to search for synchronisation information for up to 800 ms duration. If after 800 ms the UE has not synchronised to the GSM cell it shall follow the handover failure procedure specified in [2].

### 5.3.3.2.1 Handover delay

When the UE receives a RRC MOBILITY FROM E-UTRA command the UE shall be ready to transmit (as specified in [10]) on the channel of the new RAT within the value in table 5.3.3.2.1-1 from the end of the last TTI containing the RRC command. The UE shall process the RRC procedures for the MOBILITY FROM E-UTRA command within 50 ms, which is noted as RRC procedure delay.

Table 5.3.3.2.1-1: E-UTRAN/GSM handover - handover of	delay
---	-------

UE synchronisation status	handover delay [ms]
The UE has synchronised to the GSM cell before the	90
RRC MOBILITY FROM E-UTRA COMMAND is received	
The UE has not synchronised to the GSM cell before	190
the RRC MOBILITY FROM E-UTRA COMMAND is	
received	

### 5.3.3.2.2 Interruption time

The interruption time is the time between the end of the last TTI containing the RRC command on the E-UTRAN PDSCH and the time the UE starts transmission on the uplink channel in GSM, excluding the RRC procedure delay. The interruption time depends on whether the UE has synchronized to the target GSM cell or not and shall be less than the value specified in table 5.3.3.2.2-1.

Table 5.3.3.2.2-1: E-UTRAN/GSM har	ndover - interruption time
------------------------------------	----------------------------

Synchronisation status	Interruption time [ms]
The UE has synchronised to the GSM cell before the	40
RRC MOBILITY FROM E-UTRA COMMAND is received	
The UE has not synchronised to the GSM cell before	140
the RRC MOBILITY FROM E-UTRA COMMAND is	
received	

# 5.4 Handover to Non-3GPP RATs

### 5.4.1 E-UTRAN – HRPD Handover

### 5.4.1.1 Introduction

The handover procedure from E-UTRAN to HRPD is initiated when E-UTRAN sends handover command to the UE through dedicated RRC signalling.

#### 5.4.1.1.1 Handover delay

The handover delay ( $D_{handover}$ ) is defined as the sum of the RRC procedure delay, which is 50 ms and the interruption time specified in section 5.4.1.1.2.

When the UE receives a RRC message implying handover to HRPD, the UE shall be ready to start the transmission of the new reverse control channel in HRPD within  $D_{handover}$  from the end of the last E-UTRAN TTI containing the RRC command.

### 5.4.1.1.2 Interruption time

The interruption time is the time between the end of the last TTI containing the RRC command on the E-UTRAN PDSCH and the time the UE starts transmission of the reverse control channel in HRPD, excluding the RRC procedure delay. The interruption time depends on whether the target cell is known to the UE or not.

An HRPD cell is known if it has been measured by the UE during the last 5 seconds otherwise it is unknown. Under the reference conditions specified in sub-clause 6.6 of [13], the interruption time shall be less than  $T_{interrupt}$ 

$$T_{interrupt} = T_{IU} + 40 + 10 * KC * SW_{K} + 10 * OC * SW_{O} ms$$

Where:

- $T_{IU}$  It is the interruption uncertainty when changing the timing from the E-UTRAN to the new HRPD cell.  $T_{IU}$  can be up to one HRPD frame (26.66 ms).
- SW<sub>K</sub> is SW<sub>K</sub> =  $\left[\frac{\text{srch}_win_k}{60}\right]$  where srch\_win\_k is the number of HRPD chips indicated by the
  - search window for known target HRPD cells in the message
- SW<sub>0</sub> is SW<sub>0</sub> =  $\left[\frac{\text{srch}_win_o}{60}\right]$  where srch\_win\_o is the number of HRPD chips indicated by the

search window for unknown target HRPD cells in the message

KC It is the number of known target HRPD cells in the message, and

OC It is the number of unknown target HRPD cells in the message.

Note: An additional delay in the interruption time may occur due to the reverse link silence interval [11], which is specific to HRPD.

### 5.4.2 E-UTRAN – cdma2000 1X Handover

### 5.4.2.1 Introduction

The handover procedure from E-UTRAN to cdma2000 1X is initiated when E-UTRAN sends handover command to the UE through dedicated RRC signalling.

### 5.4.2.1.1 Handover delay

The handover delay ( $D_{handover}$ ) is defined as the sum of the RRC procedure delay, which is 130 ms and the interruption time specified in section 5.4.2.1.2.

When the UE receives a RRC message implying handover to cdma2000 1X, the UE shall be ready to start the transmission of the new reverse control channel in cdma2000 1X within  $D_{handover}$  from the end of the last E-UTRAN TTI containing the RRC command.

#### 5.4.2.1.2 Interruption time

The interruption time is the time between the end of the last TTI containing the RRC command on the E-UTRAN PDSCH and the time the UE starts transmission of the reverse control channel in cdma2000 1X, excluding the RRC procedure delay. The interruption time depends on whether the target cell is known to the UE or not.

A cdma2000 1X cell is known if it has been measured by the UE during the last 5 seconds otherwise it is unknown. Under the reference conditions specified in sub-clause 4.2.1 of [14], the interruption time shall be less than  $T_{interrupt}$ :

$$T_{interrupt} = T_{IU} + 40 + 10*KC*SW_{K} + 10*OC*SW_{O} \text{ ms}$$

Where:

$$T_{IU}$$
It is the interruption uncertainty when changing the timing from the E-UTRAN to the new  
cdma2000 1X cell.  $T_{IU}$  can be up to one cdma2000 1X frame (20 ms). $SW_K$ is  $SW_K = \left[\frac{\text{srch}_win}{60}\right]$  where srch\_win\_k is the number of cdma2000 1x chips indicated by  
the search window for known target cdma2000 1x cells in the message $SW_O$ is  $SW_O = \left[\frac{\text{srch}_win}{0}\right]$  where srch\_win\_o is the number of cdma2000 1x chips indicated by  
the search window for unknown target cdma2000 1x cells in the message $SW_O$ is  $SW_O = \left[\frac{\text{srch}_win}{0}\right]$  where srch\_win\_o is the number of cdma2000 1x chips indicated by  
the search window for unknown target cdma2000 1x cells in the message $KC$ It is the number of known target cdma2000 1X cells in the message, and  
OC $OC$ It is the number of unknown target cdma2000 1X cells in the message.

# 6 RRC Connection Mobility Control

# 6.1 RRC Re-establishment

The requirements in this section are applicable to both E-UTRAN FDD and TDD.

### 6.1.1 Introduction

RRC connection re-establishment is initiated when a UE in RRC connected mode looses RRC connection due to any of these reasons: radio link failure, handover failure or radio link problem. The RRC es-tablishment procedure is specified in section 5.3.7 in TS 36.331 [2].

### 6.1.2 Requirements

In RRC connected mode the UE shall be capable of sending *RRCConnectionReestablishmentRequest* message within  $T_{re-establish\_delay}$  seconds from the moment it detects a loss in RRC connection. The total RRC connection delay ( $T_{re-establish\_delay}$ ) shall be less than:

 $T_{re-establish\_delay} = T_{UL\_grant} + T_{UE\_re-establish\_delay}$ 

 $T_{UL_{grant}}$ : It is the time required to acquire and process uplink grant from the target cell. The uplink grant is required to transmit *RRCConnectionReestablishmentRequest* message.

The UE re-establishment delay ( $T_{UE\_re-establish\_delay}$ ) is specified in section 6.1.2.1.

#### 6.1.2.1 UE Re-establishment delay requirement

The UE re-establishment delay ( $T_{UE\_re-establish\_delay}$ ) is the time between the moments when any of the conditions requiring RRC re-establishment as defined in section 5.3.7 in TS 36.331 [2] is detected by the UE to the time when the UE sends PRACH to the target cell. The UE re-establishment delay ( $T_{UE\_re-establish\_delay}$ ) requirement shall be less than:

 $T_{UE-re-establish\_delay} = 50 \text{ ms} + N_{freq} * Tsearch + T_{SI} + T_{PRACH}$ 

 $T_{search}$ : It is the time required by the UE to search the target cell.

 $T_{\text{search}} = \text{It is [100] ms if the target cell is known by the UE; the target cell is known if it has been measured by the UE in the last 5 seconds.$ 

 $T_{\text{search}} = \text{It is 800 ms if the target cell is unknown by the UE; the target cell is unknown if it has not been measured by the UE in the last 5 seconds.$ 

 $T_{SI}$  = It is the time required for receiving all the relevant system information according to the reception procedure and the RRC procedure delay of system information blocks defined in TS 36.331 [2] for E-UTRAN cell.

 $T_{PRACH}$  = The additional delay caused by the random access procedure; it will be at least 10 ms due to random access occasion and there might be additional delay due to ramping procedure.

 $N_{freq}$ : It is the total number of E-UTRA frequencies to be monitored for RRC re-establishment;  $N_{freq} = 1$  if the target cell is known.

There is no requirement if the target cell does not contain the UE context.

# 6.2 Random Access

# 6.2.1 Introduction

The random access procedure is used when establishing the layer 1 communication between the UE and E-UTRAN. The random access is specified in section 6 of TS 36.213[3] and the control of the RACH transmission is specified in section 5.1 of TS 36.321[17].

# 6.2.2 Requirements

The UE shall have capability to calculate PRACH transmission power according to the PRACH power formula defined in TS 36.213[3] and apply this power level at the first preamble or additional preambles. The absolute power applied to the first preamble shall have an accuracy as specified in table 6.3.5.1.1-1 of TS 36.101[5]. The relative power applied to additional preambles shall have an accuracy as specified in table 6.3.5.2.1-1 of 36.101[5].

The UE shall indicate a Random Access problem to upper layers if the maximum number of preamble transmission counter has been reached.

#### 6.2.2.1 Contention based random access

#### 6.2.2.1.1 Correct behaviour when receiving Random Access Response reception

The UE may stop monitoring for Random Access Response(s) and shall transmit the msg3 if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if all received Random Access Responses contain Random Access Preamble identifiers that do not match the transmitted Random Access Preamble.

#### 6.2.2.1.2 Correct behaviour when not receiving Random Access Response reception

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if no Random Access Response is received within the RA Response window defined in clause 5.1.4 TS 36.321.

#### 6.2.2.1.3 Correct behaviour when receiving a NACK on msg3

The UE shall re-transmit the msg3 upon the reception of a NACK on msg3.

#### 6.2.2.1.4 Void

#### 6.2.2.1.5 Correct behaviour when receiving a message over Temporary C-RNTI

The UE shall send ACK if the Contention Resolution is successful.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires unless the received message includes a UE Contention Resolution Identity MAC control element and the UE Contention Resolution Identity included in the MAC control element matches the CCCH SDU transmitted in the uplink message.

#### 6.2.2.1.6 Correct behaviour when contention Resolution timer expires

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if the Contention Resolution Timer expires.

## 6.2.2.2 Non-Contention based random access

#### 6.2.2.2.1 Correct behaviour when receiving Random Access Response

The UE may stop monitoring for Random Access Response(s) if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble.

The UE shall re-transmit the preamble with the calculated PRACH transmission power if all received Random Access Responses contain Random Access Preamble identifiers that do not match the transmitted Random Access Preamble.

#### 6.2.2.2.2 Correct behaviour when not receiving Random Access Response

The UE shall re-transmit the preamble with the calculated PRACH transmission power.

# 7 Timing and signalling characteristics

# 7.1 UE transmit timing

# 7.1.1 Introduction

The UE shall have capability to follow the frame timing change of the connected eNode B. The uplink frame transmission takes place  $(N_{TA} + N_{TA \text{ offset}}) \times T_s$  before the reception of the first detected path (in time) of the corresponding downlink frame from the reference cell UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are defined in the following requirements.

# 7.1.2 Requirements

The UE initial transmission timing error shall be less than or equal to  $\pm T_e$  where the timing error limit value  $T_e$  is specified in Table 7.1.2-1. This requirement applies when it is the first transmission in a DRX cycle for PUCCH,

PUSCH and SRS or it is the PRACH transmission. The reference point for the UE initial transmit timing control requirement shall be the downlink timing minus  $(N_{TA\_Ref} + N_{TA\_offset}) \times T_s$ . The downlink timing is defined as the time when [the first detected path (in time)] of the corresponding downlink frame is received from the reference cell.  $N_{TA\_Ref}$  for PRACH is defined as 0.  $(N_{TA\_Ref} + N_{TA\_offset})$  (in  $T_s$  units) for other channels is the difference between UE transmission timing and the Downlink timing immediately after when the last timing advance in section 7.3 was applied.  $N_{TA\_Ref}$  for other channels is not changed until next timing advance is received.

Table	7.1.2	2-1: T <sub>e</sub>	Timing	Error	Limit
-------	-------	---------------------	--------	-------	-------

Downlink Bandwidth (MHz)	T <sub>e</sub> _		
1.4	24*T <sub>S</sub>		
≥3 12*Ts			
Note: T <sub>S</sub> is the basic timing unit defined in TS 36.211			

When it is not the first transmission in a DRX cycle or there is no DRX cycle, and when it is the transmission for PUCCH, PUSCH and SRS transmission, the UE shall be capable of changing the transmission timing according to the received downlink frame except when the timing advance in section 7.3 is applied. When the transmission timing error between the UE and the reference timing exceeds  $\pm T_e$  the UE is required to adjust its timing to within  $\pm T_e$ . The reference timing shall be  $(N_{TA\_Ref} + N_{TA offset}) \times T_s$  before the downlink timing. All adjustments made to the UE uplink timing shall follow these rules:

- 1) The maximum amount of the magnitude of the timing change in one adjustment shall be  $T_q$  seconds.
- 2) The minimum aggregate adjustment rate shall be  $7*T_s$  per second.
- 3) The maximum aggregate adjustment rate shall be  $T_q$  per 200ms.

where the maximum autonomous time adjustment step  $T_q$  is specified in Table 7.1.2-2.

Downlink Bandwidth (MHz)	T <sub>q_</sub>	
1.4	16*Ts	
3	8*T <sub>S</sub>	
5	4*T <sub>S</sub>	
≥10	2*T <sub>S</sub>	
Note: Ts is the basic timing unit defined in TS 36.211		

Table 7.1.2-2: T<sub>q</sub> Maximum Autonomous Time Adjustment Step

# 7.2 UE timer accuracy

# 7.2.1 Introduction

UE timers are used in different protocol entities to control the UE behaviour.

# 7.2.2 Requirements

For UE timers specified in section 7.3 in [2], UE shall comply with the timer accuracies according to Table 7.2.2-1.

The requirements are only related to the actual timing measurements internally in the UE. They do not include the following:

- Inaccuracy in the start and stop conditions of a timer (e.g. UE reaction time to detect that start and stop conditions of a timer is fulfilled), or
- Inaccuracies due to restrictions in observability of start and stop conditions of a UE timer (e.g. TTI alignment when UE sends messages at timer expiry).

Table 7.2.2-1	Tab	le	7.2	.2-1
---------------	-----	----	-----	------

Timer value [s]	Accuracy	
timer value < 4	±0.1s	
timer value $\geq 4$	± 2.5%	

# 7.3 Timing Advance

## 7.3.1 Introduction

The timing advance is initiated from E-UTRAN with MAC message that implies and adjustment of the timing advance, see 3GPP TS 36.321 [17] section 5.2.

# 7.3.2 Requirements

#### 7.3.2.1 Timing Advance adjustment delay

UE shall adjust the timing of its uplink transmission timing at sub-frame n+6 for a timing advancement command received in sub-frame n.

### 7.3.2.2 Timing Advance adjustment accuracy

The UE shall adjust the timing of its transmissions with a relative accuracy better than or equal to  $\pm 4*$  T<sub>s</sub> seconds to the signalled timing advance value compared to the timing of preceding uplink transmission. The timing advance command is expressed in multiples of 16\* T<sub>s</sub> and is relative to the current uplink timing.

# 7.4 Cell phase synchronization accuracy (TDD)

# 7.4.1 Definition

Cell phase synchronization accuracy is defined as the maximum absolute deviation in frame start timing between any pair of cells on the same frequency that have overlapping coverage areas.

# 7.4.2 Minimum requirements

For Wide Area BS, the cell phase synchronization accuracy measured at BS antenna connectors shall be better than the requirement specified in table 7.4.2-1. If a cell's coverage area overlaps with another cell with different cell radius then the cell phase synchronization accuracy corresponding to the larger of the two cell sizes applies to the overlapping cells with different radii.

Table 7.4.2-1	Cell phase synchronization requirement for wide area BS (TDD)
---------------	---

Cell Type	Cell Radius	Requirement
Small cell	≤ 3 km	≤ 3 μs
Large cell	> 3 km	≤ 10 μs

For Home BS, the cell phase synchronization accuracy measured at BS antenna connectors shall be better than the requirement specified in table 7.4.2-2.

Source Cell Type	Propagation Distance	Requirement
Small cell	≤ 500 m	≤3 μs
Large cell	> 500 m	$\leq$ 1.33 + <i>T</i> <sub>propagation</sub> µs

#### Table 7.4.2-2 Cell phase synchronization requirement for Home BS (TDD)

- Note 1:  $T_{propagation}$  is the propagation delay between the Home BS and the cell selected as the network listening synchronization source. In terms of the network listening synchronization source selection, the best accurate synchronization source to GNSS should be selected.
- Note 2: If the Home BS obtains synchronization without using network listening, the small cell requirement applies.

# 7.5 Synchronization Requirements for E-UTRAN to 1xRTT and HRPD Handovers

# 7.5.1 Introduction

This section contains the synchronization requirements for eNodeB capable of supporting E-UTRAN to CDMA 1xRTT and HRPD handovers. To facilitate E-UTRAN to CDMA 1xRTT and HRPD handovers, the CDMA System Time reference needs to be provided to the UE in order for the UE to report the pilot PN phases of the target 1xRTT or HRPD cells. This is achieved through the SIB8 message broadcasted by the serving eNodeB:

If the eNodeB is synchronized to the GPS time then the size of CDMA System Time information is 39 bits and the unit is 10 ms based on a 1.2288 Mcps chip rate.

If the eNodeB is not synchronized to the GPS time then the size of CDMA System Time information is 49 bits and the unit is 8 CDMA chips based on 1.2288 Mcps chip rate.

The CDMA system time reference provided by the serving eNodeB has to be within a certain level of accuracy in order to facilitate accurate reporting of the pilot PN phases of the target 1xRTT or HRPD cells and enable reliable handover to the 1xRTT or HRPD networks.

# 7.5.2 eNodeB Synchronization Requirements

# 7.5.2.1 Synchronized E-UTRAN

The eNodeB shall be synchronized to the GPS time. With external source of CDMA System Time disconnected, the eNodeB shall maintain the timing accuracy within  $\pm 10 \ \mu s$  of CDMA System Time for a period of not less than 8 hours.

The timing deviation between the SFN boundary at or immediately after the ending boundary of the SI-window in which *SystemInformationBlockType8* (containing the broadcasted CDMA System Time with 10-ms granularity) is transmitted and the broadcasted CDMA System Time shall be within 10 µs.

# 7.5.2.2 Non-Synchronized E-UTRAN

The timing deviation between the SFN boundary at or immediately after the end of the boundary of the SI-window in which *SystemInformationBlockType8* (containing the broadcasted CDMA System Time with 8-chip granularity) is transmitted and the broadcasted CDMA System Time shall be within 10  $\mu$ s. With external source of CDMA System Time disconnected the SFN boundary at or immediately after the broadcasted CDMA System Time in the SIB8 message shall maintain the timing accuracy within ±10  $\mu$ s of CDMA System Time for a period of not less than 8 hours.

# 7.6 Radio Link Monitoring

# 7.6.1 Introduction

The UE shall monitor the downlink link quality based on the cell-specific reference signal in order to detect the downlink radio link quality of the serving cell as specified in [3].

The UE shall estimate the downlink radio link quality and compare it to the thresholds  $Q_{out}$  and  $Q_{in}$  for the purpose of monitoring downlink radio link quality of the serving cell.

The threshold  $Q_{out}$  is defined as the level at which the downlink radio link cannot be reliably received and shall correspond to 10% block error rate of a hypothetical PDCCH transmission taking into account the PCFICH errors with transmission parameters specified in Table 7.6.1-1.

The threshold  $Q_{in}$  is defined as the level at which the downlink radio link quality can be significantly more reliably received than at  $Q_{out}$  and shall correspond to 2% block error rate of a hypothetical PDCCH transmission taking into account the PCFICH errors with transmission parameters specified in Table 7.6.1-2.

#### Table 7.6.1-1 PDCCH/PCFICH transmission parameters for out-of-sync

Attribute	Value
DCI format	1A
Number of control OFDM symbols	2; Bandwidth $\ge$ 10 MHz
	3; [3] MHz $\leq$ Bandwidth $\leq$ 5 MHz
	4; Bandwidth = 1.4 MHz
Aggregation level (CCE)	4; Bandwidth = 1.4 MHz
	8; Bandwidth $\ge$ 3 MHz
Ratio of PDCCH RE energy to average RS RE energy	4 dB; when single antenna port is used for cell- specific reference signal transmission by the serving cell
	1 dB: when two or four antenna ports are used for cell-specific reference signal transmission by the serving cell
Ratio of PCFICH RE energy to average RS RE energy	4 dB; when single antenna port is used for cell- specific reference signal transmission by the serving cell
	1 dB: when two or four antenna ports are used for cell-specific reference signal transmission by the serving cell

Note 1: DCI format 1A is defined in section 5.3.3.1.3 in 3GPP TS 36.212 [21].

Note 2: A hypothetical PCFICH transmission corresponding to the number of control symbols shall be assumed.

Attribute	Value
DCI format	1C
Number of control OFDM symbols	2; Bandwidth $\ge$ 10 MHz
	3; 3 MHz $\leq$ Bandwidth $\leq$ 5 MHz
	4; Bandwidth = 1.4 MHz
Aggregation level (CCE)	4
Ratio of PDCCH RE energy to average RS RE energy	0 dB; when single antenna port is used for cell- specific reference signal transmission by the serving cell
	<ul> <li>-3 dB; when two or four antenna ports are used for cell-specific reference signal transmission by the serving cell</li> </ul>
Ratio of PCFICH RE energy to average RS RE energy	4 dB; when single antenna port is used for cell- specific reference signal transmission by the serving cell
	1 dB: when two or four antenna ports are used for cell-specific reference signal transmission by the serving cell

#### Table 7.6.1-2 PDCCH/PCFICH transmission parameters for in-sync

Note 1: DCI format 1C is defined in section 5.3.3.1.4 in 3GPP TS 36.212 [21].

Note 2: A hypothetical PCFICH transmission corresponding to the number of control symbols shall be assumed.

# 7.6.2 Requirements

# 7.6.2.1 Minimum requirement when no DRX is used

When the downlink radio link quality estimated over the last 200 ms period becomes worse than the threshold  $Q_{out}$ , Layer 1 of the UE shall send an out-of-sync indication to the higher layers within [200] ms  $Q_{out}$  evaluation period. A Layer 3 filter shall be applied to the out-of-sync indications as specified in [2].

When the downlink radio link quality estimated over the last 100 ms period becomes better than the threshold  $Q_{in}$ , Layer 1 of the UE shall send an in-sync indication to the higher layers within 100 ms  $Q_{in}$  evaluation period. A L3 filter shall be applied to the in-sync indications as specified in [2].

The out-of-sync and in-sync evaluations shall be performed as specified in section 4.2.1 in [3]. Two successive indications from Layer 1 shall be separated by at least 10 ms.

The transmitter power shall be turned off within [40] ms after expiry of T310 timer as specified in section 5.3.11 in [2].

#### 7.6.2.2 Minimum requirement when DRX is used

When DRX is used the  $Q_{out}$  evaluation period ( $T_{Evaluate}Q_{out}DRX$ ) and the  $Q_{in}$  evaluation period ( $T_{Evaluate}Q_{in}DRX$ ) is specified in Table 7.6.2.2-1 will be used.

When the downlink radio link quality estimated over the last  $T_{Evaluate}Q_{out_DRX}$  [s] period becomes worse than the threshold  $Q_{out}$ , Layer 1 of the UE shall send out-of-sync indication to the higher layers within  $T_{Evaluate}Q_{out_DRX}$  [s] evaluation period. A Layer 3 filter shall be applied to the out-of-sync indications as specified in [2].

When the downlink radio link quality estimated over the last  $T_{Evaluate}Q_{in_DRX}$  [s] period becomes better than the threshold  $Q_{in}$ , Layer 1 of the UE shall send in-sync indications to the higher layers within  $T_{Evaluate}Q_{in_DRX}$  [s] evaluation period. A L3 filter shall be applied to the in-sync indications as specified in [2].

The out-of-sync and in-sync evaluations shall be performed as specified in section 4.2.1 in [3]. Two successive indications from Layer 1 shall be separated by at least max(10 ms, DRX\_cycle\_length).

Upon start of T310 timer as specified in section 5.3.11 in [2], the UE shall monitor the link for recovery using the evaluation period and Layer 1 indication interval corresponding to the non-DRX mode until the expiry or stop of T310 timer.

The transmitter power shall be turned off within 40 ms after expiry of T310 timer as specified in section 5.3.11 in [2].

# 7.6.2.3 Minimum requirement at transitions

The out-of-sync and in-sync evaluations shall be performed as specified in section 4.2.1 in [3]. Two successive indications from Layer 1 shall be separated by at least max(10 ms, DRX\_cycle\_length).

When the UE transitions between DRX and non-DRX or when DRX cycle periodicity changes, for a duration of time equal to the evaluation period corresponding to the second mode after the transition occurs, the UE shall use an evaluation period that is no less than the minimum of evaluation periods corresponding to the first mode and the second mode. Subsequent to this duration, the UE shall use an evaluation period corresponding to the second mode. This requirement shall be applied to both out-of-sync evaluation and in-sync evaluation.

DRX cycle length (s)	T <sub>Evaluate</sub> _Q <sub>out_DRX</sub> and T <sub>Evaluate</sub> _Q <sub>in_DRX</sub> (s) (DRX cycles)		
≤0.04	Note (20)		
0.04 < DRX cycle ≤ 0. 64	Note (10)		
0.64 < DRX cycle ≤ 2.56	Note (5)		
Note: Evaluation period length in time depends on the length of the DRX cycle in use			

Table 7.6.2.2-1: Qout and Qin Evaluation Period in DRX

# 8 UE Measurements Procedures in RRC\_CONNECTED State

# 8.1 General Measurement Requirements

# 8.1.1 Introduction

This section contains requirements on the UE regarding measurement reporting in RRC\_CONNECTED state. The requirements are split in E-UTRA intra frequency, E-UTRA inter frequency, Inter-RAT UTRA FDD, UTRA TDD and GSM measurements. These measurements may be used by the E-UTRAN, e.g. for handover decisions. The measurement quantities are defined in [4], the measurement model is defined in [22] and measurement accuracies are specified in section 9. Control of measurement reporting is specified in [2].

# 8.1.2 Requirements

# 8.1.2.1 UE measurement capability

If the UE requires measurement gaps to identify and measure inter-frequency and/or inter-RAT cells, in order for the requirements in the following subsections to apply the E-UTRAN must provide a single measurement gap pattern with constant gap duration for concurrent monitoring of all frequency layers and RATs.

During the measurement gaps the UE:

- shall not transmit any data
- is not expected to tune its receiver on the E-UTRAN serving carrier frequency.

Inter-frequency and inter-RAT measurement requirements within this section rely on the UE being configured with one measurement gap pattern. UEs shall only support those measurement gap patterns listed in Table 8.1.2.1-1 that are relevant to its measurement capabilities.

 Table 8.1.2.1-1: Gap Pattern Configurations supported by the UE

Gap Pattern Id	MeasurementGap Length (MGL, ms)	Measurement Gap Repetition Period (MGRP, ms)	Minimum available time for inter-frequency and inter-RAT measurements during 480ms period (Tinter1, ms)	Measurement Purpose
0	6	40	60	Inter-Frequency E-UTRAN FDD and TDD, UTRAN FDD, GERAN, LCR TDD, HRPD, CDMA2000 1x
1	6	80	30	Inter-Frequency E-UTRAN FDD and TDD, UTRAN FDD, GERAN, LCR TDD, HRPD, CDMA2000 1x

- [Editor's note: Further patterns still need to be defined in order to fulfil all required Inter-RAT monitoring purposes.]
- NOTE 1: For E-UTRAN FDD, the UE shall not transmit in the subframe occurring immediately after the measurement gap.
- NOTE 2: For E-UTRAN TDD, the UE shall not transmit in the uplink subframe occurring immediately after the measurement gap if the subframe occurring immediately before the measurement gap is a downlink subframe.
- NOTE 3: When inter-frequency RSTD measurements are configured as a part of the measurement configuration only Gap Pattern 0 can be used. For defining the inter-frequency and inter-RAT requirements  $T_{inter1}$ =30ms shall be assumed.

The requirements in section 9 are applicable for a UE performing measurements according to this section.

# 8.1.2.1.1 Monitoring of multiple layers using gaps

When monitoring of multiple inter-frequency E-UTRAN and inter-RAT (UTRAN, GSM) using gaps is configured, the UE shall be capable of performing one measurement of the configured measurement type (RSRP, RSRQ, UTRAN TDD P-CCPCH RSCP, UTRAN FDD CPICH measurements, GSM carrier RSSI, etc.) of detected cells on all the layers

The effective total number of frequencies excluding the serving frequency being monitored using gaps is  $N_{\text{freq}}$ , which is defined as:

 $N_{freq} = N_{freq, \ E-UTRA} + N_{freq, \ UTRA} + M_{gsm} + N_{freq, \ cdma2000} + N_{freq, \ HRPD}$ 

where

 $N_{freq, E-UTRA}$  is the number of E-UTRA carriers being monitored (FDD and TDD)

 $N_{\text{freq, UTRA}}$  is the number of UTRA carriers being monitored (FDD and TDD)

 $M_{GSM}$  is an integer which is a function of the number of GSM carriers on which measurements are being performed.  $M_{GSM}$  is equal to 0 if no GSM carrier is being monitored. For a MGRP of 40 ms,  $M_{GSM}$  is equal to 1 if cells on up to 32

GSM carriers are being measured. For a MGRP of 80 ms,  $M_{GSM}$  is equal to ceil( $N_{carriers,GSM}$ /20) where  $N_{carriers,GSM}$  is the number of GSM carriers on which cells are being measured.

 $N_{freq, cdma2000}$  is the number of cdma2000 1x carriers being monitored

 $N_{\text{freq, HRPD}}$  is the number of HRPD carriers being monitored

8.1.2.1.1.1 Maximum allowed layers for multiple monitoring

The UE shall be capable of monitoring using gaps at least per RAT group:

- Depending on UE capability, 3 FDD E-UTRA inter-frequency carriers, and
- Depending on UE capability, 3 TDD E-UTRA inter-frequency carriers, and
- Depending on UE capability, 3 FDD UTRA carriers, and
- Depending on UE capability, 3 TDD UTRA carriers, and
- Depending on UE capability, 32 GSM carriers (one GSM layer corresponds to 32 cells), and
- Depending on UE capability, 5 cdma2000 1x carriers, and
- Depending on UE capability, 5 HRPD carriers

In addition to the requirements defined above, the UE shall be capable of monitoring using gaps a total of at least 7 carrier frequency layers comprising of any above defined combination of E-UTRA FDD, E-UTRA TDD, UTRA FDD, UTRA TDD, GSM (one GSM layer corresponds to 32 carriers), cdma2000 1x and HRPD layers.

## 8.1.2.2 E-UTRAN intra frequency measurements

The UE shall be able to identify new intra-frequency cells and perform RSRP measurements of identified intrafrequency cells without an explicit intra-frequency neighbour cell list containing physical layer cell identities. During the RRC\_CONNECTED state the UE shall continuously measure identified intra frequency cells and additionally search for and identify new intra frequency cells.

#### 8.1.2.2.1 E-UTRAN FDD intra frequency measurements

#### 8.1.2.2.1.1 E-UTRAN intra frequency measurements when no DRX is used

When no DRX is in use the UE shall be able to identify a new detectable FDD intra frequency cell within

$$T_{\text{identify intra}} = T_{\text{basic identify } E-UTRA\_FDD, intra} \cdot \frac{T_{\text{Measurement Period, Intra}}}{T_{\text{Intra}}} \quad ms$$

where

T<sub>basic\_identify\_E-UTRA\_FDD, intra</sub> is 800 ms

A cell shall be considered detectable when

- RSRP related side condition given in Section 9.1 are fulfilled for a corresponding Band,
- SCH\_RP|<sub>dBm</sub>  $\geq$  -127 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21 and SCH  $\hat{E}s/Iot \geq$  6 dB.
- SCH\_RP|<sub>dBm</sub> $\geq$  -126 dBm for Band 9 and SCH Ês/Iot  $\geq$  6 dB,
- SCH\_RP  $|_{dBm} \ge$  -125 dBm for Bands 2, 5, 7, 17 and SCH  $\hat{E}s/Iot \ge$  6 dB,

- SCH\_RP  $|_{dBm} \ge -124 \text{ dBm}$  for Bands 3, 8, 12, 13, 14, 20 and SCH  $\hat{E}_s/Iot \ge -6 \text{ dB}$ .

 $T_{Measurement Period, Intra} = 200 \text{ ms.}$  The measurement period for Intra frequency RSRP measurements.

 $T_{Intra}$ : This is the minimum time that is available for intra frequency measurements, during the measurement period with an arbitrarily chosen timing. Time is assumed to be available for performing intra frequency measurements whenever the receiver is guaranteed to be active on the intra frequency carrier.

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of  $T_{Measurement\_Period Intra}$ . If higher layer filtering is used, an additional cell identification delay can be expected.

In the RRC\_CONNECTED state the measurement period for intra frequency measurements is 200 ms. When no measurement gaps are activated, the UE shall be capable of performing RSRPand RSRQ measurements for 8 identified-intra-frequency cells, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When measurement gaps are activated the UE shall be capable of performing measurements to higher layers with the measurements for at least  $Y_{measurement intra}$  cells, where  $Y_{measurement intra}$  is defined in the following equation. If the UE has identified more than  $Y_{measurement intra}$  cells, the UE shall perform measurements of at least 8 identified intra- frequency cells but the reporting rate of RSRP and RSRQ measurements of cells from UE physical layer to higher layers may be decreased.

$$Y_{\text{measurement intra}} = Floor \left\{ X_{\text{basic measurement FDD}} \cdot \frac{T_{\text{Intra}}}{T_{\text{Measurement\_Period, Intra}}} \right\} \text{ cells}$$

where

 $X_{\text{basic measurement FDD}} = 8$  (cells)

 $T_{Measurement\_Period Intra} = 200 \text{ ms.}$  The measurement period for Intra frequency RSRP measurements.

 $T_{Intra}$ : This is the time that is available for intra frequency measurements, during the measurement period with an arbitrarily chosen timing. Time is assumed to be available for performing intra frequency measurements whenever the receiver is guaranteed to be active on the intra frequency carrier.

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.

#### 8.1.2.2.1.1.1 Measurement Reporting Requirements

#### 8.1.2.2.1.1.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1.2.2.1.1.1.2 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1.2.2.1.1.1.3 Event Triggered Reporting.

#### 8.1.2.2.1.1.1.3 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty

is:  $2 \times TTI_{DCCH}$ . This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T  $_{identify intra}$  defined in Section 8.1.2.2.1.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period  $T_{identify\_intra}$  defined in section 8.1.2.2.1.1 becomes undetectable for a period  $\leq 5$  seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than  $T_{Measurement\_Period Intra}$  provided the timing to that cell has not changed more than  $\pm$  50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

#### 8.1.2.2.1.2 E-UTRAN intra frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable FDD intra frequency cell within  $T_{identify\_intra}$  as shown in table 8.1.2.2.1.2-1

DRX cycle length (s)	T <sub>identify_intra</sub> (s) (DRX cycles)		
≤0.04	0.8 (Note1)		
0.04 <drx-< td=""><td>Note2 (40)</td></drx-<>	Note2 (40)		
cycle≤0.08			
0.08 <drx-< td=""><td>Note2(20)</td></drx-<>	Note2(20)		
cycle≤2.56			
Note1: Number of DRX cycle			
depends upon the DRX cycle in use			
Note2: Time depends upon the DRX			
cycle in use			

A cell shall be considered detectable when

- RSRP related side condition given in Section 9.1 are fulfilled for a corresponding Band,
- SCH\_RP|<sub>dBm</sub>  $\geq$  -127 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21 and SCH  $\hat{E}$ s/Iot  $\geq$  6 dB.
- SCH\_RP|<sub>dBm</sub> $\geq$  -126 dBm for Band 9 and SCH  $\hat{E}s$ /Iot  $\geq$  6 dB,
- SCH\_RP  $|_{dBm} \ge$  -125 dBm for Bands 2, 5, 7, 17 and SCH  $\hat{E}s/Iot \ge$  6 dB,
- SCH\_RP  $|_{dBm} \ge -124 \text{ dBm}$  for Bands 3, 8, 12, 13, 14, 20 and SCH  $\hat{E}s/Iot \ge -6 \text{ dB}$ .

In the RRC\_CONNECTED state with DRX cycles of 40ms or greater the measurement period for intra frequency measurements is  $T_{measure\_intra}$  as shown in table 8.1.2.2.1.2-2. The UE shall be capable of performing RSRP measurements for 8 identified-intra-frequency cells, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of  $T_{measure\_intra}$ .

DRX cycle length (s)	T <sub>measure_intra</sub> (s) (DRX cycles)		
≤0.04	0.2 (Note1)		
0.04 <drx-< td=""><td>Note2 (5)</td></drx-<>	Note2 (5)		
cycle≤2.56			
Note1: Number of DRX cycle			
depends upon the DRX cycle in use			
Note2: Time depends upon the DRX			
cycle in use			

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.

#### 8.1.2.2.1.2.1 Measurement Reporting Requirements

#### 8.1.2.2.1.1.2.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1.2.2.1.1.2.2 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1.2.2.1.1.2.3 Event Triggered Reporting.

#### 8.1.2.2.1.1.2.3 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is:  $2 \times TTI_{DCCH}$ . This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T  $_{identify_{intra}}$  defined in Section 8.1.2.2.1.2. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period  $T_{identify\_intra}$  defined in section 8.1.2.2.1.2 becomes undetectable for a period  $\leq 5$  seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than  $T_{measure\_intra}$  provided the timing to that cell has not changed more than  $\pm 50$  Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

#### 8.1.2.2.2 E-UTRAN TDD intra frequency measurements

#### 8.1.2.2.2.1 E-UTRAN intra frequency measurements when no DRX is used

When no DRX is in use the UE shall be able to identify a new detectable TDD intra frequency cell within

$$T_{\text{identify intra}} = T_{\text{basic identify } E-UTRA_TDD, \text{ intra}} \cdot \frac{T_{\text{Measurement Period, Intra}}}{T_{\text{Intra}}} \quad ms$$

where

T<sub>basic\_identify\_E-UTRA\_TDD, intra</sub> is 800 ms

A cell shall be considered detectable when

- RSRP related side condition given in Section 9.1 are fulfilled for a corresponding Band,
- SCH\_RP  $\geq$  -127 dBm for Bands 33, 34, 35, 36, 37, 38, 39, 40 and SCH  $\hat{E}_s/Iot \geq$  6 dB.

 $T_{Measurement Period Intra} = 200 \text{ ms.}$  The measurement period for Intra frequency RSRP measurements.

 $T_{Intra}$ : This is the minimum time that is available for intra frequency measurements, during the measurement period with an arbitrarily chosen timing. Time is assumed to be available for performing intra frequency measurements whenever the receiver is guaranteed to be active on the intra frequency carrier.

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Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of  $T_{Measurement\_Period Intra}$ . If higher layer filtering is used, an additional cell identification delay can be expected.

In the RRC\_CONNECTED state the measurement period for intra frequency measurements is 200 ms. When no measurement gaps are activated, the UE shall be capable of performing RSRP measurements for 8 identified-intra-frequency cells, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When measurement gaps are activated the UE shall be capable of performing measurements for at least  $Y_{measurement intra}$  cells, where  $Y_{measurement intra}$  is defined in the following equation. If the UE has identified more than  $Y_{measurement intra}$  cells, the UE shall perform measurements of at least 8 identified intra-frequency cells but the reporting rate of RSRP measurements of cells from UE physical layer to higher layers may be decreased.

$$Y_{\text{measurement intra}} = Floor \left\{ X_{\text{basic measurement TDD}} \cdot \frac{T_{\text{Intra}}}{T_{\text{Measurement_Period, Intra}}} \right\} \text{ cells}$$

where

 $X_{\text{basic measurement TDD}} = 8 \text{ (cells)}$ 

 $T_{\text{Measurement Period Intra}} = [200]$  ms. The measurement period for Intra frequency RSRP measurements.

 $T_{Intra}$ : This is the minimum time that is available for intra frequency measurements, during the measurement period with an arbitrarily chosen timing. Time is assumed to be available for performing intra frequency measurements whenever the receiver is guaranteed to be active on the intra frequency carrier.

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.

#### 8.1.2.2.2.1.1 Measurement Reporting Requirements

#### 8.1.2.2.2.1.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1.2.2.2.1.1.2 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1.2.2.2.1.1.3 Event Triggered Reporting.

#### 8.1.2.2.2.1.1.3 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI<sub>DCCH</sub>. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T  $_{identify intra}$  defined in Section 8.1.2.2.2.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period  $T_{identify\_intra}$  defined in section 8.1.2.2.2.1 becomes undetectable for a period  $\leq 5$  seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than  $T_{Measurement\_Period Intra}$  provided the timing to that cell has not

changed more than  $\pm$  50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

#### 8.1.2.2.2.2 E-UTRAN intra frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable TDD intra frequency cell within  $T_{identify_{intra}}$  as shown in table 8.1.2.2.2.2-1

Table 8.1.2.2.2.2-1: Requirement to identify a newly detectable TDD intrafrequency cell

DRX cycle length (s)	T <sub>identify_intra</sub> (s) (DRX cycles)		
≤0.04	0.8 (Note1)		
0.04 <drx-< td=""><td>Note2 (40)</td></drx-<>	Note2 (40)		
cycle≤0.08			
0.08 <drx-< td=""><td>Note2(20)</td></drx-<>	Note2(20)		
cycle≤2.56			
Note1: Number of DRX cycle			
depends upon the DRX cycle in use			
Note2: Time depends upon the DRX			
cycle in use			

A cell shall be considered detectable when

- RSRP related side condition given in Section 9.1 are fulfilled for a corresponding Band,
- SCH\_RP  $\geq$  -127 dBm for Bands 33, 34, 35, 36, 37, 38, 39, 40 and SCH  $\hat{E}s/Iot \geq$  6 dB.

In the RRC\_CONNECTED state with DRX cycles of 80ms or greater the measurement period for intra frequency measurements is  $T_{measure\_intra}$  as shown in table 8.1.2.2.2.2.2. The UE shall be capable of performing RSRP measurements for [8] identified-intra-frequency cells and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of  $T_{measure\_intra}$ .

Table 8.1.2.2.2.2-2: Requirement to measure TDD intra frequency cells

DRX cycle length (s)	T <sub>measure_intra</sub> (s) (DRX cycles)	
≤0.04	0.2 (Note1)	
0.04 <drx- cycle≤2.56</drx- 	Note2 (5)	
Note1: Number of DRX cycle depends upon the DRX cycle in use.		
Note2: Time depends upon the DRX cycle in use.		

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.

#### 8.1.2.2.2.2.1 Measurement Reporting Requirements

#### 8.1.2.2.2.2.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1.2.2.2.1.2 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in section 9.

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The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1.2.2.2.2.1.3 Event Triggered Reporting.

#### 8.1.2.2.2.2.1.3 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: [2] x  $TTI_{DCCH}$ . This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T  $_{identify_{intra}}$  defined in Section 8.1.2.2.2.2. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period  $T_{identify\_intra}$  defined in section 8.1.2.2.2.2 becomes undetectable for a period  $\leq 5$  seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than  $T_{measure\_intra}$  provided the timing to that cell has not changed more than  $\pm 50$  Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

#### 8.1.2.2.3 E-UTRAN FDD intra frequency measurements with autonomous gaps

#### 8.1.2.2.3.1 Identification of a new CGI of E-UTRA cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of E-UTRA cell. The UE shall identify and report the CGI when requested by the network for the purpose 'reportCGI'. The UE may make autonomous gaps in downlink reception and uplink transmission for receiving MIB and SIB1 message according to section 5.5.3.1 of 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', the UE shall be able to identify a new CGI of E-UTRA cell within:

 $T_{identify\_CGI, intra} = T_{basic\_identify\_CGI, intra}$  ms

#### Where

 $T_{basic\_identify\_CGI, intra} = 150$  ms. This is the time period used in the above equation where the maximum allowed time for the UE to identify a new CGI of an E-UTRA cell is defined.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in Section 9.1 are fulfilled for a corresponding Band,
- SCH\_RP|dBm  $\geq$  -127 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21 and SCH  $\hat{E}s/Iot \geq$  -6 dB,
- SCH\_RP|dBm  $\geq$  -126 dBm for Band 9 and SCH  $\hat{E}s/Iot \geq$  -6 dB,
- SCH\_RP|dBm  $\geq$  -125 dBm for Bands 2, 5, 7, 17 and SCH  $\hat{E}s/Iot \geq$  -6 dB,
- SCH\_RP|dBm  $\geq$  -124 dBm for Bands 3, 8, 12, 13, 14, 20 and SCH  $\hat{E}s/Iot \geq$  -6 dB.

The requirement for identifying a new CGI of an E-UTRA cell within  $T_{basic\_identify\_CGI\_intra}$  is applicable when no DRX is used as well as when all the DRX cycles specified in 3GPP TS 36.331 [2] are used.

Given that continuous DL data allocation and no DRX is used, the UE shall have more than [60] ACK/NACK sending during identifying a new CGI of E-UTRA cell.

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#### 8.1.2.2.3.2 ECGI Reporting Delay

The ECGI reporting delay occurs due to the delay uncertainty when inserting the ECGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the ECGI reporting may be delayed until the next DRX cycle.

#### 8.1.2.2.4 E-UTRAN TDD intra frequency measurements with autonomous gaps

#### 8.1.2.2.4.1 Identification of a new CGI of E-UTRA cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of E-UTRA cell. The UE shall identify and report the CGI when requested by the network for the purpose 'reportCGI'. The UE may make autonomous gaps in downlink reception and uplink transmission for receiving MIB and SIB1 messages according to section 5.5.3.1 of 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', the UE shall be able to identify a new CGI of E-UTRA cell within:

 $T_{identify\_CGI, intra} = T_{basic\_identify\_CGI, intra}$  ms

Where

 $T_{\text{basic_identify}\_CGI, intra} = 150 \text{ ms.}$  This is the time period used in the above equation where the maximum allowed time for the UE to identify a new CGI of an E-UTRA cell is defined.

A cell shall be considered identifiable when the following conditions are fulfilled:

- RSRP related side conditions given in Section 9.1 are fulfilled for a corresponding Band,
- SCH\_RP  $\geq$  -127 dBm for Bands 33, 34, 35, 36, 37, 38, 39, 40 and SCH  $\hat{E}_s/Iot \geq$  6 dB.

The requirement for identifying a new CGI of an E-UTRA cell within  $T_{basic\_identify\_CGI\_intra}$  is applicable when no DRX is used as well as when all the DRX cycles specified in 3GPP TS 36.331 [2] are used.

Given that continuous DL data allocation and no DRX is used, the UE shall have more than [60] ACK/NACK sending during identifying a new CGI of E-UTRA cell.

#### 8.1.2.2.4.2 ECGI Reporting Delay

The ECGI reporting delay occurs due to the delay uncertainty when inserting the ECGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the ECGI reporting may be delayed until the next DRX cycle.

#### 8.1.2.3 E-UTRAN inter frequency measurements

The UE shall be able to identify new inter-frequency cells and perform RSRP measurements of identified interfrequency cells if carrier frequency information is provided by the serving cell, even if no explicit neighbour list with physical layer cell identities is provided.

#### 8.1.2.3.1 E-UTRAN FDD – FDD inter frequency measurements

#### 8.1.2.3.1.1 E-UTRAN FDD – FDD inter frequency measurements when no DRX is used

When measurement gaps are scheduled the UE shall be able to identify a new FDD inter-frequency within  $T_{Identify\_Inter}$  according to the following expression:

$$T_{Identify\_Inter} = T_{Basic\_Identify\_Inter} \cdot \frac{480}{T_{Inter1}} \cdot N_{freq} \quad ms$$

Where:

 $T_{Basic\_Identify\_Inter} = 480$  ms. It is the time period used in the inter frequency equation where the maximum allowed time for the UE to identify a new FDD inter-frequency cell is defined.

 $N_{\text{freq}}$  is defined in section 8.1.2.1.1 and  $T_{\text{inter1}}$  is defined in section 8.1.2.1

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP $|_{dBm} \ge -125 \text{ dBm}$  and for Bands 1, 4, 6, 10, 11, 18, 19, 21 and RSRP  $\hat{E}s/Iot \ge -4 \text{ dB}$ ,
- RSRP $|_{dBm} \ge -124 \text{ dBm}$  for Bands 9 and RSRP  $\hat{E}s/Iot \ge -4 \text{ dB}$ ,
- RSRP $|_{dBm} \ge -123$  dBm for Bands 2, 5, 7, 17 and RSRP  $\hat{E}s/Iot \ge -4$  dB,
- RSRP $|_{dBm} \ge -122 \text{ dBm}$  for Bands 3, 8, 12, 13, 14, 20 and RSRP  $\hat{E}s/\text{Iot} \ge -4 \text{ dB}$ ,
- other RSRP related side conditions given in Section 9.1 are fulfilled,
- SCH\_RP|<sub>dBm</sub> $\ge$  -125 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21 and SCH  $\hat{E}s/Iot \ge -4 dB$ ,
- SCH\_RP|<sub>dBm</sub> $\geq$  -124 dBm for Band 9 and SCH  $\hat{E}$ s/Iot  $\geq$  -4 dB,
- SCH\_RP  $|_{dBm} \ge -123$  dBm for Bands 2, 5, 7, 17 and SCH  $\hat{E}s/Iot \ge -4$  dB,
- SCH\_RP  $|_{dBm} \ge -122 \text{ dBm}$  for Bands 3, 8, 12, 13, 14, 20 and SCH  $\hat{E}s/Iot \ge -4 \text{ dB}$ .

When measurement gaps are scheduled for FDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.3 with measurement period given by table 8.1.2.3.1.1-1.

#### Table 8.1.2.3.1.1-1: RSRP measurement period and measurement bandwidth

Configuration	Physical Layer Measurement period:	Measurement bandwidth [RB]
	T <sub>Measurement_Period _Inter_FDD</sub> [ms]	
0	480 x N <sub>freq</sub>	6
1 (Note)	240 x N <sub>freq</sub>	50

Note: This configuration is optional

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 inter-frequency cells per FDD inter-frequency for up to 3 FDD inter-frequencies and the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with the measurement period defined in Table 8.1.2.3.1.1-1.

#### 8.1.2.3.1.1.1 Measurement Reporting Requirements

#### 8.1.2.3.1.1.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1.2.3.1.1.1.2 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1.2.2.5 Event Triggered Reporting.

#### 8.1.2.3.1.1.1.3 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is:  $2 \times TTI_{DCCH}$ . This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T  $_{identify-inter}$  defined in Section 8.1.2. 3.1.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period  $T_{identify\_inter}$  defined in section 8.1.2.3.1.1 and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than  $T_{Measurement\_Period\_Inter\_FDD}$  defined in section 8.1.2.3.1.1 provided the timing to that cell has not changed more than ± 50 Ts while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.1.2.3.1.2 E-UTRAN FDD – FDD inter frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable E-UTRAN FDD inter frequency cell within  $T_{identify\_inter}$  as shown in table 8.1.2.3.1.2-1

Table 8.1.2.3.1.2-1: Requirement to identify a newly detectable FDD interfrequency cell

DRX	Tidentify_inter (s) (DRX cycles)		
cycle	Gap period	Gap period	
length (s)	= 40 ms	= 80 ms	
≤0.16	Non DRX	Non DRX	
	Requirements	Requirements	
	in section	in section	
	8.1.2.3.1.1	8.1.2.3.1.1	
	are applicable	are applicable	
0.256	5.12*N <sub>freq</sub>	7.68*N <sub>freq</sub>	
	(20*N <sub>freq</sub> )	(30*N <sub>freq</sub> )	
0.32	6.4*N <sub>freq</sub>	7.68*N <sub>freq</sub>	
	(20*N <sub>freq</sub> )	(24*N <sub>freq</sub> )	
0.32<	Note	Note	
DRX-	(20*N <sub>freq</sub> )	(20*N <sub>freq</sub> )	
cycle≤2.56	,	,	
Note: Time depends upon the DRX			
cycle in use			

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP $|_{dBm} \ge -125 \text{ dBm}$  and for Bands 1, 4, 6, 10, 11, 18, 19, 21 and RSRP  $\hat{E}s/Iot \ge -4 \text{ dB}$ ,
- RSRP $|_{dBm} \ge -124 \text{ dBm}$  for Bands 9 and RSRP  $\hat{E}s/Iot \ge -4 \text{ dB}$ ,
- RSRP $|_{dBm} \ge -123$  dBm for Bands 2, 5, 7, 17 and RSRP  $\hat{E}s/Iot \ge -4$  dB,
- RSRP $|_{dBm} \ge$  -122 dBm for Bands 3, 8, 12, 13, 14, 20 and RSRP  $\hat{E}s/Iot \ge$  -4 dB,
- other RSRP related side conditions given in Section 9.1 are fulfilled,
- SCH\_RP|<sub>dBm</sub>≥ -125 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21 and SCH  $\hat{E}s/Iot ≥ -4 dB$ ,
- SCH\_RP|<sub>dBm</sub> $\geq$  -124 dBm for Band 9 and SCH  $\hat{E}s/Iot \geq$  -4 dB,
- SCH\_RP  $|_{dBm} \ge$  -123 dBm for Bands 2, 5, 7, 17 and SCH  $\hat{E}s/Iot \ge$  -4 dB,
- SCH\_RP  $|_{dBm} \ge$  -122 dBm for Bands 3, 8, 12, 13, 14, 20 and SCH  $\hat{E}s/Iot \ge -4$  dB.

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The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 inter-frequency cells per FDD inter-frequency and the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with the measurement period defined in table 8.1.2.3.1.2-2.

DRX cycle length (s)	T <sub>measure_inter</sub> (s) (DRX cycles)	
≤0.08	Non DRX	
	Requirements in	
	section 8.1.2.3.1.1	
	are applicable	
0.08 <drx-< td=""><td>Note (5*N<sub>freq</sub>)</td></drx-<>	Note (5*N <sub>freq</sub> )	
cycle≤2.56		
Note: Time depends upon the DRX		
cycle in use		

#### Table 8.1.2.3.1.2-2: Requirement to measure FDD interfrequency cells

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.

#### 8.1.2.3.1.2.1 Measurement Reporting Requirements

#### 8.1.2.3.1.1.2.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1.2.3.1.1.2.2 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1.2.2.5 Event Triggered Reporting.

#### 8.1.2.3.1.1.2.3 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI<sub>DCCH</sub>. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than  $T_{identify_{inter}}$  defined in Section 8.1.2. 3.1.2. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period  $T_{identify\_inter}$  defined in section 8.1.2.3.1.2 and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than  $T_{measure\_inter}$  defined in section 8.1.2.3.1.2 provided the timing to that cell has not changed more than ± 50 Ts while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

#### 8.1.2.3.2 E-UTRAN TDD – TDD inter frequency measurements

8.1.2.3.2.1 E-UTRAN TDD – TDD inter frequency measurements when no DRX is used

When measurement gaps are scheduled the UE shall be able to identify a new TDD inter-frequency within  $T_{Identify\_Inter}$  according to the following expression:

$$T_{Identify\_Inter} = T_{Basic\_Identify\_Inter} \cdot \frac{480}{T_{Interl}} \cdot N_{freq} \quad ms$$

Where:

 $T_{Basic\_Identify\_Inter} = 480$  ms. It is the time period used in the inter frequency equation where the maximum allowed time for the UE to identify a new TDD inter-frequency cell is defined.

 $N_{freq}$  is defined in section 8.1.2.1.1 and  $T_{inter1}$  is defined in section 8.1.2.1

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP $|_{dBm} \ge -125 \text{ dBm}$  and for Bands 33, 34, 35, 36, 37, 38, 39, 40 and RSRP  $\hat{E}s/Iot \ge -4 \text{ dB}$ ,
- other RSRP related side conditions given in Section 9.1 are fulfilled.
- SCH\_RP|\_{dBm}  $\geq$  -125 dBm for Bands 33, 34, 35, 36, 37, 38, 39, 40 and SCH  $\hat{E}s/Iot \geq -4$  dB.

When measurement gaps are scheduled for TDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.3 with measurement period ( $T_{Measurement\_Period\_TDD\_Inter}$ ) given by table 8.1.2.3.2.1-1:

Table 8.1.2.3.2.1-1: T <sub>Measurement_Period_TDD_In</sub>	er for different configurations
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Configuration	Measurement bandwidth [RB]	Number of UL/DL sub- frames per half frame (5 ms)		DwPTS		T <sub>Measurement_</sub> Period_TDD _Inter [ms]
		DL	UL	Normal CP	Extended CP	
0	6	2	2	$19760 \cdot T_s$	$20480 \cdot T_s$	480 x N <sub>freq</sub>
1 (Note 1)	50	2	2	$19760 \cdot T_s$	$20480 \cdot T_s$	240 x N <sub>freq</sub>
	figuration is option		•	•	•	

Note 2: *T*<sub>s</sub> is defined in 3GPP TS 36.211 [16]

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 inter-frequency cells per TDD inter-frequency and the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with the measurement period  $T_{Measurement\_Period\_TDD\_Inter}$ .

#### 8.1.2.3.2.1.1 Measurement Reporting Requirements

#### 8.1.2.3.2.1.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1.2.3.2.1.1.2 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1.2.3.2.1.1.3 Event Triggered Reporting.

# 8.1.2.3.2.1.1.3 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI<sub>DCCH</sub>. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than  $T_{Identify\_Inter}$  defined in Section 8.1.2.3.2.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period  $T_{Identify\_Inter}$  defined in section 8.1.2.3.2.1 and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than  $T_{Measurement\_Period\_TDD\_Inter}$  defined in section 8.1.2.3.2.1 provided the timing to that cell has not changed more than  $\pm$  50 Ts while measurementgap has not been available and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

# 8.1.2.3.2.2 E-UTRAN TDD – TDD inter frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable E-UTRAN TDD inter frequency cell within  $T_{identify\_inter}$  as shown in table 8.1.2.3.2.2-1

DRX cycle	T <sub>identify_inter</sub> (s) (DRX cycles)		
length (s)	Gap period	Gap period	
	= 40 ms	= 80 ms	
≤0.16	Non DRX	Non DRX	
	Requirements	Requirements	
	in section	in section	
	8.1.2.3.2.1	8.1.2.3.2.1	
	are applicable	are applicable	
0.256	5.12*Nfreq	7.68*Nfreq	
	(20*Nfreq)	(30*Nfreq)	
0.32	6.4*Nfreq	7.68*Nfreq	
	(20*Nfreq)	(24*Nfreq)	
0.32 <drx-< td=""><td>Note</td><td>Note</td></drx-<>	Note	Note	
cycle≤2.56	(20*Nfreq)	(20*Nfreq)	
Note: Ti	ime depends upon the DRX		
cycle in use			

#### Table 8.1.2.3.2.2-1: Requirement to identify a newly detectable TDD interfrequency cell

A cell shall be considered detectable provided following conditions are fulfilled:

- $RSRP|_{dBm} \ge -125 \text{ dBm}$  and for Bands 33, 34, 35, 36, 37, 38, 39, 40 and RSRP  $\hat{E}s/Iot \ge -4 \text{ dB}$ ,
- RSRP related side conditions given in Section 9.1 are fulfilled.
- SCH\_RP|<sub>dBm</sub> $\ge$  -125 dBm for Bands 33, 34, 35, 36, 37, 38, 39, 40 and SCH  $\hat{E}s/Iot \ge -4$  dB.

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 inter-frequency cells per TDD inter-frequency for up to 3 TDD inter-frequencies and the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with the measurement period defined in Table 8.1.2.3.2.2-2.

DRX cycle	T <sub>measure_inter</sub> (s)	
length (s)	(DRX cycles)	
≤0.08	Non DRX	
	Requirements in	
	section 8.1.2.3.2.1	
	are applicable	
0.08 <drx-< td=""><td>Note (5*N<sub>freq</sub>)</td></drx-<>	Note (5*N <sub>freq</sub> )	
cycle≤2.56		
Note: Time	e depends upon the	
DRX	X cycle in use	

#### Table 8.1.2.3.2.2-2: Requirement to measure TDD interfrequency cells

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.

#### 8.1.2.3.2.2.1 Measurement Reporting Requirements

#### 8.1.2.3.2.2.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1.2.3.2.2.1.2 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1.2.3.2.2.1.3 Event Triggered Reporting.

#### 8.1.2.3.2.2.1.3 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI<sub>DCCH</sub>. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than  $T_{Identify\_Inter}$  defined in Section 8.1.2.3.2.2. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period  $T_{Identify\_Inter}$  in section 8.1.2.3.2.2 and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than  $T_{measure\_inter}$  in section 8.1.2.3.2.2 provided the timing to that cell has not changed more than  $\pm$  50 Ts while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

#### 8.1.2.3.3 E-UTRAN TDD – FDD inter frequency measurements

#### 8.1.2.3.3.1 E-UTRAN TDD – FDD inter frequency measurements when no DRX is used

The requirements in this section shall apply to UE supporting FDD and TDD.

The requirements in section 8.1.2.3.1.1 also apply for this section.

8.1.2.3.3.2 E-UTRAN TDD – FDD inter frequency measurements when DRX is used

The requirements in this section shall apply to UE supporting FDD and TDD.

The requirements in section 8.1.2.3.1.2 also apply for this section.

8.1.2.3.3.2 (Void)

#### 8.1.2.3.4 E-UTRAN FDD – TDD inter frequency measurements

8.1.2.3.4.1 E-UTRAN FDD – TDD inter frequency measurements when no DRX is used

The requirements in this section shall apply to UE supporting FDD and TDD.

The requirements in section 8.1.2.3.2.1 also apply for this section.

#### 8.1.2.3.4.2 E-UTRAN FDD – TDD inter frequency measurements when DRX is used

The requirements in this section shall apply to UE supporting FDD and TDD.

The requirements in section 8.1.2.3.2.2 also apply for this section.

8.1.2.3.5 E-UTRAN FDD-FDD inter frequency measurements with autonomous gaps

#### 8.1.2.3.5.1 Identification of a new CGI of E-UTRA FDD cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of E-UTRA cell. The UE shall identify and report the CGI when requested by the network for the purpose of 'reportCGI'. The UE may make autonomous gaps in both downlink reception and uplink transmission for receiving MIB and SIB1 message according to section 5.5.3.1 of 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', regardless of whether DRX is used or not, the UE shall be able to identify a new CGI of E-UTRA cell within:

 $T_{identify\_CGI, inter} = T_{basic\_identify\_CGI, inter}$  ms

Where

 $T_{\text{basic_identify}\_CGI, inter} = 150 \text{ ms.}$  This is the time period used in the above equation where the maximum allowed time for the UE to identify a new CGI of E-UTRA cell is defined.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in Section 9.1 are fulfilled for a corresponding Band,
- SCH\_RP|dBm  $\geq$  -125 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21 and SCH  $\hat{E}s/Iot \geq$  -4 dB,
- SCH\_RP|dBm  $\geq$  -124 dBm for Band 9 and SCH  $\hat{E}s/Iot \geq$  -4 dB,
- SCH\_RP|dBm  $\geq$  -123 dBm for Bands 2, 5, 7, 17 and SCH  $\hat{E}$ s/Iot  $\geq$  -4 dB,
- SCH\_RP|dBm  $\geq$  -122 dBm for Bands 3, 8, 12, 13, 14, 20 and SCH  $\hat{E}s/Iot \geq$  -4 dB.

The requirement for identifying a new CGI of an E-UTRA cell within  $T_{basic\_identify\_CGI\_inter}$  is applicable when no DRX is used as well as when all the DRX cycles specified in 3GPP TS 36.331 [2] are used.

Given that continuous DL data allocation and no DRX is used, the UE shall have more than [60] ACK/NACK sending during identifying a new CGI of E-UTRA cell.

#### 8.1.2.3.5.2 ECGI Reporting Delay

The ECGI reporting delay occurs due to the delay uncertainty when inserting the ECGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the ECGI reporting may be delayed until the next DRX cycle.

#### 8.1.2.3.6 E-UTRAN TDD-FDD inter frequency measurements using autonomous gaps

The requirements in this section shall apply to UE supporting FDD and TDD.

The requirements in section 8.1.2.3.5 also apply for this section.

#### 8.1.2.3.7 E-UTRAN TDD-TDD inter frequency measurements with autonomous gaps

#### 8.1.2.3.7.1 Identification of a new CGI of E-UTRA TDD cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of E-UTRA cell. The UE shall identify and report the CGI when requested by the network for the purpose of 'reportCGI'. The UE may make autonomous gaps in both downlink reception and uplink transmission according to section 5.5.3.1 of 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', regardless of whether DRX is used or not, the UE shall be able to identify a new CGI of E-UTRA cell within:

 $T_{identify\_CGI, inter} = T_{basic\_identify\_CGI, inter}$  ms

Where

 $T_{\text{basic\_identify\_CGI, inter}} = 150 \text{ ms.}$  This is the time period used in the above equation where the maximum allowed time for the UE to identify a new CGI of E-UTRA cell is defined.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in Section 9.1 are fulfilled for a corresponding Band,
- SCH\_RP > -127 dBm for Bands 33, 34, 35, 36, 37, 38, 39, 40 and SCH Ês/Iot > 4 dB.

The requirement for identifying a new CGI of an E-UTRA cell within  $T_{basic\_identify\_CGI\_inter}$  is applicable when no DRX is used as well as when all the DRX cycles specified in 3GPP TS 36.331 [2] are used.

Given that continuous DL data allocation and no DRX is used, the UE shall have more than [60] ACK/NACK sending during identifying a new CGI of E-UTRA cell.

#### 8.1.2.3.7.2 ECGI Reporting Delay

The ECGI reporting delay occurs due to the delay uncertainty when inserting the ECGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the ECGI reporting may be delayed until the next DRX cycle.

#### 8.1.2.3.8 E-UTRAN FDD-TDD inter frequency measurements using autonomous gaps

The requirements in this section shall apply to UE supporting FDD and TDD.

The requirements in section 8.1.2.3.7 also apply for this section.

#### 8.1.2.4 Inter RAT measurements

#### 8.1.2.4.1 E-UTRAN FDD – UTRAN FDD measurements

#### 8.1.2.4.1.1 E-UTRAN FDD – UTRAN FDD measurements when no DRX is used

#### 8.1.2.4.1.1.1 Identification of a new UTRA FDD cell

When explicit neighbour list is provided and no DRX is used the UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{\text{identify, UTRA_FDD}} = T_{\text{basic_identify_UTRA_FDD}} \cdot \frac{480}{T_{\text{interl}}} \cdot N_{Freq} \quad ms$$

A cell shall be considered detectable when

- CPICH Ec/Io  $\geq$  -20 dB,
- SCH\_Ec/Io ≥ -17 dB for at least one channel tap and SCH\_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected.

#### 8.1.2.4.1.1.1a Enhanced UTRA FDD cell identification requirements

When explicit neighbour list is provided and no DRX is used the UE shall be able to identify a new detectable cell belonging to the monitored set within  $T_{identify, enhanced_UTRA_FDD}$ :

$$T_{\text{identify, enhanced\_UTRA\_FDD}} = (T_{\text{basic\_identify\_enhanced\_UTRA\_FDD}} \cdot \frac{480}{T_{\text{interl}}} + 480) N_{Freq} \quad ms$$

A cell shall be considered detectable when:

- CPICH Ec/Io  $\geq$  [-15] dB,
- SCH\_Ec/Io ≥ [-15] dB for at least one channel tap and SCH\_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected.

#### 8.1.2.4.1.1.2 UE UTRA FDD CPICH measurement capability

When measurement gaps are scheduled for UTRA FDD inter RAT measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in Section 9.2 with measurement period given by

$$T_{\text{measurement}\_UTRA\_FDD} = Max \left\{ T_{\text{Measurement}\_Period UTRA\_FDD}, T_{\text{basic}\_measurement}\_UTRA\_FDD} \cdot \frac{480}{T_{\text{interl}}} \cdot N_{Freq} \right\} ms$$

If the UE does not need measurement gaps to perform UTRA FDD measurements, the measurement period for UTRA FDD measurements is 480 ms.

The UE shall be capable of performing UTRA FDD CPICH measurements for  $X_{basic measurementUTRA_FDD}$  inter-frequency cells per FDD frequency and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of  $T_{Measurement\_UTRA_FDD}$ .

 $X_{\text{basic measurement UTRA_FDD}} = 6$ 

 $T_{Measurement\_Period UTRA\_FDD} = 480$  ms. The period used for calculating the measurement period  $T_{measurement\_UTRA\_FDD}$  for UTRA FDD CPICH measurements.

 $T_{\text{basic\_identify}\_UTRA\_FDD} = 300 \text{ ms.}$  This is the time period used in the inter RAT equation in section 8.1.2.4.1.1.1 where the maximum allowed time for the UE to identify a new UTRA FDD cell is defined.

 $T_{\text{basic\_identify\_enhanced\_UTRA\_FDD}} = [60]$  ms. This is the time period used in the inter RAT equation in section 8.1.2.4.1.1.1a where the maximum allowed time for the UE to identify a new UTRA FDD cell is defined.

 $T_{\text{basic\_measurement\_UTRA\_FDD}} = 50$  ms. This is the time period used in the equation for defining the measurement period for inter RAT CPICH measurements.

 $N_{\text{freq}}$  is defined in section 8.1.2.1.1 and  $T_{\text{interl}}$  is defined in section 8.1.2.1

#### 8.1.2.4.1.1.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1.2.4.1.1.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This measurement reporting delay excludes a delay uncertainty for the uplink DCCH. This measurement reporting delay excludes a delay uncertainty is twice the TTI of the uplink DCCH. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than  $T_{identify, UTRA_FDD}$  defined in Section 8.1.2.4.1.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period  $T_{identify, UTRA_FDD}$  defined in section 8.1.2.4.1.1.1 and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than  $T_{measurement\_UTRA\_FDD}$  defined in section 8.1.2.4.1.1.2 provided the timing to that cell has not changed more than  $\pm$  32 chips while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

#### 8.1.2.4.1.1.5 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1.2.4.1.1.4 Event Triggered Reporting.

#### 8.1.2.4.1.2 E-UTRAN FDD – UTRAN FDD measurements when DRX is used

When explicit neighbour list is provided and DRX is used the UE shall be able to identify a new detectable cell belonging to the neighbour cell list within  $T_{identify,UTRA_FDD}$  as shown in table 8.1.2.4.1.2-1

DRX cycle length (s)	T <sub>identify_UTRA_FDD</sub> (s) (DRX cycles)		
	Gap period =	Gap period	
	40 ms	= 80 ms	
≤0.04	Non DRX	Non DRX	
	Requirements	Requirements	
	in section	in section	
	8.1.2.4.1.1 are	8.1.2.4.1.1	
	applicable	are applicable	
0.064	2.56* Nfreq	4.8* Nfreq	
	(40* Nfreq)	(75* Nfreq)	
0.08	3.2* Nfreq	4.8* Nfreq	
	(40* Nfreq)	(60* Nfreq)	
0.128	2.56* Nfreq	4.8* Nfreq	
	(20* Nfreq)	(37.5* Nfreq)	
0.16	3.2* Nfreq (20*	4.8* Nfreq	
	Nfreq)	(30* Nfreq)	
0.16 <drx-< td=""><td>Note (20*</td><td>Note</td></drx-<>	Note (20*	Note	
cycle≤2.56	Nfreq)	(20* Nfreq)	
Note: Time de	epends upon the D	RX cycle in	
use			

Table 8.1.2.4.1.2-1: Requirement to identify a newly detectable UTRA FDD cell

A cell shall be considered detectable provided following conditions are fulfilled: A cell shall be considered detectable when

- CPICH Ec/Io  $\geq$  -20 dB,
- SCH\_Ec/Io ≥ -17 dB for at least one channel tap and SCH\_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected.

The UE shall be capable of performing RSCP and Ec/Io measurements of at least 6 UTRA cells per UTRA FDD carrier for up to 3 UTRA FDD carriers and the UE physical layer shall be capable of reporting RSCP and Ec/Io measurements to higher layers with the measurement period defined in table 8.1.2.3.1.2-2.

DRX cycle length (s)	T <sub>measure_UTRA_FDD</sub> (s) (DRX cycles)		
	Gap period	Gap period =	
	= 40 ms	80 ms	
≤0.04	Non DRX	Non DRX	
	Requirements	Requirements	
	in section	in section	
	8.1.2.4.1.1	8.1.2.4.1.1 are	
	are applicable	applicable	
0.064	0.48* N <sub>freq</sub>	0.8* N <sub>freq</sub>	
	(7.5* N <sub>freq</sub> )	(12.5* N <sub>freq</sub> )	
0.08	0.48* N <sub>freq</sub>	0. 8* N <sub>freq</sub> (10*	
	(6* N <sub>freq</sub> )	N <sub>freq</sub> )	
0.128	0.64* N <sub>freq</sub>	0. 8* N <sub>freq</sub>	
	(5* N <sub>freq</sub> )	(6.25* N <sub>freq</sub> )	
0.128 <drx-< td=""><td>Note (5* N<sub>freq</sub>)</td><td>Note (5* N<sub>freq</sub>)</td></drx-<>	Note (5* N <sub>freq</sub> )	Note (5* N <sub>freq</sub> )	
cycle≤2.56			
Note: Time depends upon the DRX cycle in use			

Table 8.1.2.4.1.2-2: Requirement to measure UTRA FDD cells

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.

#### 8.1.2.4.1.2.1 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1.2.4.1.2.2 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This measurement reporting delay excludes a delay uncertainty is twice the TTI of the uplink DCCH. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than  $T_{identify,UTRA_FDD}$  defined in Section 8.1.2.4.1.2. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period  $T_{identify, UTRA_FDD}$  defined in section 8.1.2.4.1.2 and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than  $T_{measurement\_UTRA_FDD}$  defined in section 8.1.2.4.1.2 provided the timing to that cell has not changed more than ± 32 chips while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

#### 8.1.2.4.1.2.3 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1.2.4.1.2.2 Event Triggered Reporting.

#### 8.1.2.4.2 E-UTRAN TDD – UTRAN FDD measurements

The requirements in section 8.1.2.4.1 also apply for this section.

8.1.2.4.2.1	E-UTRAN TDD – UTRAN FDD measurements when no DRX is used
8.1.2.4.2.2	E-UTRAN TDD – UTRAN FDD measurements when DRX is used

- 8.1.2.4.3 E-UTRAN TDD UTRAN TDD measurements
- 8.1.2.4.3.1 E-UTRAN TDD UTRAN TDD measurements when no DRX is used
- 8.1.2.4.3.1.1 Identification of a new UTRA TDD cell

When explicit neighbour list is provided and no DRX is used the UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{\text{identify, UTRA_TDD}} = Max \left\{ 5000, T_{\text{basic identify UTRA_TDD}} \cdot \frac{480}{T_{\text{interl}}} \cdot N_{Freq} \right\} ms$$

If the UE does not require transmit gap to perform inter-RAT UTRA TDD measurements, the UE shall be able to identify a new detectable inter-RAT UTRA TDD cell belonging to the monitored set within 5000 ms.

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A cell shall be considered detectable when

- P-CCPCH Ec/Io  $\geq$  -8 dB,
- DwPCH\_Ec/Io  $\geq$  -5 dB.

When L3 filtering is used an additional delay can be expected.

#### 8.1.2.4.3.1.2 UE UTRA TDD P-CCPCH RSCP measurement capability

When measurement gaps are scheduled for UTRA TDD inter RAT measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in Section 9.3 with measurement period given by

$$T_{\text{measurement UTRA_TDD}} = Max \left\{ T_{\text{Measurement_Period UTRA_TDD}}, T_{\text{basic measurement UTRA_TDD}} \cdot \frac{480}{T_{\text{interl}}} \cdot N_{Freq} \right\} ms$$

If the UE does not need measurement gaps to perform UTRA TDD measurements, the measurement period for UTRA TDD measurements is 480 ms.

The UE shall be capable of performing UTRA TDD P-CCPCH RSCP measurements for  $X_{\text{basic measurementUTRA_TDD}}$  interfrequency cells per TDD frequency of the monitored set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of  $T_{\text{Measurement_UTRA_TDD}}$ .

 $X_{\text{basic measurementUTRA_TDD}} = 6$ 

 $T_{Measurement\_Period UTRA\_TDD} = 480$  ms is the period used for calculating the measurement period  $T_{measurement\_UTRA\_TDD}$  for UTRA TDD P-CCPCH RSCP measurements.

 $T_{basic\_identify\_UTRA\_TDD} = 800$  ms is the time period used in the inter RAT equation where the maximum allowed time for the UE to identify a new UTRA TDD cell is defined.

 $T_{basic\_measurement\_UTRA\_TDD} = 50$  ms is the time period used in the equation for defining the measurement period for inter RAT P-CCPCH RSCP measurements.

 $N_{\text{freq}}$  is defined in section 8.1.2.1.1 and  $T_{\text{inter1}}$  is defined in section 8.1.2.1

#### 8.1.2.4.3.1.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1.2.4.3.1.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This measurement reporting delay excludes a delay uncertainty for the uplink DCCH. This measurement reporting delay excludes a delay uncertainty is twice the TTI of the uplink DCCH. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than  $T_{identify, UTRA_TDD}$  defined in Section 8.1.2.4.3.1.1 When L3 filtering is used an additional delay can be expected.

#### 8.1.2.4.3.1.5 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1.2.4.3.1.4 Event Triggered Reporting.

#### 8.1.2.4.3.2 E-UTRAN TDD – UTRAN TDD measurements when DRX is used

When explicit neighbour list is provided and DRX is used the UE shall be able to identify a new detectable cell belonging to the neighbour cell list within  $T_{identify,UTRA_TDD}$  as shown in table 8.1.2.4.3.2-1

DRX cycle	T <sub>identify_UTRA_TDD</sub> (s) (DRX cycles)	
length (s)	Gap period = 40 ms	Gap period = 80 ms
≤0.32	Non DRX	Non DRX
	Requirements	Requirements
	in section	in section
	8.1.2.4.3.1	8.1.2.4.3.1
	are applicable	are applicable
0.64≤DRX-	Note (20*	Note
cycle≤2.56	Nfreq)	(20* Nfreq)
Note: Time depends upon the DRX cycle in use		

Table 8.1.2.4.3.2-1: Requirement to identify a newly detectable UTRA TDD cell

A cell shall be considered detectable provided following conditions are fulfilled: A cell shall be considered detectable when

- P-CCPCH Ec/Io  $\geq$  -8 dB,
- DwPCH\_Ec/Io  $\geq$  -5 dB.

When L3 filtering is used an additional delay can be expected.

The UE shall be capable of performing UTRA TDD P-CCPCH RSCP measurements of at least 6 UTRA cells per UTRA TDD carrier for up to 3 UTRA TDD carriers and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period defined in table 8.1.2.4.3.2-2.

DRX cycle length (s)	T <sub>measure_UTRA_TDD</sub> (s) (DRX cycles)			
	Gap period = 40 ms	Gap period = 80 ms		
≤0.04	Non DRX	Non DRX		
	Requirements in	Requirements in		
	section	section		
	8.1.2.4.3.1 are	8.1.2.4.3.1 are		
	applicable	applicable		
0.064	0.48*N <sub>freq</sub>	0.8*N <sub>freq</sub>		
	(7.5*N <sub>freq</sub> )	(12.5*N <sub>freq</sub> )		
0.08	0.48*N <sub>freq</sub>	0.8*N <sub>freq</sub>		
	(6*N <sub>freq</sub> )	(10*N <sub>freq</sub> )		
0.128	0.64 (5*N <sub>freq</sub> )	0.8*N <sub>freq</sub>		
		(6.25*N <sub>freq</sub> )		
0. 128 <drx-< td=""><td>Note (5*N<sub>freq</sub>)</td><td>Note (5*N<sub>freq</sub>)</td></drx-<>	Note (5*N <sub>freq</sub> )	Note (5*N <sub>freq</sub> )		
cycle≤2.56	e≤2.56			
Note: Time depends upon the DRX cycle in use				

Table 8.1.2.4.3.2-2: Requirement to measure UTRA TDD cells

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.

#### 8.1.2.4.3.2.1 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

## 8.1.2.4.3.2.2 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This measurement reporting delay excludes a delay uncertainty is twice the TTI of the uplink DCCH. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than  $T_{identify, UTRA_TDD}$  defined in Section 8.1.2.4.3.2 When L3 filtering is used an additional delay can be expected.

# 8.1.2.4.3.2.3 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1.2.4.3.2.2 Event Triggered Reporting.

# 8.1.2.4.4 E-UTRAN FDD – UTRAN TDD measurements

The requirements in section 8.1.2.4.3 also apply for this section.

# 8.1.2.4.5 E-UTRAN FDD – GSM measurements

#### 8.1.2.4.5.1 E-UTRAN FDD – GSM measurements when no DRX is used

The requirements in this section apply only to UE supporting E-UTRAN FDD and GSM.

Measurements on GSM cells can be requested with BSIC verified.

In RRC\_CONNECTED state when a supported measurement gap pattern sequence according to Table 8.1.2.1-1 is configured by E-UTRAN the UE shall continuously measure GSM cells, search for new GSM cells given in the monitored set and re-confirm the BSIC for already detected cells.

# 8.1.2.4.5.1.1 GSM carrier RSSI

This measurement shall be based on measurement gaps allocated for GSM carrier RSSI measurement as described in section 8.1.2.1. A UE supporting GSM measurements shall measure minimum number of 10 GSM carrier RSSI measurement samples ( $N_{GSM \text{ carrier RSSI}}$ ) per measurement gap. In RRC\_CONNECTED state the measurement period,  $T_{Measurement Period, GSM}$ , for the GSM carrier RSSI measurement is  $N_{freq}$ \*480 ms. The parameter  $N_{freq}$  is defined in section 8.1.2.1.1.

The UE shall meet the measurement accuracy requirements stated for RXLEV in [8], when the given measurement time allows the UE to take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods.

#### 8.1.2.4.5.1.2 BSIC verification

Measurements on a GSM cell can be requested with BSIC verified. The UE shall be able to report the GSM cells with BSIC verified for those cells where the verification of BSIC has been successful.

The procedure for BSIC verification on a GSM cell can be divided into the following two tasks:

- **Initial BSIC identification:** Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the E-UTRAN FDD and GSM cells. The UE shall trigger the initial BSIC identification within the available measurement gap pattern sequence. The requirements for BSIC re-confirmation can be found in section 8.1.2.4.5.1.2.1.
- **BSIC re-confirmation:** Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The UE shall trigger the BSIC re-confirmation within the available measurement gap pattern. The requirements for BSIC re-confirmation can be found in section 8.1.2.4.5.1.2.2.

If the network requests measurements on a GSM cell the UE shall behave as follows:

- The UE shall perform GSM carrier RSSI measurements according to section 8.1.2.4.5.1 when a measurement gap pattern sequence is activated.
- The UE shall perform measurement reporting as defined in [2].
- The UE shall perform BSIC identification. The UE shall use the most recently available GSM carrier RSSI measurement results for arranging GSM cells in signal strength order for performing BSIC identification.
- The UE shall perform BSIC re-confirmation on all the GSM cells that have been successfully identified.
- The UE shall perform all configured event evaluation for event-triggered reporting after the BSIC has been verified for a GSM cell. The UE shall use the most recently available GSM carrier RSSI measurement results in event evaluation and event-triggered reporting.
- Event-triggered and periodic reports shall be triggered according to [2].

The BSIC of a GSM cell is considered to be "verified" if the UE has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification). Once a GSM cell has been identified the BSIC shall be re-confirmed at least once every  $8*T_{re-confirm,GSM}$  seconds. Otherwise the BSIC of the GSM cell is considered as "non-verified". If a measurement gap pattern sequence is deactivated by the network after BSIC has been identified or verified, the UE shall consider the BSIC as non-verified.

 $T_{identify,GSM}$  indicates the maximum time allowed for the UE to decode the unknown BSIC of the GSM cell in one GSM BCCH carrier in the initial BSIC identification procedure.

 $T_{re-confirm,GSM}$  indicates the maximum time allowed for the re-confirmation of the BSIC of one GSM cell in the BSIC re-confirmation procedure.

The UE shall be able to decode a BSIC within a measurement gap when the time difference between the middle of the received GSM synchronisation burst at the UE and the middle of the effective measurement gap is within the limits specified in table 8.1.2.4.5.1.2-1.

Gap length [ms]	Maximum time difference [µs]
6	± 2350 μs

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [9].

#### 8.1.2.4.5.1.2.1 Initial BSIC identification

This measurement shall be based on the measurement gaps used for Initial BSIC identification as described in section 8.1.2.4.5.1.2.

The UE shall continuously attempt to decode the BSIC of SCH on the BCCH carrier of the 8 strongest BCCH carriers of the GSM cells indicated in the Inter-RAT cell info list. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BCCH carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value.

If the BSIC of the GSM BCCH carrier has been successfully decoded the UE shall immediately continue BSIC identification with the next GSM BCCH carrier, in signal strength order, with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within  $T_{identify,GSM}$  ms, the UE shall abort the BSIC identification attempts for that GSM BCCH carrier. The UE shall continue to try to perform BSIC identification of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC identification failed shall not be re-considered for BSIC identification until BSIC identification attempts have been made for all the rest of the 8 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

 $T_{identify,GSM}$  values are given for a set of reference gap patterns in table 8.1.2.4.5.1.2.1-1. The requirements in the table represent the time required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier. If interfrequency RSTD measurements are configured as a part of the measurement configuration,  $T_{identify,GSM}$  shall be based on the 80ms gap configuration.

Number	T <sub>identify,gsm</sub> (ms)		T <sub>reconfirm,</sub>	<sub>gsm</sub> (ms)
of carriers other than GSM	40ms gap configuration (ID 0)	80ms gap configuration (ID 1)	40ms gap configuration (ID 0)	80ms gap configuration (ID 1)
0	2160	5280	1920	5040
1	5280	21760	5040	17280
2	5280	31680	5040	29280
3	19440	No requirement No	13320	No requirement No
4	31680	requirement	29280	requirement
		No		No
5	31680	requirement	29280	requirement

Table 8.1.2.4.5.1.2.1-1

#### 8.1.2.4.5.1.2.2 BSIC re-confirmation

The UE shall maintain the timing information of up to 8 identified GSM cells. Initial timing information is obtained from the initial BSIC identification. The timing information shall be updated every time the BSIC is decoded.

For each measurement gap used for GSM BSIC reconfirmation as described in section 8.1.2.4.5.1.2, the UE shall attempt to decode the BSIC falling within the measurement gap according to table 8.1.2.4.5.1.2.1-1. If more than one BSIC can be decoded within the same measurement gap, priority shall be given to the least recently decoded BSIC. If inter-frequency RSTD measurements are configured as a part of the measurement configuration,  $T_{re-confirm,GSM}$  shall be based on the 80ms gap configuration.

If the UE fails to decode the BSIC after two successive attempts or if the UE has not been able to re-confirm the BSIC for a GSM cell within  $T_{re-confirm,GSM}$  seconds, the UE shall abort the BSIC re-confirmation attempts for that GSM cell. The GSM cell shall be treated as a new GSM cell with unidentified BSIC and the GSM cell shall be moved to the initial BSIC identification procedure, see section 8.1.2.4.5.1.2.1.

#### 8.1.2.4.5.1.2a Enhanced BSIC verification

In addition to the BSIC verification requirements in section 8.1.2.4.5.1.2, when the UE receives the GSM cell at levels down to [10] dB + the reference sensitivity level or reference interference levels as specified in [9] the BSIC identification requirement in table 8.1.2.4.5.1.2a-1 applies.

	T <sub>enhanced_identify.gsm</sub> (ms)		T <sub>enhanced</sub> reco	<sub>nfirm,asm</sub> (ms)
		40ms gap		40ms gap
		configuration		configuration
Number		when		when
of		interfrequency		interfrequency
carriers		RSTD		RSTD
other	40ms gap	measurement	40ms gap	measurement
than	configuration	is also	configuration	is also
GSM	(ID 0)	configured	(ID 0)	configured
0	[1040]	[1840]	TBD	TBD

Table	8 1	24	5 1	2a-1
Iable	0.1		J. I	- <b>L</b> a-I

#### 8.1.2.4.5.1.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1.2.4.5.1.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH.

The event triggered reporting delay requirement is valid when the UE for each GSM carrier in the monitored set can take the required number of samples during the measurement period  $T_{Measurement Period, GSM}$  (see section 8.1.2.4.5.1).

The event triggered measurement reporting delay for a GSM cell with verified BSIC, measured without L3 filtering shall be less than  $2*T_{Measurement Period, GSM}$ , where  $T_{Measurement Period, GSM}$  is defined in section 8.1.2.4.5.1. When L3 filtering is used an additional delay can be expected.

#### 8.1.2.4.5.1.5 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1.2.4.5.1.4 Event Triggered Reporting.

#### 8.1.2.4.5.2 E-UTRAN FDD – GSM measurements when DRX is used

The requirements in this section apply only to UE supporting E-UTRAN FDD and GSM.

Measurements on GSM cells can be requested with BSIC verified.

In RRC\_CONNECTED state when a supported measurement gap pattern sequence according to Table 8.1.2.1-1 is configured by E-UTRAN the UE shall continuously measure GSM cells, search for new GSM cells given in the monitored set and re-confirm the BSIC for already detected cells. During DRX periods the UE may use other periods of time outside the specified measurement gap patterns. The UE is not required to make measurements of GSM cells during DRX periods if a measurement gap pattern has not been configured.

#### 8.1.2.4.5.2.1 GSM carrier RSSI

This measurement shall be based on measurement gaps allocated for GSM carrier RSSI measurement as described in section 8.1.2.1. A UE supporting GSM measurements shall measure minimum number of 10 GSM carrier RSSI measurement samples ( $N_{GSM \text{ carrier RSSI}}$ ) per DRX cycle. In RRC\_CONNECTED state the measurement period,  $T_{Measurement \text{ Period}, \text{ GSM}}$ , for the GSM carrier RSSI measurement is shown in table 8.1.2.4.5.2.1-1. The parameter  $N_{freq}$  is defined in section 8.1.2.1.1.

DRX cycle length (s)	T <sub>measure,GSM</sub> (s) (DRX cycles)	
≤0.04	Non DRX Requirements are	
	applicable	
0.04 <drx-cycle≤ 0.08<="" td=""><td>Note (6*N<sub>freq</sub>)</td></drx-cycle≤>	Note (6*N <sub>freq</sub> )	
0.08 <drx-cycle≤ 2.56<="" td=""><td>Note (5*N<sub>freq</sub>)</td></drx-cycle≤>	Note (5*N <sub>freq</sub> )	
Note: Time depends upon the DRX cycle in use		

Table 8.1.2.4.5.2.1-1: GSM measurement	period for large DRX
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The UE shall meet the measurement accuracy requirements stated for RXLEV in [8], when the given measurement time allows the UE to take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods.

#### 8.1.2.4.5.2.2 BSIC verification

Measurements on a GSM cell can be requested with BSIC verified. The UE shall be able to report the GSM cells with BSIC verified for those cells where the verification of BSIC has been successful.

The procedure for BSIC verification on a GSM cell can be divided into the following two tasks:

- **Initial BSIC identification:** Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the E-UTRAN FDD and GSM cells.
- **BSIC re-confirmation:** Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The UE shall trigger the BSIC re-confirmation within the available measurement gap pattern

If the network requests measurements on a GSM cell, the UE shall behave as follows:

- The UE shall perform GSM carrier RSSI measurements according to section 8.1.2.4.5.2.1 when a measurement gap pattern sequence is activated.
- The UE shall perform measurement reporting as defined in [2].
- The UE shall perform BSIC identification. The UE shall use the most recently available GSM carrier RSSI measurement results for arranging GSM cells in signal strength order for performing BSIC identification.
- The UE shall perform BSIC re-confirmation on all the GSM cells that have been successfully identified.
- The UE shall perform all configured event evaluation for event-triggered reporting after the BSIC has been verified for a GSM cell. The UE shall use the most recently available GSM carrier RSSI measurement results in event evaluation and event-triggered reporting.
- Event-triggered and periodic reports shall be triggered according to [2].

The BSIC of a GSM cell is considered to be "verified" if the UE has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification). Once a GSM cell has been identified the BSIC shall be re-confirmed at least once every 30 seconds. Otherwise the BSIC of the GSM cell is considered as "non-verified".

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [9].

#### 8.1.2.4.5.2.2.1 Initial BSIC identification

This measurement shall be made on GSM cells that are requested with BSIC verified.

For DRX cycle length  $\leq$  40 ms, the initial GSM BSIC identification requirements corresponding to the non DRX requirements as specified in section 8.1.2.4.5.1.2.1 shall apply.

For DRX cycle length > 40 ms, the UE shall make at least one attempt every  $N_{freq}$ \*30s to decode the BSIC of SCH on the BCCH carrier of the 8 strongest BCCH carriers of the GSM cells indicated in the Inter-RAT cell info list. If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within  $N_{freq}$ \*60 s, the UE shall abort the BSIC identification attempts for that GSM BCCH carrier. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BCCH carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value. The parameter  $N_{freq}$  is defined in section 8.1.2.1.1.

If the BSIC of the GSM BCCH carrier has been successfully decoded the UE shall continue BSIC identification with the next GSM BCCH carrier, in signal strength order, with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

### 8.1.2.4.5.2.2.2 BSIC re-confirmation

The UE shall maintain the timing information of up to 8 identified GSM cells. Initial timing information is obtained from the initial BSIC identification. The timing information shall be updated every time the BSIC is decoded.

For DRX cycle length  $\leq$  40 ms, the GSM BSIC re-conformation requirements corresponding to the non DRX requirements as specified in section 8.1.2.4.5.1.2.2 shall apply.

For DRX cycle length > 40 ms, at least every  $N_{freq}$ \*30 seconds, the UE shall attempt to decode the BSIC of each identified GSM cell.If the UE fails to decode the BSIC after two successive attempts or if the UE has not been able to re-confirm the BSIC for a GSM cell within  $N_{freq}$ \*60 seconds, the UE shall abort the BSIC re-confirmation attempts for that GSM cell. The GSM cell shall be treated as a new GSM cell with unidentified BSIC and the GSM cell shall be moved to the initial BSIC identification procedure, see section 8.1.2.4.5.2.2.1. The parameter  $N_{freq}$  is defined in section 8.1.2.1.1.

#### 8.1.2.4.5.2.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1.2.4.5.2.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH.

The event triggered reporting delay requirement is valid when the UE for each GSM carrier in the monitored set can take the required number of samples during the measurement period  $T_{Measurement Period, GSM}$  (see section 8.1.2.4.5.2.1).

The event triggered measurement reporting delay for a GSM cell with verified BSIC , measured without L3 filtering shall be less than  $2*T_{Measurement Period, GSM}$ , where  $T_{Measurement Period, GSM}$  is defined in section 8.1.2.4.5.2.1. When L3 filtering is used an additional delay can be expected.

### 8.1.2.4.5.2.5 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1.2.4.5.2.4 Event Triggered Reporting.

#### 8.1.2.4.6 E-UTRAN TDD – GSM measurements

The requirements in section 8.1.2.4.5 also apply for this section.

### 8.1.2.4.7 E-UTRAN FDD – UTRAN FDD measurements for SON

#### 8.1.2.4.7.1 Identification of a new UTRA FDD cell for SON

No explicit neighbour list is provided to the UE for identifying a UTRA cell for SON. The UE shall identify and report only the strongest cell when requested by the network for the purpose of SON.

8.1.2.4.7.1.1 Requirements when no DRX is used

When no DRX is used the UE shall be able to identify a new cell within:

$$T_{identify, UTRA_FDD} = T_{basic_identify_UTRA_FDD} \cdot \frac{480}{Tinter1} \cdot N_{Freq} \quad ms$$

 $T_{\text{basic_identify}\_UTRA\_FDD} = 300 \text{ ms.}$  This is the time period used in the above equation where the maximum allowed time for the UE to identify a new UTRA FDD cell is defined.

A cell shall be considered identifiable following conditions are fulfilled:

- CPICH Ec/Io  $\geq$  -20 dB,
- SCH\_Ec/Io ≥ -17 dB for at least one channel tap and SCH\_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected.

If the UE is unable to identify the UTRA cell for SON within  $8^{T_{identify, UTRA_FDD}}$  ms, the UE may stop searching UTRA cells for SON.

8.1.2.4.7.1.2 Requirements when DRX is used

When DRX is used the UE shall be able to identify a new cell within T<sub>identify, UTRA\_FDD</sub> as defined in table 8.1.2.4.7.1.2-1.

Table 8.1.2.4.7.1.2-1: Requirement to identify a new UTRA FDD cell for SON

DRX cycle length (s)	Tidentify, UTRA_FDD (s) (DRX cycles)	
	Gap period = 40 ms	Gap period = 80 ms
≤0.04	Non DRX Requirements in section 8.1.2.4.7.1.1are applicable	Non DRX Requirements in section 8.1.2.4.7.1.1 are applicable
0.04 <drx cycle≤0.08<="" td=""><td>3.6* N<sub>freq</sub> (45* N<sub>freq</sub>)</td><td>7.6* N<sub>freq</sub> (95* N<sub>freq</sub>)</td></drx>	3.6* N <sub>freq</sub> (45* N <sub>freq</sub> )	7.6* N <sub>freq</sub> (95* N <sub>freq</sub> )
0.08 <drx cycle≤0.16<="" td=""><td>4.0* N<sub>freq</sub> (25* N<sub>freq</sub>)</td><td>8.0* N<sub>freq</sub> (50* N<sub>freq</sub>)</td></drx>	4.0* N <sub>freq</sub> (25* N <sub>freq</sub> )	8.0* N <sub>freq</sub> (50* N <sub>freq</sub> )
0.16 <drx cycle≤0.32<="" td=""><td>8* N<sub>freq</sub> (25* N<sub>freq</sub>)</td><td>8.96* N<sub>freq</sub> (28* N<sub>freq</sub>)</td></drx>	8* N <sub>freq</sub> (25* N <sub>freq</sub> )	8.96* N <sub>freq</sub> (28* N <sub>freq</sub> )
0.32 <drx cycle≤2.56<="" td=""><td>Note (25* N<sub>freq</sub>)</td><td>Note (25* N<sub>freq</sub>)</td></drx>	Note (25* N <sub>freq</sub> )	Note (25* N <sub>freq</sub> )
Note: Time depends upon the DRX cycle in use		

A cell shall be considered identifiable provided following conditions are fulfilled:

- CPICH Ec/Io  $\geq$  -20 dB,

 SCH\_Ec/Io ≥ -17 dB for at least one channel tap and SCH\_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected.

If the UE is unable to identify the UTRA cell for SON within  $8*T_{identify, UTRA_FDD}$  seconds, the UE may stop searching UTRA cells for SON;  $T_{identify, UTRA_FDD}$  is defined in table 8.1.2.4.7.1.2-1.

#### 8.1.2.4.7.1.3 Reporting Delay

The UE shall not report the physical cell identity of an identifiable cell for SON as long as the reporting criteria are not fulfilled.

The reporting delay is defined as the time between the identification of the strongest cell for SON until the UE starts to transmit its physical cell identity over the Uu interface. This requirement assumes that the reporting of the physical cell identity is not delayed by other RRC signalling on the DCCH. This reporting delay excludes a delay uncertainty resulted when inserting the physical cell identity of the strongest cell for SON to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This reporting delay excludes any delay caused by unavailability of UL resources for UE sending the physical cell identity of the strongest cell for SON.

The reporting delay of the physical cell identity of the strongest cell for SON without L3 filtering shall be less than  $T_{identify, UTRA_FDD}$  defined in section 8.1.2.4.7.1.1 and in section 8.1.2.4.7.1.2 for non DRX and DRX cases respectively. When L3 filtering is used an additional delay can be expected.

#### 8.1.2.4.8 E-UTRAN TDD – UTRAN FDD measurements for SON

The requirements in section 8.1.2.4.7 also apply for this section.

#### 8.1.2.4.9 E-UTRAN FDD – cdma2000 1xRTT measurements

UE shall perform cdma2000 1xRTT measurements according to the procedure defined in [15] on the cdma2000 1xRTT neighbor cells indicated by the serving eNode B. If measurement gaps are required, the UE shall perform cdma2000 1xRTT measurements only during the measurement gaps configured by the serving eNode B.

### 8.1.2.4.9.1A E-UTRAN FDD – cdma2000 1xRTT measurements when no DRX is used

When measurement gaps are scheduled for CDMA2000 1xRTT inter RAT measurements, the UE physical layer shall be capable of reporting CDMA2000 1xRTT Pilot Strength measurements to higher layers with measurement accuracy as specified in Section 9.5, corresponding to a 90% measurement success rate, with measurement period given by

$$\mathbf{T}_{\text{measurement}\_CDMA2000\_1x} = \mathbf{T}_{\text{basic}\_measurement}\_CDMA2000\_1x} \cdot N_{Freq} \cdot S_{gap}$$

where  $T_{basic\_measurement\_CDMA2000\_1x} = 100$  ms and the measurement gap specific scale factor  $S_{gap}$  is based on the measurement gap pattern in use as defined in Table 8.1.2.4.9.1-1. If inter-frequency RSTD measurements are configured as a part of the measurement configuration,  $S_{gap}$  shall be based to the Gap Pattern Id 1.

Gap Pattern Id	S <sub>gap</sub>
0	32/3
1	64/3

If the UE does not need measurement gaps to perform CDMA2000 1xRTT Pilot Strength measurements, the measurement period is given by

 $\mathbf{T}_{\text{measurement}_{\text{CDMA2000}_{1x}}} = \mathbf{T}_{\text{basic}_{\text{measurement}_{\text{CDMA2000}_{1x}}}} \cdot N_{Freq}.$ 

#### 8.1.2.4.9.1 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

The measurement reporting delay of each periodic report is defined as the time between the end of the last measurement period and the moment when the UE starts to transmit the measurement report over the Uu interface. This delay shall be less than  $T_{71m}$  defined in [15] for each periodic report. This measurement reporting delay excludes a delay which is caused by the unavailability of the uplink resources for the UE to send the measurement report.

### 8.1.2.4.10 E-UTRAN TDD – cdma2000 1xRTT measurements

The requirements in section 8.1.2.4.9 also apply for this section.

#### 8.1.2.4.11 E-UTRAN FDD – HRPD measurements

UE shall perform HRPD measurements according to the procedure defined in [11] on the HRPD neighbor cells indicated by the serving eNode B. If measurement gaps are required, the UE shall perform HRPD measurements only during the measurement gaps configured by the serving eNode B.

### 8.1.2.4.12 E-UTRAN TDD – HRPD measurements

The requirements in section 8.1.2.4.11 also apply for this section.

#### 8.1.2.4.13 E-UTRAN TDD – UTRAN TDD measurements for SON

#### 8.1.2.4.13.1 Identification of a new UTRA TDD cell for SON

No explicit neighbour list is provided to the UE for identifying a UTRA TDD cell for SON. The UE shall identify and report only the strongest cell when requested by the network for the purpose of SON.

#### 8.1.2.4.13.1.1 Requirements when no DRX is used

When no DRX is used the UE shall be able to identify a new cell within:

$$T_{\text{identify, UTRA_TDD}} = T_{\text{basic_identify}_UTRA_TDD} \cdot \frac{480}{T_{\text{interl}}} \cdot N_{Freq} \quad ms$$

 $T_{\text{basic_identify}\_UTRA\_TDD} = 800 \text{ ms.}$  This is the time period used in the above equation where the maximum allowed time for the UE to identify a new UTRA TDD cell is defined.

A cell shall be considered identifiable following conditions are fulfilled:

- P-CCPCH Ec/Io  $\geq$  -8 dB,
- DwPCH\_Ec/Io  $\geq$  -5 dB.

When L3 filtering is used an additional delay can be expected.

If the UE is unable to identify the UTRA TDD cell for SON within  $8*T_{identify, UTRA_TDD}$  ms, the UE may stop searching UTRA TDD cells for SON.

#### 8.1.2.4.13.1.2 Requirements when DRX is used

When DRX is used the UE shall be able to identify a new cell within  $T_{identify, UTRA_TDD}$  as defined in table 8.1.2.4.13.1.2-1.

DRX cycle length (s)	Tidentify, UTRA_TDD (s) (DRX cycles)	
	Gap period = 40 ms	Gap period = 80 ms
≤0.16	Non DRX Requirements in section 8.1.2.3.1.1 are applicable	Non DRX Requirements in section 8.1.2.3.1.1 are applicable
0.16 <drx cycle≤0.32<="" td=""><td>8* N<sub>freq</sub> (25* N<sub>freq</sub>)</td><td>12.8* N<sub>freq</sub> (40* N<sub>freq</sub>)</td></drx>	8* N <sub>freq</sub> (25* N <sub>freq</sub> )	12.8* N <sub>freq</sub> (40* N <sub>freq</sub> )
0.32 <drx cycle≤2.56<="" td=""><td>Note (25* N<sub>freq</sub>)</td><td>Note (25* N<sub>freq</sub>)</td></drx>	Note (25* N <sub>freq</sub> )	Note (25* N <sub>freq</sub> )
Note: Time depends upon the DRX cycle in use		

Table 8.1.2.4.13.1.2-1: Requirement to identify a new UTRA TDD cell for SON

A cell shall be considered identifiable provided following conditions are fulfilled:

- P-CCPCH Ec/Io  $\geq$  -8 dB,
- DwPCH\_Ec/Io  $\geq$  -5 dB.

When L3 filtering is used an additional delay can be expected.

If the UE is unable to identify the UTRA TDD cell for SON within  $8^{T_{identify, UTRA_TDD}}$  seconds, the UE may stop searching UTRA TDD cells for SON;  $T_{identify, UTRA_TDD}$  is defined in table 8.1.2.4.13.1.2-1.

### 8.1.2.4.13.1.3 Reporting Delay

The UE shall not report the physical cell identity of an identifiable cell for SON as long as the reporting criteria are not fulfilled.

The reporting delay is defined as the time between the identification of the strongest cell for SON until the UE starts to transmit its physical cell identity over the Uu interface. This requirement assumes that the reporting of the physical cell identity is not delayed by other RRC signalling on the DCCH. This reporting delay excludes a delay uncertainty resulted when inserting the physical cell identity of the strongest cell for SON to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This reporting delay excludes any delay caused by unavailability of UL resources for UE sending the physical cell identity of the strongest cell for SON.

The reporting delay of the physical cell identity of the strongest cell for SON without L3 filtering shall be less than  $T_{identify, UTRA_TDD}$  defined in section 8.1.2.4.13.1.1 and in section 8.1.2.4.13.1.2 for non DRX and DRX cases respectively. When L3 filtering is used an additional delay can be expected.

### 8.1.2.4.14 E-UTRAN FDD – UTRAN TDD measurements for SON

The requirements in section 8.1.2.4.13 also apply for this section.

### 8.1.2.5 E-UTRAN OTDOA Intra-Frequency RSTD Measurements

All intra-frequency RSTD measurement requirements specified in Sections 8.1.2.5.1 and 8.1.2.5.2 shall apply without DRX as well as for all the DRX cycles specified in 3GPP TS 36.331 [2].

### 8.1.2.5.1 E-UTRAN FDD Intra-Frequency OTDOA Measurements

When the physical layer cell identities of neighbour cells together with the OTDOA assistance data are provided, the UE shall be able to detect and measure intra-frequency RSTD, specified in 3GPP TS 36.214 [48], for at least n=16 cells, including the reference cell, on the same carrier frequency f1 as that of the reference cell within

 $T_{RSTD IntraFreqFDD, E-UTRAN}$  ms as given below (see also Figure 8.1.2.5.1-1):

 $T_{\text{RSTD IntraFreqFDD, E-UTRAN}} = T_{\text{PRS}} \cdot (M - 1) + \Delta \qquad ms$ 

where

 $T_{RSTD IntraFreqFDD, E-UTRAN}$  is the total time for detecting and measuring at least *n* cells,

 $T_{\rm PRS}$  is the cell-specific positioning subframe configuration period as defined in 3GPP TS 36.211 [21],

M is the number of PRS positioning occasions as defined in Table 8.1.2.5.1-1, where each PRS positioning occasion comprises of  $N_{PRS}$  (1 $\leq N_{PRS} \leq 6$ ) consecutive downlink positioning subframes defined in 3GPP TS 36.211 [21], and

 $\Delta = 160 \cdot \left| \frac{n}{M} \right|$  ms is the measurement time for a single PRS positioning occasion which includes the sampling time

and the processing time.

Table 8.1.2.5.1-1: Number of PRS positioning occasions within  $T_{RSTD IntraFreeFDD. E-UTRAN}$ 

Positioning subframe	Number of PRS positioning occasions $M$	
configuration period $T_{ m PRS}$	f1 Note1	f1 and f2 Note2
160 ms	16	32
>160 ms	8	16
Note 1: When only intra-frequency RSTD measurements are performed over cells belonging to the serving FDD carrier frequency f1. Note 2: When intra-frequency RSTD and inter-frequency RSTD measurements are performed over cells belonging to the serving FDD carrier frequency f1 and one inter-frequency carrier frequency f2, respectively.		

The UE physical layer shall be capable of reporting RSTD for the reference cell and all the neighbor cells *i* out of at least (*n*-1) neighbor cells within  $T_{RSTD IntraFreeFDD, E-UTRAN}$  provided:

 $(\text{PRS } \hat{E}_s / \text{Iot})_{ref} \ge -6 \text{ dB}$  for all Frequency Bands for the reference cell,

 $(\text{PRS } \hat{E}_s / \text{Iot}) \ge -13 \text{ dB}$  for all Frequency Bands for neighbour cell *i*,

$$\left(\text{PRS}\,\hat{\text{E}}_{\text{s}}\,/\,\text{Iot}\right)_{ref}$$
 and  $\left(\text{PRS}\,\hat{\text{E}}_{\text{s}}\,/\,\text{Iot}\right)_{i}$  conditions apply for all subframes of at least  $L = \frac{M}{2}$  PRS positioning

occasions,

PRP 1,2|<sub>dBm</sub>≥ -127 dBm for Frequency Bands 1, 4, 6, 10, 11, 18, 19, 21,

PRP  $1,2|_{dBm} \ge -126$  dBm for Frequency Bands 9,

PRP  $1,2|_{dBm} \ge -125$  dBm for Frequency Bands 2, 5, 7, 17,

PRP  $1,2|_{dBm} \ge -124$  dBm for Frequency Bands 3, 8, 12, 13, 14, 20.

PRS  $\hat{E}_s$  / Iot is defined as the ratio of the average received energy per PRS RE during the useful part of the symbol to the average received power spectral density of the total noise and interference for this RE, where the ratio is measured over all REs which carry PRS.

The time  $T_{RSTD IntraFreqFDD, E-UTRAN}$  starts from the first subframe of the PRS positioning occasion closest in time after the OTDOA assistance data in the OTDOA-ProvideAssistanceData message as specified in 3GPP TS 36.355 [24], is delivered to the physical layer of the UE as illustrated in Figure 8.1.2.5.1-1.

The RSTD measurement accuracy for all measured neighbor cells *i* shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.10.1.

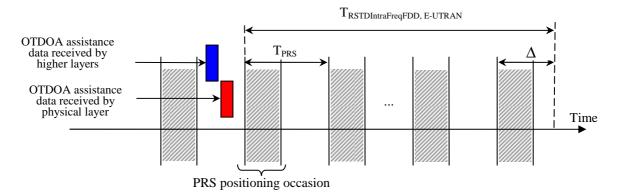


Figure 8.1.2.5.1-1. Illustration of the RSTD reporting time requirement in an FDD system.

#### 8.1.2.5.1.1 RSTD Measurement Reporting Delay

This requirement assumes that the measurement report is not delayed by other LPP signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is:  $2 \times TTI_{DCCH}$ . This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

### 8.1.2.5.2 E-UTRAN TDD Intra-Frequency OTDOA Measurements

When the physical layer cell identities of neighbour cells together with the OTDOA assistance data are provided, the UE shall be able to detect and measure intra-frequency RSTD, specified in 3GPP TS 36.214 [48], for at least n=16 cells, including the reference cell, on the same carrier frequency f1 as that of the reference cell within

T<sub>RSTD IntraFreqTDD, E-UTRAN</sub> ms as given below:

$$T_{\text{RSTD IntraFreqTDD, E-UTRAN}} = T_{\text{PRS}} \cdot (M - 1) + \Delta \qquad ms$$

where

 $T_{RSTD IntraFreqTDD, E-UTRAN}$  is the total time for detecting and measuring at least *n* cells,

 $T_{\rm PRS}$  is the cell-specific positioning subframe configuration period as defined in 3GPP TS 36.211 [21],

M is the number of PRS positioning occasions as defined in Table 8.1.2.5.2-1, where a PRS positioning occasion is as defined in Section 8.1.2.5.1, and

 $\Delta = 160 \cdot \left| \frac{n}{M} \right|$  ms is the measurement time for a single PRS positioning occasion which includes the sampling time

and the processing time.

Table 8.1.2.5.2-1: Number of PRS	positioning occasions within	T <sub>RSTD</sub> IntraFreqTDD F-UTRAN
----------------------------------	------------------------------	--

Positioning subframe	Number of PRS positioning occasions $M$	
configuration period $T_{ m PRS}$	f1 <sup>Note1</sup>	f1 and f2 Note2
160 ms	16	32
>160 ms	8	16
Note 1: When only intra-frequency RSTD measurements are performed over cells belonging to the serving TDD carrier frequency f1. Note 2: When intra-frequency RSTD and inter-frequency RSTD measurements are performed over cells belonging to the serving TDD carrier frequency f1 and one inter-frequency carrier frequency f2 respectively.		

The UE physical layer shall be capable of reporting RSTD for the reference cell and all the neighbor cells *i* out of at least (*n*-1) neighbor cells within  $T_{RSTD IntraFreeTDD, E-UTRAN}$  provided:

 $(\text{PRS } \hat{\text{E}}_{s} / \text{Iot})_{ref} \ge -6 \text{ dB}$  for all Frequency Bands for the reference cell,

 $(\text{PRS } \hat{\text{E}}_{s} / \text{Iot})_{i} \ge -13 \text{ dB}$  for all Frequency Bands for neighbour cell *i*,

 $(\text{PRS}\,\hat{\text{E}}_{s} / \text{Iot})_{ref}$  and  $(\text{PRS}\,\hat{\text{E}}_{s} / \text{Iot})_{i}$  conditions apply for all subframes of at least  $L = \frac{M}{2}$  PRS positioning

occasions,

PRP 1,2<sub>|dBm</sub>≥ -127 dBm for Frequency Bands 33, 34, 35, 36, 37, 38, 39, 40.

PRS  $\hat{E}_{s}$  / Iot is as defined in Section 8.1.2.5.1.

The time  $T_{RSTD IntraFreqTDD, E-UTRAN}$  starts from the first subframe of the PRS positioning occasion closest in time after the OTDOA assistance data in the OTDOA-ProvideAssistanceData message as specified in 3GPP TS 36.355 [24], is delivered to the physical layer of the UE.

The RSTD measurement accuracy for all measured neighbor cells *i* shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.10.1.

The intra-frequency requirements in this section (8.1.2.5.2) shall apply for all TDD special subframe configurations specified in 3GPP TS 36.211 [21] and for the TDD uplink-downlink configurations as specified in Table 8.1.2.5.2-2.

# Table 8.1.2.5.2-2: TDD uplink-downlink subframe configurations applicable for TDD intra-frequency requirements

	PRS Transmission Bandwidth [RB]	Applicable TDD uplink-downlink configurations
	6, 15	1, 2, 3, 4 and 5
25, 50, 75, 100 0, 1, 2, 3, 4, 5 and 6		0, 1, 2, 3, 4, 5 and 6
	Note: Uplink-downlink configurations are specified in Table 4.2-2 in 3GPP TS 36.211 [21].	

#### 8.1.2.5.2.1 RSTD Measurement Reporting Delay

This requirement assumes that the measurement report is not delayed by other LPP signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is:  $2 \times TTI_{DCCH}$ . This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

### 8.1.2.6 E-UTRAN Inter-Frequency OTDOA Measurements

All inter-frequency RSTD measurement requirements specified in Sections 8.1.2.6.1-8.1.2.6.4 shall apply when the measurement gap pattern ID # 0 specified in Section 8.1.2.1 is used.

All inter-frequency RSTD measurement requirements specified in Sections 8.1.2.6.1-8.1.2.6.4 shall apply without DRX as well as for all the DRX cycles specified in 3GPP TS 36.331 [2].

#### 8.1.2.6.1 E-UTRAN FDD-FDD Inter-Frequency OTDOA Measurements

When the physical layer cell identities of neighbour cells together with the OTDOA assistance data are provided, the UE shall be able to detect and measure inter-frequency RSTD, specified in 3GPP TS 36.214 [48], for at least n=16 cells, including the reference cell, within  $T_{RSTD InterFreeFDD, E-UTRAN}$  ms as given below:

$$T_{\text{RSTD InterFreqFDD, E-UTRAN}} = T_{\text{PRS}} \cdot (M - 1) + \Delta \qquad ms$$

where

 $T_{RSTD InterFreqFDD, E-UTRAN}$  is the total time for detecting and measuring at least *n* cells,

 $T_{\rm PRS}$  is the cell-specific positioning subframe configuration period as defined in 3GPP TS 36.211 [21],

M is the number of PRS positioning occasions as defined in Table 8.1.2.6.1-1, where a PRS positioning occasion is as defined in Section 8.1.2.5.1, and

 $\Delta = 160 \cdot \left| \frac{n}{M} \right|$  ms is the measurement time for a single PRS positioning occasion which includes the sampling time

and the processing time.

Table 8.1.2.6.1-1: Number of PRS	positioning occasions within	T <sub>RSTD</sub> InterFreqEDD E-LITRAN
----------------------------------	------------------------------	---

		KSID InterriedFDD, E-OIKAN
		RS positioning occasions $M$
configuration period $T_{ m PRS}$	f2 Note1	f1 and f2 Note2
160 ms	16	32
>160 ms	8	16
Note 1: When inter-frequency RSTD measurements are performed over the reference cell and neighbor		ed over the reference cell and neighbour

cells, which belong to the FDD inter-frequency carrier frequency f2.

Note 2: When inter-frequency RSTD measurements are performed over the reference cell and the neighbour cells, which belong to the serving FDD carrier frequency f1 and the FDD inter-frequency carrier frequency f2 respectively.

The UE physical layer shall be capable of reporting RSTD for the reference cell and all the neighbor cells *i* out of at least (*n*-1) neighbor cells within  $T_{RSTD InterFreeFDD, E-UTRAN}$  provided:

 $(\text{PRS } \hat{\text{E}}_{s} / \text{Iot})_{ref} \ge -6 \text{ dB}$  for all Frequency Bands for the reference cell,

 $(\text{PRS } \hat{E}_s / \text{Iot})_i \ge -13 \text{ dB}$  for all Frequency Bands for neighbour cell *i*,

 $\left(\text{PRS}\,\hat{\text{E}}_{\text{s}}\,/\,\text{Iot}\right)_{ref}$  and  $\left(\text{PRS}\,\hat{\text{E}}_{\text{s}}\,/\,\text{Iot}\right)_{i}$  conditions apply for all subframes of at least  $L = \frac{M}{2}$  PRS positioning

occasions,

PRP 1,2|<sub>dBm</sub>≥ -127 dBm for Frequency Bands 1, 4, 6, 10, 11, 18, 19, 21,

PRP  $1,2|_{dBm} \ge -126$  dBm for Frequency Bands 9,

PRP  $1,2|_{dBm} \ge -125$  dBm for Frequency Bands 2, 5, 7, 17,

PRP  $1,2|_{dBm} \ge -124$  dBm for Frequency Bands 3, 8, 12, 13, 14, 20.

**PRS**  $\hat{E}_{s}$  / Iot is as defined in Section 8.1.2.5.1.

The time  $T_{RSTD InterFreqFDD, E-UTRAN}$  starts from the first subframe of the PRS positioning occasion closest in time after the OTDOA assistance data in the OTDOA-ProvideAssistanceData message as specified in 3GPP TS 36.355 [24], is delivered to the physical layer of the UE.

The RSTD measurement accuracy for all measured neighbor cells *i* shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.10.2.

#### 8.1.2.6.1.1 RSTD Measurement Reporting Delay

This requirement assumes that the measurement report is not delayed by other LPP signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is:  $2 \times TTI_{DCCH}$ . This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

#### 8.1.2.6.2 E-UTRAN TDD-FDD Inter-Frequency OTDOA Measurements

The requirements in section 8.1.2.6.1 also apply for this section, assuming f1 is a TDD frequency and f2 is an FDD frequency.

#### 8.1.2.6.3 E-UTRAN TDD-TDD Inter-Frequency OTDOA Measurements

When the physical layer cell identities of neighbour cells together with the OTDOA assistance data are provided, the UE shall be able to detect and measure inter-frequency RSTD, specified in 3GPP TS 36.214 [48], for at least n=16 cells, including the reference cell, within  $T_{RSTD InterFreqTDD, E-UTRAN}$  ms as given below:

$$T_{\text{RSTD InterFreqTDD, E-UTRAN}} = T_{\text{PRS}} \cdot (M - 1) + \Delta \qquad ms$$

where

 $T_{RSTD InterFreqTDD, E-UTRAN}$  is the total time for detecting and measuring at least *n* cells,

 $T_{\rm PRS}$  is the cell-specific positioning subframe configuration period as defined in 3GPP TS 36.211 [21],

M is the number of PRS positioning occasions as defined in Table 8.1.2.6.1-1, where a PRS positioning occasion is as defined in Section 8.1.2.5.1, and

 $\Delta = 160 \cdot \left| \frac{n}{M} \right|$  ms is the measurement time for a single PRS positioning occasion which includes the sampling time

and the processing time.

Table 8.1.2.6.3 -1: Number of PRS positioning occasions within T<sub>PSTD InterFreeTDD F-UTRAN</sub>

RSTD InterFreqTDD, E-UTRAN		
Positioning subframe	Number of PRS p	ositioning occasions $M$
configuration period $T_{ m PRS}$	f2 <sup>Note1</sup>	f1 and f2 Note2
160 ms	16	32
>160 ms	8	16
Note 1: When inter-frequency RSTD measurements are performed over the reference cell and neighbour cells, which belong to the TDD inter-frequency carrier frequency f2. Note 2: When inter-frequency RSTD measurements are performed over the reference cell and the neighbour cells, which belong to the serving TDD carrier frequency f1 and the TDD inter-frequency carrier frequency f2 respectively.		

The inter-frequency requirements in this section (8.1.2.6.3) shall apply for all TDD special subframe configurations specified in 3GPP TS 36.211 [21] and for the TDD uplink-downlink configurations as specified in Table 8.1.2.6.3-2.

 Table 8.1.2.6.3-2: TDD uplink-downlink subframe configurations applicable for inter-frequency requirements

PRS Transmission Bandwidth [RB]	Applicable TDD uplink-downlink configurations
6, 15	3, 4 and 5
25	1, 2, 3, 4, 5 and 6
50, 75, 100	0, 1, 2, 3, 4, 5 and 6
Note: Uplink-downlink configurations are specified in Table 4.2-2 in 3GPP TS 36.211 [21].	

The UE physical layer shall be capable of reporting RSTD for the reference cell and all the neighbor cells *i* out of at least (*n*-1) neighbor cells within  $T_{RSTD InterFreqTDD, E-UTRAN}$  provided:

 $\left( \text{PRS } \hat{\text{E}}_{\text{s}} / \text{Iot} \right)_{ref} \ge -6 \text{ dB}$  for all Frequency Bands for the reference cell,

 $(\text{PRS } \hat{E}_s / \text{Iot}) \ge -13 \text{ dB}$  for all Frequency Bands for neighbour cell *i*,

 $(\text{PRS}\,\hat{\text{E}}_{s}/\text{Iot})_{ref}$  and  $(\text{PRS}\,\hat{\text{E}}_{s}/\text{Iot})_{i}$  conditions apply for all subframes of at least  $L = \frac{M}{2}$  PRS positioning

occasions, PRP  $1,2|_{dBm} \ge -127$  dBm for Frequency Bands 33, 34, 35, 36, 37, 38, 39, 40.

PRS  $\hat{E}_{s}$  / Iot is as defined in Section 8.1.2.5.1.

The time  $T_{RSTD InterFreqTDD, E-UTRAN}$  starts from the first subframe of the PRS positioning occasion closest in time after the OTDOA assistance data in the OTDOA-ProvideAssistanceData message as specified in 3GPP TS 36.355 [24], is delivered to the physical layer of the UE.

The RSTD measurement accuracy for all measured neighbor cells *i* shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.10.2.

### 8.1.2.6.3.1 RSTD Measurement Reporting Delay

This requirement assumes that the measurement report is not delayed by other LPP signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is:  $2 \times TTI_{DCCH}$ . This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

#### 8.1.2.6.4 E-UTRAN FDD-TDD Inter-Frequency OTDOA Measurements

The requirements in section 8.1.2.6.3 also apply for this section, assuming f1 is an FDD frequency and f2 is a TDD frequency.

### 8.1.2.7 E-UTRAN E-CID Measurements

#### 8.1.2.7.1 E-UTRAN FDD UE Rx-Tx Time Difference Measurements

When no DRX is used the physical layer measurement period of the UE Rx-Tx time difference measurement shall be 200 ms.

When DRX is used in RRC\_CONNECTED state the physical layer measurement period ( $T_{measure\_FDD\_UE\_Rx\_Tx}$ ) of the UE Rx-Tx time difference measurement shall be as specified in table 8.1.2.7.1-1.

#### Table 8.1.2.7.1-1: FDD UE Rx-Tx time difference measurement requirement when DRX is used

DRX cycle length (s)	Tmeasure_FDD_UE_Rx_Tx (s) (DRX cycles)					
≤0.04	0.2 (Note1)					
0.04 <drx-cycle≤2.56< th=""><th colspan="4">Note2 (5)</th></drx-cycle≤2.56<>	Note2 (5)					
Note1: Number of DRX cycle depends upon the DRX cycle in use						
Note2: Time depends upon the DRX cy	cle in use					

The measurement accuracy for the UE Rx-Tx time difference measurement when DRX is used as well as when no DRX is used shall be as specified in the sub-clause 9.1.9.

#### 8.1.2.7.1.1 UE Rx-Tx Measurement Reporting Delay

This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: [2] x  $TTI_{DCCH}$ . This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in subclause 9.1.9.

### 8.1.2.7.2 E-UTRAN TDD UE Rx-Tx Time Difference Measurements

When no DRX is used the physical layer measurement period of the UE Rx-Tx time difference measurement shall be 200 ms.

When DRX is used in RRC\_CONNECTED state the physical layer measurement period ( $T_{measure_TDD_UE_Rx_Tx}$ ) of the UE Rx-Tx time difference measurement shall be as specified in table 8.1.2.7.2-1.

#### Table 8.1.2.7.2-1: TDD UE Rx-Tx time difference measurement requirement when DRX is used

DRX cycle length (s)	T <sub>measure_TDD_UE_Rx_Tx</sub> (s) (DRX cycles)						
≤0.04	0.2 (Note1)						
0.04 <drx-cycle≤2.56< td=""><td colspan="4">Note2 (5)</td></drx-cycle≤2.56<>	Note2 (5)						
Note1: Number of DRX cycle depends upon the DRX cycle in use							
Note2: Time depends upon the DRX cy	cle in use						

The measurement accuracy for the UE Rx-Tx time difference measurement when DRX is used as well as when no DRX is used shall be as specified in the sub-clause 9.1.9.

#### 8.1.2.7.2.1 UE Rx-Tx Measurement Reporting Delay

This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: [2] x  $TTI_{DCCH}$ . This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in subclause 9.1.9.

## 8.2 Capabilities for Support of Event Triggering and Reporting Criteria

### 8.2.1 Introduction

This section contains requirements on UE capabilities for support of event triggering and reporting criteria. As long as the measurement configuration does not exceed the requirements stated in section 8.2.2, the UE shall meet the performance requirements defined in section 9.

The UE can be requested to make measurements under different measurement identities defined in 3GPP TS 36.331 [2]. Each measurement identity corresponds to either event based reporting, periodic reporting or no reporting. In case of event based reporting, each measurement identity is associated with an event. In case of periodic reporting, a measurement identity is associated with one periodic reporting criterion. In case of no reporting, a measurement identity is associated with one periodic reporting criterion.

The purpose of this section is to set some limits on the number of different event, periodic and no reporting criteria the UE may be requested to track in parallel.

### 8.2.2 Requirements

In this section a reporting criterion corresponds to either one event (in the case of event based reporting), or one periodic reporting criterion (in case of periodic reporting), or one no reporting criterion (in case of no reporting). For event based reporting, each instance of event, with the same or different event identities, is counted as separate reporting criterion in table 8.2.2-1.

The UE shall be able to support in parallel per category up to  $E_{cat}$  reporting criteria according to table 8.2.2-1. For the measurement categories belonging to measurements on: E-UTRA intra-frequency cells, E-UTRA inter frequency cells, and inter-RAT per supported RAT, the UE need not support more than 21 reporting criteria in total.

Table 8.2.2-1: Requirements for reporting criteria per measurement category

Measurement category	E <sub>cat</sub>	Note
Intra-frequency	9	E-UTRA intra-frequency cells
Inter-frequency	7	E-UTRA inter-frequency cells
Inter-RAT (E-UTRAN FDD or TDD, UTRAN FDD, UTRAN TDD, GSM, cdma2000 1 x RTT and HRPD)	5	Only applicable for UE with this (inter-RAT) capability. This requirement ( $E_{cat} = 5$ ) is per supported RAT.

# 9 Measurements performance requirements for UE

One of the key services provided by the physical layer is the measurements used to trigger or perform a multitude of functions. Both the UE and the E-UTRAN are required to perform measurements. The physical layer measurement model and a complete list of measurements are specified in [25] and [22] respectively. The physical layer measurements are described and defined in [4]. In this clause for each measurement the relevant requirements on the measurement period, reporting range, granularity and performance in terms of accuracy are specified.

Since the UE reference sensitivity requirements are different depending on supported band, this is noted in each case with definition of the range Io for each frequency band. Definitions of each frequency bands can be found in [5].

The accuracy requirements in this clause are applicable for AWGN radio propagation conditions and assume independent interference (noise) at each receiver antenna port.

## 9.1 E-UTRAN measurements

The requirements in this clause are applicable for a UE:

- in state RRC\_CONNECTED
- performing measurements with appropriate measurement gaps as defined in Section 8.1.2.1.
- that is synchronised to the cell that is measured.

The reported measurement result after layer 1 filtering shall be an estimate of the average value of the measured quantity over the measurement period. The reference point for the measurement result after layer 1 filtering is referred to as point B in the measurement model described in [25].

The accuracy requirements in this clause are valid for the reported measurement result after layer 1 filtering. The accuracy requirements are verified from the measurement report at point D in the measurement model having the higher layer filtering disabled.

### 9.1.2 Intra-frequency RSRP Accuracy Requirements

### 9.1.2.1 Absolute RSRP Accuracy

The requirements for absolute accuracy of RSRP in this section apply to a cell on the same frequency as that of the serving cell.

The accuracy requirements in Table 9.1.2.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled.

RSRP|dBm≥ -127 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21, 33, 34, 35, 36, 37, 38, 39, 40,

RSRP|dBm $\geq$  -126 dBm for Bands 9,

 $RSRP|_{dBm} \ge -125 \text{ dBm}$  for Bands 2, 5, 7, 17,

 $RSRP|_{dBm} \ge -124 \text{ dBm}$  for Bands 3, 8, 12, 13, 14, 20.

#### Table 9.1.2.1-1: RSRP Intra frequency absolute accuracy

Parameter	Unit	t Accuracy [dB]		Conditions <sup>1</sup>				
		Normal condition	Extreme condition	Bands 1, 4, 6, 10, 11, 18, 19, 21, 33, 34, 35, 36, 37, 38, 39, 40	Bands 2, 5, 7, 17	Bands 3, 8, 12, 13, 14, 20	Band 9	
				lo	lo	lo	lo	
RSRP for Ês/lot ≥	dBm	±6	±9	-	-	-	-	
-6 dB				121dBm/15kHz	119dBm/15kHz	118dBm/15kHz	120dBm/15kHz	
				70dBm/	70dBm/	70dBm/	70dBm/	
				<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	
RSRP for Ês/lot ≥	dBm	±8	±11	-70dBm/	-70dBm/	-70dBm/	-70dBm/	
-6 dB				BW <sub>Channel</sub>	BW <sub>Channel</sub>	BW <sub>Channel</sub>	BW <sub>Channel</sub>	
				50dBm/	50dBm/	50dBm/	50dBm/	
				BW <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	

Note 1. Io is assumed to have constant EPRE across the bandwidth.

### 9.1.2.2 Relative Accuracy of RSRP

The relative accuracy of RSRP is defined as the RSRP measured from one cell compared to the RSRP measured from another cell on the same frequency.

The accuracy requirements in Table 9.1.2.2-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled.

RSRP1,2|<sub>dBm</sub>≥ -127 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21, 33, 34, 35, 36, 37, 38, 39, 40,

RSRP1,2 $|_{dBm} \ge -126 \text{ dBm}$  for Bands 9,

 $RSRP1,2|_{dBm} \ge -125 dBm$  for Bands 2, 5, 7, 17,

 $RSRP1,2|_{dBm} \ge -124 \text{ dBm}$  for Bands 3, 8, 12, 13, 14, 20.

Parameter	Unit	Accura	cy [dB]	Conditions <sup>1</sup>				
		Normal condition	Extreme condition	Bands 1, 4, 6, 10, 11, 18, 19, 21, 33, 34, 35, 36, 37, 38, 39, 40	Bands 2, 5, 7, 17	Bands 3, 8, 12, 13, 14, 20	Band 9	
				lo	lo	lo	lo	
RSRP for Ês/lot	dBm	±2	±3	-	-	-	-	
> -3 dB				121dBm/15kHz	119dBm/15kHz	118dBm/15kHz	120dBm/15kHz	
				50dBm/	50dBm/	50dBm/	50dBm/	
				BW <sub>Channel</sub>	BW <sub>Channel</sub>	BW <sub>Channel</sub>	<b>BW</b> Channel	
RSRP for Ês/lot ≥	dBm	±3	±3	-	-	-	-	
-6 dB				121dBm/15kHz	119dBm/15kHz	118dBm/15kHz	120dBm/15kHz	
				50dBm/	50dBm/	50dBm/	50dBm/	
				<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	

Note 2. The parameter Ês/lot is the minimum Ês/lot of the pair of cells.to which the requirement applies.

## 9.1.3 Inter-frequency RSRP Accuracy Requirements

### 9.1.3.1 Absolute RSRP Accuracy

The requirements for absolute accuracy of RSRP in this section apply to a cell that has different carrier frequency from the serving cell.

The accuracy requirements in Table 9.1.3.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled.

RSRP|dBm≥ -127 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21, 33, 34, 35, 36, 37, 38, 39, 40,

RSRP|dBm $\geq$  -126 dBm for Bands 9,

RSRP|dBm $\geq$  -125 dBm for Bands 2, 5, 7, 17,

RSRP|dBm≥ -124 dBm for Bands 3, 8, 12, 13, 14, 20.

Parameter	Unit	Accura	Jnit Accuracy [dB]		Conditions <sup>1</sup>				
		Normal condition	Extreme condition	Bands 1, 4, 6, 10, 11, 18, 19, 21, 33, 34, 35, 36, 37, 38, 39, 40	Bands 2, 5, 7, 17	Bands 3, 8, 12, 13, 14, 20	Band 9		
				lo	lo	lo	lo		
RSRP for Ês/lot ≥	dBm	±6	±9	-	-	-	-		
-6 dB				121dBm/15kHz	119dBm/15kHz	118dBm/15kHz	120dBm/15kHz		
				70dBm/	70dBm/	70dBm/	70dBm/		
				<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>		
RSRP for Ês/lot ≥	dBm	±8	±11	-70dBm/	-70dBm/	-70dBm/	-70dBm/		
-6 dB				BW <sub>Channel</sub>	BW <sub>Channel</sub>	BW <sub>Channel</sub>	BW <sub>Channel</sub>		
				50dBm/	50dBm/	50dBm/	50dBm/		
				<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>		

### Table 9.1.3.1-1: RSRP Inter frequency absolute accuracy

Note 1. Io is assumed to have constant EPRE across the bandwidth.

#### 9.1.3.2 Relative Accuracy of RSRP

The relative accuracy of RSRP in inter frequency case is defined as the RSRP measured from one cell compared to the RSRP measured from another cell on a different frequency.

The accuracy requirements in Table 9.1.3.2-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled.

 $RSRP1|_{dBm} \ge -127 \text{ dBm}$  if RSRP1 is on Bands 1, 4, 6, 10, 11, 18, 19, 21, 33, 34, 35, 36, 37, 38, 39, 40,

 $\text{RSRP1}_{\text{dBm}} \ge -126 \text{ dBm if RSRP1}$  is on Band 9,

 $RSRP1|_{dBm} \ge -125 dBm$  if RSRP1 is on Bands 2, 5, 7, 17,

 $RSRP1|_{dBm} \ge -124 \text{ dBm if } RSRP1 \text{ is on Bands } 3, 8, 12, 13, 14, 20,$ 

 $RSRP2|_{dBm} \ge -127 \ dBm \ if \ RSRP2 \ is \ on \ Bands \ 1, \ 4, \ 6, \ 10, \ 11, \ 18, \ 19, \ 21, \ 33, \ 34, \ 35, \ 36, \ 37, \ 38, \ 39, \ 40$ 

 $RSRP2|_{dBm} \ge -126 \text{ dBm if } RSRP2 \text{ is on Band 9},$ 

 $RSRP2|_{dBm} \ge -125 dBm$  if RSRP2 is on Bands 2, 5, 7, 17,

 $RSRP2|_{dBm} \ge -124 \text{ dBm if } RSRP2 \text{ is on Bands } 3, 8, 12, 13, 14, 20.$ 

 $\left|RSRP1\right|_{dBm} - RSRP2\right|_{dBm} \le 27 dB$ 

| Channel 1\_Io -Channel 2\_Io |  $\leq$  20 dB

Parameter	Unit	Accura	cy [dB]	Conditions <sup>1</sup>				
		Normal condition	Extreme condition	RSRP is on Bands 1, 4, 6, 10, 11, 18, 19, 21, 33, 34, 35, 36, 37, 38, 39 and 40	RSRP is on Bands 2, 5, 7, 17	RSRP is on Bands 3, 8, 12, 13, 14, 20	RSRP is on Band 9	
				lo	lo	lo	lo	
RSRP for Ês/lot	dBm			-121dBm/15kHz	-119dBm/15kHz	-118dBm/15kHz	-120dBm/15kHz	
> -6dB		±6	±6	50dBm/	50dBm/	50dBm/	50dBm/	
				<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	

Note 1. Io is assumed to have constant EPRE across the bandwidth. Note 2. The parameter Ês/lot is the minimum Ês/lot of the pair of cells.to which the requirement applies.

#### 9.1.4 RSRP Measurement Report Mapping

The reporting range of RSRP is defined from -140 dBm to -44 dBm with 1 dB resolution.

The mapping of measured quantity is defined in Table 9.1.4-1. The range in the signalling may be larger than the guaranteed accuracy range.

Reported value	Measured quantity value	Unit
RSRP_00	RSRP < -140	dBm
RSRP_01	-140 ≤ RSRP < -139	dBm
RSRP_02	-139 ≤ RSRP < -138	dBm
RSRP_95	-46 ≤ RSRP < -45	dBm
RSRP_96	-45 ≤ RSRP < -44	dBm
RSRP_97	-44 ≤ RSRP	dBm

Table 9.1.4-1: RSRP measurement report mapping

### 9.1.5 Intra-frequency RSRQ Accuracy Requirements

### 9.1.5.1 Absolute RSRQ Accuracy

The requirements for absolute accuracy of RSRQ in this section apply to a cell on the same frequency as that of the serving cell.

The accuracy requirements in Table 9.1.5.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled.

RSRP|dBm≥ -127 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21, 33, 34, 35, 36, 37, 38, 39, 40,

RSRP|dBm≥ -126 dBm for Bands 9,

 $RSRP|_{dBm} \ge -125 dBm$  for Bands 2, 5, 7, 17,

 $RSRP|_{dBm} \ge -124 \text{ dBm}$  for Bands 3, 8, 12, 13, 14, 20.

Parameter	Unit	Jnit Accuracy [dB]		Conditions <sup>1</sup>				
		Normal condition	Extreme condition	Bands 1, 4, 6, 10, 11, 18, 19, 21, 33, 34, 35, 36, 37, 38, 39, 40	Bands 2, 5, 7, 17	Bands 3, 8, 12, 13, 14, 20	Band 9	
				lo	lo	lo	lo	
RSRQ when RSRP	dBm	± 2.5	± 4	-	-	-	-	
Ês/lot > -3 dB				121dBm/15kHz	119dBm/15kHz	118dBm/15kHz	120dBm/15kHz	
				50dBm/	50dBm/	50dBm/	50dBm/	
				<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	
RSRQ when RSRP	dBm	± 3.5	± 4	-	-	-	-	
Ês/lot ≥ -6 dB				121dBm/15kHz	119dBm/15kHz	118dBm/15kHz	120dBm/15kHz	
				50dBm/	50dBm/	50dBm/	50dBm/	
				<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	

Note 1. Io is assumed to have constant EPRE across the bandwidth.

### 9.1.6 Inter-frequency RSRQ Accuracy Requirements

### 9.1.6.1 Absolute RSRQ Accuracy

The requirements for absolute accuracy of RSRQ in this section apply to a cell that has different carrier frequency from the serving cell.

The accuracy requirements in Table 9.1.6.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled.

RSRP|dBm≥ -127 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21, 33, 34, 35, 36, 37, 38, 39, 40,

RSRP|dBm $\geq$  -126 dBm for Bands 9,

 $RSRP|_{dBm} \ge -125 \text{ dBm}$  for Bands 2, 5, 7, 17,

 $RSRP|_{dBm} \ge -124 \text{ dBm}$  for Bands 3, 8, 12, 13, 14, 20.

Table 9.1.6.1-1: RSRQ Inter frequency absolute accuracy
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Parameter	Unit	Accura	cy [dB]		Condi	tions <sup>1</sup>	
		Normal	Extreme	Bands 1, 4, 6,	Bands 2, 5, 7,	Bands 3, 8, 12,	Bands 9
		condition	condition	10, 11, 18, 19,	17	<b>13, 14</b> , 20	
				21, 33, 34, 35,			
				36, 37, 38, 39,			
				40			
				lo	lo	lo	lo
RSRQ when RSRP	dBm	± 2.5	± 4	-	-	-	-
Ês/lot > -3 dB				121dBm/15kHz	119dBm/15kHz	118dBm/15kHz	120dBm/15kHz
				50dBm/	50dBm/	50dBm/	50dBm/
				BW <sub>Channel</sub>	<b>BW</b> Channel	BW <sub>Channel</sub>	BW <sub>Channel</sub>
RSRQ when RSRP	dBm	± 3.5	± 4	-	-	-	-
Ês/lot ≥ -6 dB				121dBm/15kHz	119dBm/15kHz	118dBm/15kHz	120dBm/15kHz
				50dBm/	50dBm/	50dBm/	50dBm/
				<b>BW</b> Channel	<b>BW</b> Channel	BW <sub>Channel</sub>	BW <sub>Channel</sub>

Note 1. Io is assumed to have constant EPRE across the bandwidth.

#### 9.1.6.2 Relative Accuracy of RSRQ

The relative accuracy of RSRQ in inter frequency case is defined as the RSRQ measured from one cell compared to the RSRQ measured from another cell on a different frequency.

The accuracy requirements in Table 9.1.6.2-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled.

RSRP1|<sub>dBm</sub> ≥ -127 dBm if RSRP1 is on Band 1, 4, 6, 10, 11, 18, 19, 21, 33, 34, 35, 36, 37, 38, 39, 40,

 $RSRP1|_{dBm} \ge -126 dBm$  if RSRP1 is on Band 9,

 $RSRP1|_{dBm} \ge -125 dBm$  if RSRP1 is on Bands 2, 5, 7, 17,

 $RSRP1|_{dBm} \ge -124 \ dBm \ if \ RSRP1 \ is \ on \ Bands \ 3, \ 8, \ 12, \ 13, \ 14, \ 20,$ 

 $RSRP2|_{dBm} \ge -127 \ dBm \ if \ RSRP2 \ is \ on \ Bands \ 1, \ 4, \ 6, \ 10, \ 11, \ 18, \ 19, \ 21, \ 33, \ 34, \ 35, \ 36, \ 37, \ 38, \ 39, \ 40,$ 

 $RSRP2|_{dBm} \ge -126 \text{ dBm if } RSRP2 \text{ is on Band 9},$ 

 $RSRP2|_{dBm} \ge -125 dBm$  if RSRP2 is on Bands 2, 5, 7, 17,

 $RSRP2|_{dBm} \ge -124 \text{ dBm if } RSRP2 \text{ is on Bands 3, 8, 12, 13, 14, 20.}$ 

 $\left| RSRP1 \right|_{dBm} - RSRP2 \Big|_{dBm} \right| \le 27 \, dB$ 

| Channel 1\_Io -Channel 2\_Io |  $\leq$  20 dB

Parameter	Unit	Accura	cy [dB]	Conditions <sup>1</sup>			
		Normal condition	Extreme condition	RSRQ is on Bands 1, 4, 6, 10, 11, 18, 19, 21, 33, 34, 35, 36, 37, 38, 39, 40		RSRQ is on Bands 3, 8, 12, 13, 14, 20	RSRQ is on Band 9
				lo	lo		
RSRQ when RSRP	dBm	± 3	± 4	-	-	-	-
Ês/lot > -3 dB				121dBm/15kH	119dBm/15kHz	118dBm/15kHz	120dBm/15kHz
				z50dBm] /	50dBm/	50dBm/	50dBm/
				<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>	<b>BW</b> <sub>Channel</sub>
RSRQ when RSRP	dBm	± 4	± 4	-	-	-	-
Ês/lot ≥ -6 dB				121dBm/15kH	119dBm/15kHz	118dBm/15kHz	120dBm/15kHz
				z50dBm] /	50dBm/	50dBm/	50dBm/
				BW <sub>Channel</sub>	BW <sub>Channel</sub>	BW <sub>Channel</sub>	BW <sub>Channel</sub>

Note 2. The parameter Ês/lot is the minimum Ês/lot of the pair of cells to which the requirement applies

## 9.1.7 RSRQ Measurement Report Mapping

The reporting range of RSRQ is defined from -19.5 dB to -3 with 0.5 dB resolution.

The mapping of measured quantity is defined in table 9.1.7-1. The range in the signalling may be larger than the guaranteed accuracy range.

Reported value	Measured quantity value	Unit
RSRQ_00	RSRQ < -19.5	dB
RSRQ_01	-19.5 ≤ RSRQ < -19	dB
RSRQ_02	-19 ≤ RSRQ < -18.5	dB
RSRQ_32	-4 ≤ RSRQ < -3.5	dB
RSRQ_33	-3.5 ≤ RSRQ < -3	dB
RSRQ_34	-3 ≤ RSRQ	dB

Table 9.1.7-1: RSRQ measurement report mapping

### 9.1.8 Power Headroom

The power headroom (PH), expressed in dB, is defined as the difference between the configured maximum UE output power ( $P_{CMAX}$ ), which is defined in section 6.2.5 in TS 36.101 [5] and the estimated power for PUSCH transmission according to section 5.1.1.1 in TS 36.213 [3].

### 9.1.8.1 Period

The reported power headroom shall be estimated over 1 subframe. The power headroom shall be estimated only in a subframe where PUSCH is transmitted.

### 9.1.8.2 Reporting Delay

The power headroom reporting delay is defined as the time between the beginning of the power headroom reference period and the time when the UE starts transmitting the power headroom over the radio interface. The reporting delay of the power headroom shall be 0 ms, which is applicable for all configured triggering mechanisms for power headroom reporting.

9.1.8.3 Void

### 9.1.8.4 Report Mapping

The power headroom reporting range is from -23 ...+40 dB. Table 9.1.8.4-1 defines the report mapping.

Reported value	Measured quantity value (dB)
POWER_HEADROOM_0	-23 ≤ PH < -22
POWER_HEADROOM_1	-22 ≤ PH < -21
POWER_HEADROOM_2	-21 ≤ PH < -20
POWER_HEADROOM_3	-20 ≤ PH < -19
POWER_HEADROOM_4	-19 ≤ PH < -18
POWER_HEADROOM_5	-18 ≤ PH < -17
POWER_HEADROOM_57	$34 \le PH < 35$
POWER_HEADROOM_58	35 ≤ PH < 36
POWER_HEADROOM_59	$36 \le PH < 37$
POWER_HEADROOM_60	37 ≤ PH < 38
POWER_HEADROOM_61	$38 \le PH < 39$
POWER_HEADROOM_62	39 ≤ PH < 40
POWER_HEADROOM_63	PH ≥ 40

 Table 9.1.8.4-1: Power headroom report mapping

### 9.1.9 UE Rx – Tx time difference

### 9.1.9.1 Measurement Requirement

NOTE: This measurement is used for UE positioning purposes.

The UE RX-TX time difference is measured from the serving cell.

The accuracy requirements in Table 9.1.9.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled.

No changes to the uplink transmission timing are applied during the measurement period.

RSRP|<sub>dBm</sub>≥ -127 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21, 33, 34, 35, 36, 37, 38, 39, 40,

 $RSRP|_{dBm} \ge -126 \text{ dBm}$  for Bands 9,

 $RSRP|_{dBm} \ge -125 \text{ dBm}$  for Bands 2, 5, 7, 17,

 $RSRP_{dBm} \ge -124 \text{ dBm}$  for Bands 3, 8, 12, 13, 14, 20.

Table 9.1.9.1-1: UE Rx – Tx time difference measurement accuracy

Parameter	Downlink Bandwidth	Unit	Accuracy [Ts]	Conditions				
	[MHz]			Bands 1, 4, 6, 10, 11, 33, 34, 35, 36, 37, 38, 39 and 40	Bands 2, 5, 7, 17	Bands 3, 8, 12, 13, 14, 20	Band 9	
				lo	lo	lo	lo	
UE RX-TX time difference	$\leq$ 3 MHz	T <sub>s</sub>	± 20	-121dBm /15kHz 	-119dBm /15kHz 	-118dBm /15kHz 	-120dBm /15kHz 	
for Ês/lot ≥ -3dB	$\geq$ 5 MHz		± 10	-50dBm/ BW <sub>Channel</sub>	-50dBm/ BW <sub>Channel</sub>	-50dBm/ BW <sub>Channel</sub>	-50dBm/ BW <sub>Channel</sub>	
	assumed to hat the basic timi			ross the bandwic 6.211.	lth	· · · · · ·		

### 9.1.9.2 Measurement Report mapping

The reporting range of UE Rx - Tx time difference is defined from 0 to  $20472T_s$  with  $2T_s$  resolution for UE Rx - Tx time difference less than  $4096T_s$  and 8Ts for UE Rx - Tx time difference equal to or greater than  $4096T_s$ .

The mapping of measured quantity is defined in Table 9.1.9.2-1.

Table 9.1.9.2-1: UE Rx -	Tx time difference	measurement	report mapping

Reported value	Measured quantity value	Unit
RX-TX_TIME_DIFFERENCE_0000	T <sub>UE Rx-Tx</sub> < 2	Ts
RX-TX_TIME_DIFFERENCE_0001	$2 \le T_{UE Rx-Tx} < 4$	Ts
RX-TX_TIME_DIFFERENCE_0002	$4 \le T_{UE Rx-Tx} < 6$	Ts
RX-TX_TIME_DIFFERENCE_2046	$4092 \le T_{UE Rx-Tx} < 4094$	Ts
RX-TX_TIME_DIFFERENCE_2047	$4094 \le T_{UE Rx-Tx} < 4096$	Ts
RX-TX_TIME_DIFFERENCE_2048	$4096 \le T_{UE Rx-Tx} < 4104$	Ts
RX-TX_TIME_DIFFERENCE_2049	$4104 \le T_{UE Rx-Tx} < 4112$	Ts
RX-TX_TIME_DIFFERENCE_4093	$20456 \le T_{UE Rx-Tx} < 20464$	Ts
RX-TX_TIME_DIFFERENCE_4094	$20464 \le T_{UE Rx-Tx} < 20472$	Ts
RX-TX_TIME_DIFFERENCE_4095	$20472 \le T_{UE \ Rx-Tx}$	Ts

### 9.1.10 Reference Signal Time Difference (RSTD)

NOTE: This measurement is used for UE positioning purposes.

#### 9.1.10.1 Intra-Frequency Accuracy Requirement

The accuracy requirements in Table 9.1.10.1-1 shall apply without DRX as well as for all the DRX cycles specified in 3GPP TS 36.331 [2].

The accuracy requirements in Table 9.1.10.1-1 are valid under the following conditions:

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled.

PRP 1,2|<sub>dBm</sub>≥ -127 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21, 33, 34, 35, 36, 37, 38, 39, 40,

PRP  $1,2|_{dBm} \ge -126$  dBm for Band 9,

PRP  $1,2|_{dBm} \ge -125$  dBm for Bands 2, 5, 7, 17,

PRP  $1,2|_{dBm} \ge -124$  dBm for Bands 3, 8, 12, 13, 14, 20.

ETSI

There are no measurement gaps overlapping with the PRS subframes.

The parameter expected RSTDU ncertainty signalled over LPP by E-SMLC as defined in 3GPP TS 36.355 [24] is less than 5  $\mu$ s.

Parameter	PRS	Number	Unit	Accuracy		Conc	ditions	
	Transmission	of		[Ts]	Bands	Bands	Bands	Band
	Bandwidth	Subframes			1, 4, 6,	2, 5, 7,	3, 8, 12,	9
	[RB]	Available for			10, 11,	17	13, 14, 20	
		Measurements			18, 19,			
					21, 33,			
					34, 35, 36, 37,			
					38, 39			
					and 40			
					lo	lo	lo	lo
RSTD for	6, 15	6	Ts	± 15	-121dBm	-119dBm	-118dBm	-120dBm
(PRS Ês/lot) <sub>ref</sub>					/15kHz	/15kHz	/15kHz	/15kHz
≥ -6dB and								
(PRS Ês/lot) <sub>i</sub>	25	≥2		± 6	-50dBm/	-50dBm/	-50dBm/	-50dBm/
≥ -13dB	50, 75, 100	≥1		± 5	BW <sub>Channel</sub>	BW <sub>Channel</sub>	BW <sub>Channel</sub>	BW <sub>Channel</sub>
		onstant EPRE acr						
Note 2: Ts is the	e basic timing un	it defined in 3GP	P TS 36	6.211 [21].				

### Table 9.1.10.1-1: RSTD measurement accuracy

### 9.1.10.2 Inter-Frequency Accuracy Requirement

The accuracy requirements in Table 9.1.10.2-1 shall apply without DRX as well as for all the DRX cycles specified in 3GPP TS 36.331 [2].

The accuracy requirements in Table 9.1.10.2-1 are valid under the following conditions:

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled.

PRP 1,2<sub>|dBm</sub>≥ -127 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21, 33, 34, 35, 36, 37, 38, 39, 40,

PRP  $1,2|_{dBm} \ge -126$  dBm for Band 9,

PRP  $1,2|_{dBm} \ge -125$  dBm for Bands 2, 5, 7, 17,

PRP  $1,2|_{dBm} \ge -124$  dBm for Bands 3, 8, 12, 13, 14, 20.

There are no measurement gaps overlapping with the PRS subframes in cells belonging to the serving carrier frequency.

The parameter expected RSTDU ncertainty signalled over LPP by E-SMLC as defined in 3GPP TS 36.355 [24] is less than 5  $\mu$ s.

#### Table 9.1.10.2-1: RSTD measurement accuracy

Parameter	PRS	Number	Unit	Accuracy		Conc	litions	
	Transmission	of Subframes		[Ts]	Bands	Bands	Bands	Band
	Bandwidth	Available for			1, 4, 6,	2, 5, 7,	3, 8, 12,	9
	[RB]	Measurements			10, 11,	17	13, 14, 20	
					18, 19,			
					21, 33, 34, 35,			
					34, 33, 36, 37,			
					38, 39			
					and 40			
					lo	lo	lo	lo
RSTD for	6, 15	≥4	T <sub>s</sub>	± 21	-121dBm	-119dBm	-118dBm	-120dBm
(PRS Ês/lot) <sub>ref</sub>					/15kHz	/15kHz	/15kHz	/15kHz
≥ -6dB and								
(PRS Ês/lot) <sub>i</sub>	25	≥2		± 10	-50dBm/ BW <sub>Channel</sub>	-50dBm/ BW <sub>Channel</sub>	-50dBm/ BW <sub>Channel</sub>	-50dBm/ BW <sub>Channel</sub>
≥ -13dB	50, 75, 100	≥1		±9	DVV Channel	DVV Channel	DVV Channel	DVV Channel
		onstant EPRE acr it defined in 3GP						

### 9.1.10.3 RSTD Measurement Report Mapping

The reporting range of RSTD is defined from  $-15391T_s$  to  $15391T_s$  with  $1T_s$  resolution for absolute value of RSTD less or equal to  $4096T_s$  and 5Ts for absolute value of RSTD greater than  $4096T_s$ .

The mapping of measured quantity is defined in Table 9.1.10.3-1.

Reported Value	Measured Quantity Value	Unit
RSTD_0000	-15391 > RSTD	Ts
RSTD_0001	-15391 ≤ RSTD < -15386	Ts
RSTD_2258	-4106 ≤ RSTD < -4101	Ts
RSTD_2259	-4101 ≤ RSTD < -4096	Ts
RSTD_2260	-4096 ≤ RSTD < -4095	T <sub>s</sub>
RSTD_2261	-4095 ≤ RSTD < -4094	Ts
RSTD_6353	-3 ≤ RSTD < -2	Ts
RSTD_6354	-2 ≤ RSTD < -1	Ts
RSTD_6355	-1 ≤ RSTD ≤ 0	Ts
RSTD_6356	0 < RSTD ≤ 1	Ts
RSTD_6357	1 < RSTD ≤ 2	Ts
RSTD_6358	2 < RSTD ≤ 3	Ts
RSTD_10450	4094 < RSTD ≤ 4095	Ts
RSTD_10451	4095 < RSTD ≤ 4096	Ts
RSTD_10452	4096 < RSTD ≤ 4101	Ts
RSTD_10453	4101 < RSTD ≤ 4106	Ts
RSTD_12709	15381 < RSTD ≤ 15386	Ts
RSTD_12710	15386 < RSTD ≤ 15391	Ts
RSTD_12711	15391 < RSTD	Ts

### Table 9.1.10.3-1: RSTD report mapping

## 9.2 UTRAN FDD Measurements

The requirements in this clause are applicable for a UE:

- in state RRC\_CONNECTED

- performing measurements according to section 8.1.2.4.1 with appropriate measurement gaps
- that is synchronised to the cell that is measured.

The reported measurement result after layer 1 filtering shall be an estimate of the average value of the measured quantity over the measurement period. The reference point for the measurement result after layer 1 filtering is referred to as point B in the measurement model described in 3GPP TS 25.302 [6].

The accuracy requirements in this clause are valid for the reported measurement result after layer 1 filtering. The accuracy requirements are verified from the measurement report at point D in the measurement model having the layer 3 filtering disabled.

### 9.2.1 UTRAN FDD CPICH RSCP

NOTE: This measurement is for handover between E-UTRAN and UTRAN FDD.

The requirements in this section are valid for terminals supporting this capability.

The measurement period for RRC\_CONNECTED state is specified in section 8.1.2.4.1.

In RRC\_CONNECTED state the accuracy requirements shall meet the absolute accuracy requirements in table 9.2.1-1,.

Table 9.2.1-1: UTRAN FDD CPICH	_RSCP absolute accuracy
--------------------------------	-------------------------

		Accura	cy [dB]	Conditions					
Parameter	Unit	Normal	Extreme	Band I, IV, VI, X XI, XIX and XXI		Band III, VIII, XII, XIII and XIV	Band IX		
		condition	condition	lo	lo	lo	lo		
				[dBm/3,84 MHz]	[dBm/3,84 MHz]	[dBm/3,84 MHz]	[dBm/3,84 MHz]		
CPICH_RSCP	dBm	± 6	± 9	-9470	-9270	-9170	-9370		
	dBm	± 8	± 11	-7050	-7050	-7050	-7050		

If the UE, in RRC\_CONNECTED state, needs measurement gaps to perform UTRAN FDD measurements, the UTRAN FDD measurement procedure and measurement gap pattern stated in section 8.1.2.4.1 shall apply.

The reporting range and mapping specified for FDD CPICH RSCP in 3GPP TS 25.133 [18] shall apply.

### 9.2.2 UTRAN FDD carrier RSSI

NOTE: This measurement is for handover between E-UTRAN and UTRAN FDD.

The requirements in this section are valid for terminals supporting this capability.

The measurement period for RRC\_CONNECTED state is equal to the measurement period for FDD CPICH measurements, whose measurement period is specified in section 8.1.2.4.1.

In RRC\_CONNECTED state the accuracy requirements shall be the same as the measurement accuracy requirements for FDD carrier RSSI in 3GPP TS 25.133 [18].

If the UE, in RRC\_CONNECTED state, needs measurement gaps to perform UTRAN FDD measurements, the UTRAN FDD measurement procedure and measurement gap pattern stated in section 8.1.2.4.1 shall apply.

The reporting range and mapping specified for FDD carrier RSSI in 3GPP TS 25.133 [18] shall apply.

### 9.2.3 UTRAN FDD CPICH Ec/No

NOTE: This measurement is for handover between E-UTRAN and UTRAN FDD.

The requirements in this section are valid for terminals supporting this capability.

The measurement period for RRC\_CONNECTED state is specified in section 8.1.2.4.1.

In RRC\_CONNECTED state the accuracy requirements shall be the same as the inter-frequency measurement accuracy requirements for FDD CPICH Ec/No in 3GPP TS 25.133 [18].

If the UE, in RRC\_CONNECTED state, needs measurement gaps to perform UTRAN FDD measurements, the UTRAN FDD measurement procedure and measurement gap pattern stated in section 8.1.2.4.1 shall apply.

The reporting range and mapping specified for FDD CPICH Ec/No in 3GPP TS 25.133 [18] shall apply.

## 9.3 UTRAN TDD Measurements

The requirements in this clause are applicable for a UE:

- in state RRC\_CONNECTED
- performing measurements according to section 8.1.2.4.3 with appropriate measurement gaps
- that is synchronised to the cell that is measured.

The reported measurement result after layer 1 filtering shall be an estimate of the average value of the measured quantity over the measurement period. The reference point for the measurement result after layer 1 filtering is referred to as point B in the measurement model described in 3GPP TS 25.302 [6].

The accuracy requirements in this clause are valid for the reported measurement result after layer 1 filtering. The accuracy requirements are verified from the measurement report at point D in the measurement model having the layer 3 filtering disabled.

### 9.3.1 UTRAN TDD P-CCPCH RSCP

NOTE: This measurement is for handover between E-UTRAN and UTRAN TDD.

The requirements in this section are valid for terminals supporting this capability.

The measurement period for RRC\_CONNECTED state is specified in section 8.1.2.4.3.

In RRC\_CONNECTED state the accuracy requirements shall be the same as the inter-frequency measurement accuracy requirements for TDD P-CCPCH in 3GPP TS 25.123 [19].

If the UE, in RRC\_CONNECTED state, needs measurement gaps to perform UTRAN TDD measurements, the UTRAN TDD measurement procedure and measurement gap pattern stated in section 8.1.2.4.3 shall apply.

The reporting range and mapping specified for TDD P-CCPCH RSCP in 3GPP TS 25.123 [19] shall apply.

### 9.3.2 UTRAN TDD carrier RSSI

NOTE: This measurement is for handover between E-UTRAN and UTRAN TDD.

The requirements in this section are valid for terminals supporting this capability.

The measurement period for RRC\_CONNECTED state is equal to the measurement period for TDD P-CCPCH RSCP measurement, whose measurement period is specified in section 8.1.2.4.3.

In RRC\_CONNECTED state the accuracy requirements shall be the same as the inter-frequency measurement accuracy requirements for TDD carrier RSSI in 3GPP TS 25.123 [19].

If the UE, in RRC\_CONNECTED state, needs measurement gaps to perform UTRAN TDD measurements, the UTRAN TDD measurement procedure and measurement gap pattern stated in section 8.1.2.4.3 shall apply.

The reporting range and mapping specified for TDD carrier RSSI in 3GPP TS 25.123 [19] shall apply.

### 9.3.3 Void

### 9.4 GSM Measurements

The requirements in this clause are applicable for a UE:

- in state RRC\_CONNECTED
- performing measurements according to section 8.1.2.4.5 with appropriate measurement gaps
- that is synchronised to the cell that is measured.

The reported measurement result after layer 1 filtering shall be an estimate of the average value of the measured quantity over the measurement period. The reference point for the measurement result after layer 1 filtering is referred to as point B in the measurement model described in 3GPP TS 25.302 [6].

The accuracy requirements in this clause are valid for the reported measurement result after layer 1 filtering. The accuracy requirements are verified from the measurement report at point D in the measurement model having the layer 3 filtering disabled.

### 9.4.1 GSM carrier RSSI

NOTE: This measurement is for handover between E-UTRAN and GSM.

The requirements in this section are valid for terminals supporting this capability.

The measurement period for RRC\_CONNECTED state is specified in section 8.1.2.4.5.

In RRC\_CONNECTED state the measurement accuracy requirements for RXLEV in TS 45.008 [8] shall apply.

If the UE, in RRC\_CONNECED state, needs measurement gaps to perform GSM measurements, the GSM measurement procedure and measurement gap pattern stated in section 8.1.2.4.5 shall apply.

The reporting range and mapping specified for RXLEV in TS 45.008 [8] shall apply.

## 9.5 CDMA2000 1x RTT Measurements

The requirements in this clause are applicable for a UE:

- in RRC\_CONNECTED state.
- synchronised to the cell that is measured.

### 9.5.1 CDMA2000 1x RTT Pilot Strength

NOTE: This measurement is for handover between E-UTRAN and cdma2000 1 x RTT.

The requirements in this section are valid for terminals supporting this capability.

CDMA2000 1xRTT Pilot Strength defined in sub-clause 5.1.10 of [4] shall meet the performance requirement defined in sub-clause 3.2.4 of [14] on the cdma2000 1xRTT neighbour cells indicated by the serving eNode B.

# 10 Measurements Performance Requirements for E-UTRAN

## 10.1 Received Interference Power

The measurement period shall be 100 ms.

### 10.1.1 Absolute accuracy requirement

#### Table 10.1.1-1: Received Interference Power absolute accuracy

Parameter	Unit	Accuracy	Conditions
		[dB]	lob [dBm/180 kHz]
lob	dBm/180 kHz	± 4	-11796

### 10.1.2 Relative accuracy requirement

The relative accuracy is defined as the Received Interference Power measured at one frequency compared to the Received Interference Power measured from the same frequency at a different time.

Parameter	Unit	Accuracy	Conditions
		[dB]	lob [dBm/180 kHz]
lob	dBm/180 kHz	± 0.5	-11796
			AND for changes $\leq \pm 9.0 \text{ dB}$

### 10.1.3 Received Interference Power measurement report mapping

The reporting range for Received Interference Power (RIP) is from -126 ... -75 dBm.

In table 10.2.3-1 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Reported value	Measured quantity value	Unit
RTWP_LEV _000	RIP < -126.0	dBm
RTWP_LEV _001	-126.0 ≤ RIP < -125.9	dBm
RTWP_LEV _002	-125.9 ≤ RIP < -125.8	dBm
RTWP_LEV _509	-75.2 ≤ RIP < -75.1	dBm
RTWP_LEV _510	-75.1 ≤ RIP < -75.0	dBm
RTWP_LEV _511	-75.0 ≤ RIP	dBm

Table 10.1.3-1: Received Interference Power measurement reporting range

## 10.2 Angle of Arrival (AOA)

### 10.2.1 Range/mapping

The reporting range for AOA measurement is from 0 to 360 degree, with resolution of 0.5 degree.

The mapping of the measured quantity is defined in table 10.2.1-1.

Reported value	Measured quantity value	Unit
AOA_ANGLE _000	$0 \le AOA\_ANGLE < 0.5$	degree
AOA_ANGLE _001	0.5 ≤ AOA_ANGLE < 1	degree
AOA_ANGLE _002	$1 \le AOA_ANGLE < 1.5$	degree
AOA_ANGLE _717	358.5 ≤ AOA_ANGLE < 359	degree
AOA_ANGLE _718	359 ≤ AOA_ANGLE < 359.5	degree
AOA_ANGLE _719	359.5 ≤ AOA_ANGLE < 360	degree

Table 10.2.1-1: AOA measurement report mapping

## 10.3 Timing Advance (T<sub>ADV</sub>)

## 10.3.1 Report mapping

The reporting range of  $T_{ADV}$  is defined from 0 to  $49232T_s$  with  $2T_s$  resolution for timing advance less or equal to  $4096T_s$  and  $8T_s$  for timing advance greater than  $4096T_s$ .

The mapping of measured quantity is defined in Table 10.3.1-1.

Reported value	Measured quantity value	Unit
TIME_ADVANCE_00	T <sub>ADV</sub> < 2	Ts
TIME_ADVANCE_01	$2 \le T_{ADV} < 4$	Ts
TIME_ADVANCE_02	$4 \le T_{ADV} < 6$	Ts
TIME_ADVANCE_2046	$4092 \le T_{ADV} < 4094$	Ts
TIME_ADVANCE_2047	$4094 \le T_{ADV} < 4096$	Ts
TIME_ADVANCE_2048	$4096 \le T_{ADV} < 4104$	Ts
TIME_ADVANCE_2049	$4104 \le T_{ADV} < 4112$	Ts
TIME_ADVANCE_7688	$49216 \le T_{ADV} < 49224$	Ts
TIME_ADVANCE_7689	$49224 \le T_{ADV} < 49232$	Ts
TIME_ADVANCE_7690	$49232 \le T_{ADV}$	Ts

Table 10.3.1-1:	T <sub>ADV</sub> measurement	report mapping
-----------------	------------------------------	----------------

## Annex A (normative): Test Cases

## A.1 Purpose of annex

This Annex specifies test specific parameters for some of the functional requirements in sections 4 to 9. The tests provide additional information to how the requirements should be interpreted for the purpose of conformance testing. The tests in this Annex are described such that one functional requirement may be tested in one or several test and one test may verify several requirements. Some requirements may lack a test.

The conformance tests are specified in TS 36.521-3 [23]. Statistical interpretation of the requirements is described in Annex A.2.

# A.2 Requirement classification for statistical testing

Requirements in this specification are either expressed as absolute requirements with a single value stating the requirement, or expressed as a success rate. There are no provisions for the statistical variations that will occur when the parameter is tested.

Annex A outlines the tests in more detail and lists the test parameters needed. The test will result in an outcome of a test variable value for the device under test (DUT) inside or outside the test limit. Overall, the probability of a "good" DUT being inside the test limit(s) and the probability of a "bad" DUT being outside the test limit(s) should be as high as possible. For this reason, when selecting the test variable and the test limit(s), the statistical nature of the test is accounted for.

The statistical nature depends on the type of requirement. Some have large statistical variations, while others are not statistical in nature at all. When testing a parameter with a statistical nature, a confidence level is set. This establishes the probability that a DUT passing the test actually meets the requirements and determines how many times a test has to be repeated and what the pass and fail criteria are. Those aspects are not covered by TS 36.133. The details of the tests on how many times to run it and how to establish confidence in the tests are described in TS 36.521-3 [23]. This Annex establishes the variable to be used in the test and whether it can be viewed as statistical in nature or not.

## A.2.1 Types of requirements in TS 36.133

### A.2.1.1 Time and delay requirements on UE higher layer actions

A very large part of the RRM requirements are delay requirements:

- In E-UTRAN RRC\_IDLE state mobility (clause A.4) there is cell re-selection delay.
- In E-UTRAN RRC\_CONNECTED state mobility (clauses A.5 and A.8) there is handover delay, cell search delay and measurement reporting delay.
- In RRC Connection Control (clause A.6) there is RRC re-establishment delay.

All have in common that the UE is required to perform an action observable in higher layers (e.g. camp on the correct cell) within a certain time after a specific event (e.g. when a new strong pilot or reference signal appears). The delay time is statistical in nature for several reasons, among others that several of the measurements are performed by the UE in a fading radio environment.

The variations make a strict limit unsuitable for a test. Instead there is a condition set for a correct action by the UE, e.g. that the UE shall camp on the correct cell within X seconds. Then the rate of correct events is observed during repeated

tests and a limit is set on the rate of correct events, usually 90% correct events are required. How the limit is applied in the test depends on the confidence required, further detailed are in TS 36.521-3 [23].

### A.2.1.2 Measurements of power levels, relative powers and time

A very large number of requirements are on measurements that the UE performs:

- In E-UTRAN RRC\_CONNECTED state mobility (clause A.5) there are measurement reports.
- In Measurement Performance Requirements (clause A.9) there are requirements for all type of measurements.

The accuracy requirements on measurements are expressed in this specification as a fixed limit (e.g. +/-X dB), but the measurement error will have a distribution that is not easily confined in fixed limits. Assuming a Gaussian distribution of the error, the limits will have to be set at +/- $3.29\sigma$  if the probability of failing a "good DUT" in a single test is to be kept at 0.1%. It is more reasonable to set the limit tighter and test the DUT by counting the rate of measurements that are within the limits, in a way similar to the requirements on delay.

## A.2.1.3 Implementation requirements

A few requirements are strict actions the UE should take or capabilities the UE should have, without any allowance for deviations. These requirements are absolute and should be tested as such. Examples are:

- "Event triggered report rate" in E-UTRAN RRC\_CONNECTED state mobility (clauses A.5 and A.8)
- "Correct behaviour at time-out" in RRC connection control (clause A.6)

## A.2.1.4 Physical layer timing requirements

There are requirements on Timing and Signaling Characteristics (clauses A.7). There are both absolute and relative limits on timing accuracy depending upon the type of requirement. Examples are:

- Initial Transmit Timing (clause A.7.1) has an absolute limit on timing accuracy.
- Timing Advance (clause A.7.2) has a relative limit on timing accuracy.

# A.3 RRM test configurations

## A.3.1 Reference Measurement Channels

- A.3.1.1 PDSCH
- A.3.1.1.1 FDD

### Table A.3.1.1.1-1: PDSCH Reference Measurement Channels for FDD

[R.2 FDD] 1.4 1 2 10 QPSK 1/3	3	5	[R.0 FDD] 10 1 24 10	[R.1 FDD] 10 2 24	20
1 2 10 QPSK	3	5	1 24	2	20
2 10 QPSK			24	-	
10 QPSK				24	
QPSK			10		
			10	10	
1/3			QPSK	QPSK	
			1/3	1/3	
120			2088	2088	
104			2088	1736	
32			1736	1736	
0			0	0	
1			1	1	
1			1	1	
1			1	1	
1			1	1	
0			0	0	
456			6624	6336	
360			6336	6048	
176			5784	5520	
0			0	-	
37.6			800	765	
ated as de	efined in 30	GPP TS 3	6.211 [16].		
Э	360 176 0 37.6 symbols a ited as de	360       176       0       37.6       symbols allocated to ted as defined in 30	360       176       0       37.6       symbols allocated to PDCCH       ted as defined in 3GPP TS 30	360         6336           176         5784           0         0           37.6         800           symbols allocated to PDCCH for 1.4 MH           ted as defined in 3GPP TS 36.211 [16].	360         6336         6048           176         5784         5520           0         0         0         0

Note 5: If more than one Code Block is present, an additional CRC sequence of L = 24 Bits is attached to each Code Block (otherwise L = 0 Bit)

#### A.3.1.1.2 TDD

Parameter	Unit	Value					
Reference channel		[R.2			[R.0	[R.1	
		TDD]			TDD]	TDD]	
Channel bandwidth	MHz	1.4	3	5	10	10	20
Number of transmitter antennas		1			1	2	
Allocated resource blocks (Note 4)		2			24	24	
Uplink-Downlink Configuration (Note 5)		1			1	1	
Special Subframe Configuration (Note 6)		6			6	6	
Allocated subframes per Radio Frame		6			6	6	
Modulation		QPSK			QPSK	QPSK	
Target Coding Rate		1/3			1/3	1/3	
Information Bit Payload							
For Sub-Frames 4,9	Bits	120			2088	2088	
For Sub-Frame 5	Bits	104			2088	2088	
For Sub-Frame 0	Bits	56			2088	1736	
For Sub-Frame 1, 6 (DwPTS)	Bits	56			1032	1032	
Number of Code Blocks per Sub-Frame		1			1	1	
(Note 7)							
For Sub-Frames 4,9		1			1	1	
For Sub-Frame 5		1			1	1	
For Sub-Frame 0		1			1	1	
For Sub-Frame 1, 6 (DwPTS)		1			1	1	
Binary Channel Bits Per Sub-Frame							
For Sub-Frames 4,9	Bits	456			6624	6336	
For Sub-Frame 5	Bits	408			6480	6192	
For Sub-Frame 0	Bits	224			5928	5664	
For Sub-Frame 1, 6 (DwPTS)	Bits	272			3696	3504	
Max. Throughput averaged over 1 frame	Mbps	0.051			1.041	1.0064	
	-	2			6		
Note 1: 2 symbols allocated to PDCCH for 10 MH							
For special subframe (1 & 6) only							IS.
Note 2: Reference signal, synchronization signals							d oizoo
Note 3: If necessary the information bit payload size are defined in 3GPP TS 36.213 [3].	ze can be adjus	ted to tacili	iale me te	sumplem	entation. I	ne payloa	u sizes

are defined in 3GPP TS 36.213 [3]. Note 4: Allocation is located in the middle of bandwidth.

Note 5: As per Table 4.2-2 in TS 36.211 [16]

Note 6:

As per Table 4.2-1 in TS 36.211 [16] If more than one Code Block is present, an additional CRC sequence of L = 24 Bits is attached to each Code Block (otherwise L = 0 Bit) Note 7:

## A.3.1.2 PCFICH/PDCCH/PHICH

### A.3.1.2.1 FDD

#### Table A.3.1.2.1-1: PCFICH/PDCCH/PHICH Reference Channel for FDD

Parameter	Unit			Va	ue		
Reference channel		[R.8 FDD]			[R.6 FDD]	[R.7 FDD]	
Channel bandwidth	MHz	1.4			10	10	
Number of transmitter antennas		1			1	2	
Control region OFDM symbols <sup>Note1</sup>	symbols	4			2	2	
Aggregation level	CCE	4			8	8	
DCI Format		Note 3			Note 3	Note 3	
Cell ID		Note 4			Note 4	Note 4	
Payload (without CRC)	Bits	Note 5			Note 5	Note 5	
Note 1: The control region consists of PC Note 2: DCI formats are defined in 3GPP Note 3: DCI format shall depend upon the Note 4: Cell ID shall depend upon the tes	TS 36.212. e test configu	uration.	CCH.				
Note 5: Payload size shall depend upon t							

## A.3.1.2.2 TDD

#### Table A.3.1.2.2-1: PCFICH/PDCCH/PHICH Reference Channel for TDD

Parameter	Unit	Value					
Reference channel		[R.8			[R.6	[R.7	
		TDD]			TDD]	TDD]	
Channel bandwidth	MHz	1.4			10	10	
Number of transmitter antennas		1			1	2	
Control region OFDM symbols <sup>Note1</sup>	symbols	4			2	2	
Aggregation level	CCE	4			8	8	
DCI Format		Note 3			Note 3	Note 3	
Cell ID		Note 4			Note 4	Note 4	
Payload (without CRC)	Bits	Note 5			Note 5	Note 5	
Note 1: The control region consists of P	CFICH, PHIC	H and PD	CCH.				
Note 2: DCI formats are defined in 3GP	P TS 36.212.						
Note 3: DCI format shall depend upon t	he test configu	uration.					
Note 4: Cell ID shall depend upon the te							
Note 5: Payload size shall depend upor							

## A.3.2 OFDMA Channel Noise Generator (OCNG)

### A.3.2.1 OCNG Patterns for FDD

The following OCNG patterns are used for modelling allocations to virtual UEs (which are not under test) and/or allocations used for MBSFN. The OCNG pattern for each sub frame specifies the allocations that shall be filled with OCNG, and furthermore, the relative power level of each such allocation.

In each test case the OCNG is expressed by parameters OCNG\_RA and OCNG\_RB which together with a relative power level ( $\gamma$ ) specifies the PDSCH EPRE-to-RS EPRE ratios in OFDM symbols with and without reference symbols, respectively. The relative power, which is used for modelling boosting per virtual UE allocation, is expressed by:

$$\gamma_i = PDSCH_i \_RA / OCNG \_RA = PDSCH_i \_RB / OCNG \_RB,$$

where  $\gamma_i$  denotes the relative power level of the *i:th* virtual UE. The parameter settings of OCNG\_RA, OCNG\_RB, and the set of relative power levels  $\gamma$  are chosen such that when also taking allocations to the UE under test into account, as given by a PDSCH reference channel, a constant transmitted power spectral density that is constant on an OFDM symbol basis is targeted.

Moreover the OCNG pattern is accompanied by a PCFICH/PDCCH/PHICH reference channel which specifies the control region. For any aggregation and PHICH allocation, the PDCCH is padded with resource element groups with a power level given by PDCCH\_RA and PDCCH\_RB as specified in the test case such that a total power spectral density in the control region that is constant on an OFDM symbol basis is targeted.

### A.3.2.1.1 OCNG FDD pattern 1: outer resource blocks allocation in 10 MHz

Allocation	Re	PDSCH Data	PMCH Data			
$n_{PRB}$		Dulu				
	0	5	4,9	1-3, 6-8	-	
0 – 12	0	0	0	N/A	Note 1	N/A
37 – 49	0	0	0	N/A		
0-49	N/A	N/A	N/A	0	N/A	Note 2
	E; the data transn	nitted over the C	CNG PDSCHs	shall be uncorre	elated pseud	o random
Note 2: Each physic shall be unce data shall be	is QPSK modulate al resource block orrelated with data QPSK modulate ames shall contai	(PRB) is assign a in other PRBs d. PMCH symbo	ed to MBSFN tra over the period ols shall not cont	ansmission. The of any measure ain cell-specific	e data in eac ment. The M Reference S	h PRB IBSFN Signals.
time slot. The parameter ${\gamma}_{\scriptscriptstyle PRB}$ is used to scale the power of PMCH.						
users by all t power shall	nore transmit ante the transmit anter be equally split be modes are speci	nas and accord tween all the tra	ing to the anteni ansmit antennas	na transmission used in the test	mode 2. The	e transmit
N/A: Not Applicable	Э					

### Table A.3.2.1.1-1: OP.1 FDD: OCNG FDD Pattern 1

### A.3.2.1.2 OCNG FDD pattern 2: full bandwidth allocation in 10 MHz

Allocation	Re	PDSCH Data	PMCH Data				
$n_{PRB}$		Data	Data				
	0	5	4, 9	1 – 3, 6 – 8			
0 – 49	0	0	0	N/A	Note 1	N/A	
0 – 49	N/A	N/A	N/A	0	N/A	Note 2	
Note 1: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random							
data, which is QPSK modulated. The parameter $\gamma_{PRB}$ is used to scale the power of PDSCH. Note 2: Each physical resource block (PRB) is assigned to MBSFN transmission. The data in each PRB shall be uncorrelated with data in other PRBs over the period of any measurement. The MBSFN data shall be QPSK modulated. PMCH subframes shall contain cell-specific Reference Signals only							
in the first symbol of the first time slot. The parameter ${\gamma}_{_{PRB}}$ is used to scale the power of PMCH.							
Note 3: If two or more transmit antennas are used in the test, the OCNG shall be transmitted to the virtual users by all the transmit antennas and according to the antenna transmission mode 2. The transmit power shall be equally split between all the transmit antennas used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213.							
N/A: Not Applicable	9						

### Table A.3.2.1.2-1: OP.2 FDD: OCNG FDD Pattern 2

### A.3.2.1.3 OCNG FDD pattern 3: outer resource blocks allocation in 1.4 MHz

Allocation	Rel	PDSCH Data	PMCH Data			
$n_{_{PRB}}$		Data	Data			
	0	5	4,9	1-3, 6-8	-	
0 – 1	0	0	0	N/A	Note 1	N/A
4 – 5	0	0	0	N/A		
0-5	N/A	N/A	N/A	0	N/A	Note 2
data, which is data, which is Note 2: Each physica shall be unco data shall be PMCH subfra time slot. The	E; the data transm s QPSK modulate al resource block orrelated with data QPSK modulate ames shall contai e parameter $\gamma_{PRH}$	hitted over the C ed. The paramet (PRB) is assign a in other PRBs d. PMCH symbol n cell-specific Re s is used to scale	CNG PDSCHs er $\gamma_{PRB}$ is use ed to MBSFN tr over the period ols shall not con eference Signal e the power of I	shall be uncorre- ed to scale the p ransmission. The of any measure tain cell-specific ls only in the firs PMCH.	elated pseudo ower of PDS e data in eacl ement. The N c Reference S st symbol of th	o random CH. n PRB IBSFN Signals. ne first
power shall b	e transmit antenn he transmit anten be equally split be modes are speci	nas and accord tween all the tra	ing to the anten	ina transmissior s used in the tes	mode 2. The	e transmit

Table A.3.2.1.3-1: OP.3 FDD: OCNG FDD Pattern 3

### A.3.2.1.4 OCNG FDD pattern 4: full bandwidth allocation in 1.4 MHz

Allocation	Re	Relative power level $\gamma_{_{PRB}}$ [dB]						
$n_{_{PRB}}$		Subfr	ame		Data	Data		
	0	5	4, 9	1 – 3, 6 – 8				
0 – 5	0	0	0	N/A	Note 1	N/A		
0 – 5	N/A	0	N/A	Note 2				
Note 1: These physic per virtual U	cal resource blocl E; the data transm							
data, which i	is QPSK modulate	ed.The paramete	er $\gamma_{\scriptscriptstyle PRB}$ is used	to scale the po	wer of PDSC	CH.		
	al resource block orrelated with data QPSK modulate	a in other PRBs	over the period	of any measure	ment. The N	IBSFN		
in the first sy	mbol of the first ti	ime slot. The pa	rameter $\gamma_{\scriptscriptstyle PRB}$ is	used to scale th	he power of	PMCH.		
Note 3: If two or more transmit antennas are used in the test, the OCNG shall be transmitted to the virtual users by all the transmit antennas and according to the antenna transmission mode 2. The transmit power shall be equally split between all the transmit antennas used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213.								
N/A: Not Applicable	9							

### Table A.3.2.1.4-1: OP.4 FDD: OCNG FDD Pattern 4

### A.3.2.2 OCNG Patterns for TDD

The following OCNG patterns are used for modelling allocations to virtual UEs (which are not under test). The OCNG pattern for each sub frame specifies the allocations that shall be filled with OCNG, and furthermore, the relative power level of each such allocation.

In each test case the OCNG is expressed by parameters OCNG\_RA and OCNG\_RB which together with a relative power level ( $\gamma$ ) specifies the PDSCH EPRE-to-RS EPRE ratios in OFDM symbols with and without reference symbols, respectively. The relative power, which is used for modelling boosting per virtual UE allocation, is expressed by:

 $\gamma_i = PDSCH_i \_RA / OCNG \_RA = PDSCH_i \_RB / OCNG \_RB,$ 

where  $\gamma_i$  denotes the relative power level of the *i:th* virtual UE. The parameter settings of OCNG\_RA, OCNG\_RB, and the set of relative power levels  $\gamma$  are chosen such that when also taking allocations to the UE under test into account, as given by a PDSCH reference channel, a transmitted power spectral density that is constant on an OFDM symbol basis is targeted.

Moreover the OCNG pattern is accompanied by a PCFICH/PDCCH/PHICH reference channel which specifies the control region. For any aggregation and PHICH allocation, the PDCCH is padded with resource element groups with a power level given by PDCCH\_RA and PDCCH\_RB as specified in the test case such that a total power spectral density in the control region that is constant on an OFDM symbol basis is targeted.

### A.3.2.2.1 OCNG TDD pattern 1: outer resource blocks allocation in 10 MHz

Alle	ocation		PDSCH Data			
	n <sub>PRB</sub>		Subfra			
		0	5	3 , 4, 8, 9 <sup>Note 2</sup>	1, 6	
C	) – 12	0	0	0	Table	Note 1
3	7 – 49	0	0	0	A.3.2.2.1-2	Note 1
Note 1:	1: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, whi					
	is QPSK mod	lulated The param	eter ${\gamma}_{\scriptscriptstyle PRB}$ is used to so	ale the power of PDS	SCH.	
Note 2:	Subframes available for DL transmission depends on the Uplink-Downlink configuration defined in Table 4.2-2 in 3GPP TS 36.211 [16].					fined in Table
Note 3:	If two or more transmit antennas are used in the test, the OCNG shall be transmitted to the virtual users by all the transmit antennas and according to the antenna transmission mode 2. The transmit power shall be equally split between all the transmit antennas used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213.				power shall be	

### Table A.3.2.2.1-1: OP.1 TDD: OCNG TDD Pattern 1 for 5ms downlink-to-uplink switch-point periodicity

# Table A.3.2.2.1-2: OP.1 TDD: OCNG TDD Pattern 1 for special subframe configuration with 5ms downlink-to-uplink switch-point periodicity

Allocation	Ļ.		Relative power level $\gamma_{PRB}$ [dB] Special subframe configuration																
n <sub>PRB</sub>	length																		
			0		1		2		3		4	5	5	(	6	7	7	8	}
	С С		Control region OFDM symbols																
	•	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
0 – 12	N		0 0		0		(	)		0	C	)	(	0	$\sim$	$\sim$	$\sim$	$\wedge$	
37 – 49	N		0	(	)		0	(	)		0	C	)	(	0	$\backslash$	$\sim$	$\sim$	$\leq$
Note 1: Special su	Note 1: Special subframe configurations are defined in Table 4.2-1 in TS 36.211 [16].																		

### A.3.2.2.2 OCNG TDD pattern 2: full bandwidth allocation in 10 MHz

Table A.3.2.2.2-1: OP.2 TDD: OCNG TDD Pattern 2 for 5ms downlink-to-uplink switch-point periodicity	y
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All	ocation		Relative power I	evel $\gamma_{_{PRB}}$ [dB]		PDSCH Data			
	n <sub>PRB</sub>		Subframe						
		0	5	3 , 4, 8, 9 <sup>Note 2</sup>	1, 6				
(	0 - 49 0		0	0	0	Note 1			
Note 1:	te 1: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtu UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPS modulated. The parameter $\gamma_{PRB}$ is used to scale the power of PDSCH.								
Note 2:						ble 4.2-2 in 3GPP			
Note 3:	If two or more transmit antennas are used in the test, the OCNG shall be transmitted to the virtual users by al the transmit antennas and according to the antenna transmission mode 2. The transmit power shall be equall split between all the transmit antennas used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213.					er shall be equally			

### A.3.2.2.3 OCNG TDD pattern 3: outer resource blocks allocation in 1.4 MHz

## Table A.3.2.2.3-1: OP.3 TDD: OCNG TDD Pattern 3 for 5 ms downlink-to-uplink switch-point periodicity

Allocation		PDSCH Data							
n <sub>PRB</sub>		Subframe							
	0	5	3, 4, 8, 9 <sup>Note 2</sup>	1, 6					
			•						
0 – 1	0	0	0	0					
4 – 5	4-5 0		0	0	Note 1				
Note 1: These physical virtual UE; the		e assigned to an arbitra ver the OCNG PDSCH							
is QPSK modu	lated.The paramet	er $\gamma_{\scriptscriptstyle PRB}$ is used to scale	e the power of PDSC	H.					
Note 2: Subframes avail in 3GPP TS 36		nission depends on the	Uplink-Downlink cor	figuration defin	ed in Table 4.2-2				
equally split b	antennas and acco	rding to the antenna transmit antennas used in	ansmission mode 2.	The transmit po	wer shall be				

### A.3.2.2.4 OCNG TDD pattern 4: full bandwidth allocation in 1.4 MHz

 Table A.3.2.2.4-1: OP.4 TDD: OCNG TDD Pattern 4 for 5 ms downlink-to-uplink switch-point periodicity

Allocation	igth		Relative power level $\gamma_{_{PRB}}$ [dB]							
$n_{PRB}$	len		Subframe							
	СЪ	0	5	3 , 4, 8, 9 <sup>Note 2</sup>	1, 6					

	0 – 5	0	0	0	0	Note 1
Note 1:	These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated. The parameter $\gamma_{PRB}$ is used to scale the power of PDSCH.					
Note 2:	Subframes available for DL transmission depends on the Uplink-Downlink configuration in Table 4.2-2 in 3GPP TS 36.211 [16].					
Note 3:	3: If two or more transmit antennas are used in the test, the OCNG shall be transmitted to the virtual users by all the transmit antennas and according to the antenna transmission mode 2. The transmit power shall be equally split between all the transmit antennas used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213.					er shall be equally

### A.3.3 Reference DRX Configurations

### Table A.3.3-1: Reference DRX Configurations

Parameter	Value		Comments		
Reference configuration	DRX_S	DRX_L	As defined in 4.8.2.1.5 in TS 36.508		
onDurationTimer	psf2	psf6			
drx-InactivityTimer	psf100	psf1920			
drx-RetransmissionTimer	sf16	sf16			
longDRX-CycleStartOffset	sf40, 0	sf1280, 0			
shortDRX	disabled	disabled			
Note: For further information see section 6.3.2 in 3GPP TS 36.331.					

## A.4 E-UTRAN RRC\_IDLE state

### A.4.2 Cell Re-Selection

### A.4.2.1 E-UTRAN FDD – FDD Intra frequency case

### A.4.2.1.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-FDD intra frequency cell reselection requirements specified in section 4.2.2.3.

The test scenario comprises of 1 E-UTRA FDD carrier and 2 cells as given in tables A.4.2.1.1-1 and A.4.2.1.1-2. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Only Cell 1 is already identified by the UE prior to the start of the test, i.e. Cell 2 is not identified by the UE prior to the start of the test, cell 1 and Cell 2 belong to different tracking areas. Furthermore, UE has not registered with network for the tracking area containing Cell 2.

I	Parameter	Unit	Value	Comment
Initial	Active cell		Cell1	
condition	Neighbour cells		Cell2	
T2 end	Active cell		Cell2	
condition	Neighbour cells		Cell1	
Final condition	Visited cell		Cell1	
E-UTRA R	F Channel Number		1	Only one FDD carrier frequency is used.
Channel B	andwidth (BW <sub>channel</sub> )	MHz	10	
Time offse	t between cells		3 ms	Asynchronous cells
Access Ba	Access Barring Information		Not Sent	No additional delays in random access procedure.
PRACH co	PRACH configuration		4	As specified in table 5.7.1-2 in 3GPP TS 36.211
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
T1		S	15	During T1, Cell 2 shall be powered off, and during the off time the physical cell identity shall be changed, The intention is to ensure that Cell 2 has not been detected by the UE prior to the start of period T2
T2		S	40	T2 need to be defined so that cell re- selection reaction time is taken into account.
Т3		S	15	T3 need to be defined so that cell re- selection reaction time is taken into account.

### Table A.4.2.1.1-1: General test parameters for FDD intra frequency cell reselection test case

Parameter	Unit		Cell 1		Cell 2			
		T1	T2	Т3	T1	T2	Т3	
E-UTRA RF Channel Number		1				1		
BW <sub>channel</sub>	MHz		10		10			
OCNG Patterns defined in A.3.2.1.1 (OP.2 FDD)		OP.2 FDD				OP.2 FDD		
PBCH_RA								
PBCH_RB								
PSS_RA								
SSS_RA								
PCFICH_RB								
PHICH_RA								
PHICH_RB	dB		0			0		
PDCCH_RA			-			-		
PDCCH_RB								
PDSCH_RA								
PDSCH_RB								
OCNG_RA <sup>Note 1</sup>								
OCNG_RB <sup>Note 1</sup>								
Qrxlevmin	dBm	-140	-140	-140	-140	-140	-140	
Pcompensation	dB	0	0	0	0	0	0	
Qhyst <sub>s</sub>	dB	0	0	0	0	0	0	
Qoffset <sub>s, n</sub>	dB	0	0	0	0	0	0	
Cell_selection_and_ reselection_quality_ measurement			RSRP		RSRP			
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	16	-3.11	2.79	-infinity	2.79	-3.11	
$N_{oc}$ Note2	dBm/15 kHz				-98			
$\hat{E}_s/N_{oc}$	dB	16	13	16	-infinity	16	13	
RSRP Note3	dBm/15 kHz	-82	-85	-82	-infinity	-82	-85	
Treselection	S	0	0	0	0	0	0	
Sintrasearch	dB	Not sent Not sent						
Propagation Condition					AWGN			
Note 1: OCNG shall be density is achie Note 2: Interference fro	eved for all OFDM	symbols.	-					

## Table A.4.2.1.1-2: Cell specific test parameters for FDD intra frequency cell reselection test case in AWGN

subcarriers and time and shall be modelled as AWGN of appropriate power for  $N_{oc}$  to be fulfilled. Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

### A.4.2.1.2 Test Requirements

The cell reselection delay to a newly detectable cell is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on Cell 2.

The cell re-selection delay to a newly detectable cell shall be less than 34 s.

The cell reselection delay to an already detected cell is defined as the time from the beginning of time period T3, to the moment when the UE camps on Cell 1, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on Cell 1.

The cell re-selection delay to an already detected cell shall be less than 8 s.

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The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to a newly detectable cell can be expressed as:  $T_{detect,EUTRAN_{Intra}} + T_{SI}$ , and to an already detected cell can be expressed as:  $T_{evaluateFDD,intra} + T_{SI}$ ,

### Where:

T <sub>detect,EUTRAN_Intra</sub>	See Table 4.2.2.3-1 in section 4.2.2.3
T <sub>evaluateFDD,intra</sub>	See Table 4.2.2.3-1 in section 4.2.2.3
T <sub>SI</sub>	Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 33.28 s, allow 34 s for the cell re-selection delay to a newly detectable cell and 7.68 s, allow 8 s for the cell re-selection delay to an already detected cell in the test case.

### A.4.2.2 E-UTRAN TDD – TDD Intra frequency case

### A.4.2.2.1 Test Purpose and Environment

This test is to verify the requirement for the TDD-TDD intra frequency cell reselection requirements specified in section 4.2.2.3.

The test scenario comprises of 1 E-UTRA TDD carrier and 2 cells as given in tables A.4.2.2.1-1 and A.4.2.2.1-2. The test consists of three successive time periods, with time duration of T1, T2, and T3 respectively. Only cell 1 is already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas. Furthermore, UE has not registered with network for the tracking area containing cell 2.

F	Parameter	Unit	Value	Comment		
Initial	Active cell		Cell1			
condition	Neighbour cells		Cell2			
T2 end	Active cell		Cell2			
condition	Neighbour cells		Cell1			
Final condition	Visited cell		Cell1			
E-UTRA RI	F Channel Number		1	Only one TDD carrier frequency is used.		
Channel Ba	andwidth (BW <sub>channel</sub> )	MHz	10			
Time offset	t between cells	μs	3	Synchronous cells		
Access Ba	ss Barring Information		ss Barring Information -		Not Sent	No additional delays in random access procedure.
Special sub	oframe configuration		6	As specified in table 4.2-1 in 3GPP TS 36.211		
Uplink-dow	nlink configuration		1	As specified in table 4.2-2 in 3GPP TS 36.21		
PRACH co	PRACH configuration index		53	As specified in table 5.7.1-3 in 3GPP TS 36.211		
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.		
T1		S	15	During T1, Cell 2 shall be powered off, and during the off time the physical cell identity shall be changed, The intention is to ensure that Cell 2 has not been detected by the UE prior to the start of period T2		
T2		S	40	T2 need to be defined so that cell re-selection reaction time is taken into account.		
Т3		S	15	T3 need to be defined so that cell re-selection reaction time is taken into account.		

### Table A.4.2.2.1-1: General test parameters for TDD intra frequency cell re-selection test case

**ETSI** 

Parameter	Unit		Cell 1		Cell 2			
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel			1			1		
Number								
BW <sub>channel</sub>	MHz		10			10		
OCNG Pattern								
defined in A.3.2.2.1		OF	P.2 TDD		O	P.2 TDD		
(OP.2 TDD)								
PBCH_RA								
PBCH_RB	1							
PSS_RA	1							
SSS_RA	1							
PCFICH_RB	1							
PHICH_RA	1							
PHICH_RB	dB		0			0		
PDCCH_RA	1				v			
PDCCH_RB	1							
PDSCH_RA	1							
PDSCH_RB	1							
OCNG_RA <sup>Note 1</sup>	1							
OCNG_RB <sup>Note 1</sup>	1							
Qrxlevmin	dBm	-140		-140				
Pcompensation	dB	0			0			
Qhysts	dB	0			0			
Qoffset <sub>s, n</sub>	dB	0		0				
Cell_selection_and_								
reselection_quality_		RSRP		RSRP				
measurement					•			
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	16	-3.11	2.79	-infinity	2.79	-3.11	
$N_{oc}$ Note2	dBm/15 kHz	-		-98				
$\hat{E}_{s}/N_{oc}$	dB	16	13	16	-infinity	16	13	
RSRP Note3	dBm/15 kHz	-82	-85	-82	-infinity	-82	-85	
Treselection	S	0	0	0	0	0	0	
Sintrasearch	dB	N	lot sent		Not sent			
Propagation				AV	VGN			
Condition								
Note 1: CNG shall be used such that both cells are fully allocated and a constant total								
	transmitted power spectral density is achieved for all OFDM symbols. nterference from other cells and noise sources not specified in the test is assumed to be constant							
over subcarrie fulfilled.	over subcarriers and time and shall be modelled as AWGN of appropriate power for ${N_{_{oc}}}$ to be							
Note 3: SRP levels ha	luimed.						not	

## Table A.4.2.2.1-2: Cell specific test parameters for TDD intra frequency cell re-selection test case in AWGN

### A.4.2.2.2 Test Requirements

The cell reselection delay to a newly detectable cell is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on Cell 2.

The cell re-selection delay to a newly detectable cell shall be less than 34 s.

The cell reselection delay to an already detected cell is defined as the time from the beginning of time period T3, to the moment when the UE camps on cell 1, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on cell 1.

The cell re-selection delay shall be less than 8 s.

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The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to a newly detectable cell can be expressed as:  $T_{detect,EUTRAN_{Intra}} + T_{SI-EUTRA}$ , and to an already detected cell can be expressed as:  $T_{evaluate, E-UTRAN_{intra}} + T_{SI-EUTRA}$ ,

### Where:

$T_{detect,EUTRAN\_Intra}$	See Table 4.2.2.3-1 in section 4.2.2.3				
$T_{evaluate,E-UTRAN_{in}}$	tra See Table 4.2.2.3-1 in section 4.2.2.3				
T <sub>SI-EUTRA</sub>	Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.				

This gives a total of 33.28 s, allow 34 s for the cell re-selection delay to a newly detectable cell and 7.68 s, allow 8 s for the cell re-selection delay to an already detected cell in the test case.

### A.4.2.3 E-UTRAN FDD – FDD Inter frequency case

### A.4.2.3.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-FDD inter-frequency cell reselection requirements specified in section 4.2.2.4.

The test scenario comprises of 2 E-UTRA FDD cells on 2 different carriers as given in tables A.4.2.3.1-1 and A.4.2.3.1-2. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Both cell 1 and cell 2 are already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas and cell 2 is of higher priority than cell 1. Furthermore, UE has not registered with network for the tracking area containing cell 2.

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell2	UE shall be forced to cell 2 in the initialisation phase, so that reselection to cell 1 occurs during the first T1 phase
T1 end	Active cell		Cell1	UE shall perform reselection to cell 1 during T1
condition	Neighbour cell		Cell2	
Final condition	Active cell		Cell2	UE shall perform reselection to cell 2 during T3
E-UTRA R	F Channel Number		1, 2	Two FDD carrier frequencies are used.
Time offse	t between cells		3 ms	Asynchronous cells
PRACH co	onfiguration		4	As specified in table 5.7.1-2 in TS 36.211
Access Ba	Irring Information	-	Not Sent	No additional delays in random access procedure.
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
T1	~~~~	S	15	T1 need to be defined so that cell re-selection reaction time is taken into account.
Τ2		S	5	During T2, cell 2 shall be powered off, and during the off time the physical cell identity shall be changed, The intention is to ensure that cell 2 has not been detected by the UE prior to the start of period T3.
Т3		S	75	T3 need to be defined so that cell re-selection reaction time is taken into account.

#### Table A.4.2.3.1-1: General test parameters for FDD-FDD inter frequency cell re-selection test case

Parameter	Unit	C	ell 1			Cell 2		
		T1	T2	T3	T1	T2	Т3	
E-UTRA RF Channel	E-UTRA RF Channel		1			2		
number								
BW <sub>channel</sub>	MHz		10			10		
OCNG Patterns defined in								
A.3.2.1.1 (OP.2 FDD)		OP.	2 FDD			OP.2 FDD		
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB							
PHICH_RB	dB		0		0			
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB	7						
OCNG_RA <sup>Note 1</sup>	dB							
OCNG_RB <sup>Note 1</sup>	dB							
Qrxlevmin	dBm	-	140		-140			
$N_{_{oc}}$ Note 2	dBm/15 kHz				-98			
RSRP Note 3	dBm/15 KHz	-84	-84	-84	-102	-infinity	-86	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	14	14	14	-4	-infinity	12	
$\hat{E}_s/N_{oc}$	dB	14	14	14	-4	-infinity	12	
TreselectionEUTRAN	S		0			0		
Snonintrasearch	dB		50			Not sent		
Thresh <sub>x, high</sub>	dB		48			48		
Thresh <sub>serving, low</sub>	dB		44		44			
Thresh <sub>x, low</sub>	dB	50 50						
Propagation Condition								
Note 1: OCNG shall be used				and a	constant to	otal transmitte	d power	
spectral density is achieved for all OFDM symbols. Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant								
over subcarriers and t	ime and shall be	modelled as	s AWGN	of app	ropriate po	wer for $N_{_{oc}}$ :	to be	
fulfilled.								

## Table A.4.2.3.1-2: Cell specific test parameters for FDD-FDD inter-frequency cell reselection test case in AWGN

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

### A.4.2.3.2 Test Requirements

The cell reselection delay to higher priority is defined as the time from the beginning of time period T3, to the moment when the UE camps on cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on Cell 2.

The cell re-selection delay to higher priority shall be less than 68 s.

The cell reselection delay to lower priority is defined as the time from the beginning of time period T1, to the moment when the UE camps on cell 1, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on cell 1.

The cell re-selection delay to lower priority shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to higher priority cell can be expressed as:  $T_{higher\_priority\_search} + T_{evaluateFDD,intra} + T_{SI}$ , and to lower priority cell can be expressed as:  $T_{evaluateFDD,intra} + T_{SI}$ ,

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Where:

$T_{higher\_priority\_search}$	See section 4.2.2
$T_{evaluateFDD,inter}$	See Table 4.2.2.4-1 in section 4.2.2.4
T <sub>SI</sub>	Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 67.68 s for higher priority cell search and 7.68 s for lower priority cell search, allow 68 s for higher priority cell and 8 s for lower priority cell in the test case.

### A.4.2.4 E-UTRAN FDD – TDD Inter frequency case

A.4.2.5 E-UTRAN TDD – FDD Inter frequency case

### A.4.2.6 E-UTRAN TDD – TDD: Inter frequency case

### A.4.2.6.1 Test Purpose and Environment

This test is to verify the requirement for the TDD-TDD inter-frequency cell reselection requirements specified in section 4.2.2.4.

The test scenario comprises of 2 E-UTRA TDD cells on 2 different carriers as given in tables A.4.2.6.1-1 and A.4.2.6.1-2. The test consists of three successive time periods, with time duration of T1, T2, and T2 respectively. Both cell 1 and cell 2 are already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas and cell 2 is of higher priority than cell 1. Furthermore, UE has not registered with network for the tracking area containing cell 2.

	Parameter	Unit	Value	Comment		
Initial condition	Active cell		Cell2	UE shall be forced to cell 2 in the initialisation phase, so that reselection to cell 1 occurs during the first T1 phase		
T1 end	Active cells		Cell1	UE shall perform reselection to cell 1 during T1		
condition	Neighbour cell		Cell2			
Final condition	Active cell		Cell2	UE shall perform reselection to cell 2 during T3		
E-UTRA R	F Channel Number		1, 2	Two TDD carrier frequencies are used.		
Time offset	ne offset between cells		offset between cells		3 μs	Synchronous cells
Access Ba	rring Information	-	Not Sent	No additional delays in random access procedure.		
Special sub	oframe configuration		6	As specified in table 4.2-1 in 3GPP TS 36.211		
Uplink-dow	nlink configuration		1	As specified in table 4.2-2 in 3GPP TS 36.211		
PRACH co	nfiguration index		53	As specified in table 5.7.1-3 in 3GPP TS 36.211		
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.		
T1		S	15	T1 need to be defined so that cell re-selection reaction time is taken into account.		
T2		S	5	During T2, cell 2 shall be powered off, and during the off time the physical cell identity shall be changed, The intention is to ensure that cell 2 has not been detected by the UE prior to the start of period T3.		
Т3		S	75	T3 need to be defined so that cell re-selection reaction time is taken into account.		

### Table A.4.2.6.1-1: General test parameters for TDD-TDD inter frequency cell reselection test case

# Table A.4.2.6.1-2: Cell specific test parameters for TDD-TDD inter-frequency cell reselection test case in AWGN

Parameter	Unit	Cell 1			Cell 2			
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel			1	-		2		
number								
BW <sub>channel</sub>	MHz		10			10		
OCNG Pattern defined in								
A.3.2.2.1 (OP.2 TDD)		OF	P.2 TDD		C	P.2 TDD		
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB		0		0			
PHICH_RB	dB							
PDCCH_RA	dB							
PDCCH_RB	dB	1						
PDSCH_RA	dB	1						
PDSCH_RB	dB	1						
OCNG_RA <sup>Note 1</sup>	dB							
OCNG_RB <sup>Note 1</sup>	dB	]						

Qrxlevmin	dBm		-140			-140		
$N_{_{oc}}$ Note 2	dBm/15 kHz	-98						
RSRP Note 3	dBm/15 KHz	-84	-84	-84	-102	-infinity	-86	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	14	14	14	-4	-infinity	12	
$\hat{E}_s / N_{oc}$	dB	14	14	14	-4	-infinity	12	
Treselection <sub>EUTRAN</sub>	S	S 0 0						
Snonintrasearch	dB	50 Not sent						
Thresh <sub>x, high</sub>	dB	48 48						
Thresh <sub>serving, low</sub>	dB	44 44						
Thresh <sub>x, low</sub>	dB	50 50						
Propagation Condition				AV	/GN			
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. Note 2: Interference from other cells and noise sources not specified in the test is assumed to be								
constant over subcarriers and time and shall be modelled as AWGN of appropriate power for								
$N_{_{oc}}$ to be fulfilled.								
Note 3: RSRP levels have	been derived from	other para	meters fo	or inform	ation purpo	ses. They a	re not	

### A.4.2.6.2 Test Requirements

settable parameters themselves.

The cell reselection delay to higher priority is defined as the time from the beginning of time period T3, to the moment when the UE camps on cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on cell 2.

The cell re-selection delay to higher priority shall be less than 68 s.

The cell reselection delay to lower priority is defined as the time from the beginning of time period T1, to the moment when the UE camps on cell 1, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on cell 1.

The cell re-selection delay to lower priority shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to higher priority cell can be expressed as:  $T_{higher\_priority\_search} + T_{evaluate,E-UTRAN\_inter} + T_{SI-EUTRA}$ , and to lower priority cell can be expressed as:  $T_{evaluate,E-UTRAN\_inter} + T_{SI-EUTRA}$ ,

Where:

$T_{higher\_priority\_search}$	See section 4.2.2
$T_{evaluate,E-UTRAN_inter}$	See Table 4.2.2.4-1 in section 4.2.2.4
T <sub>SI-EUTRA</sub>	Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 67.68 s for higher priority cell search and 7.68 s for lower priority cell search, allow 68 s for higher priority cell and 8 s for lower priority cell in the test case.

### A.4.2.7 E-UTRAN FDD – FDD Inter frequency case in the existence of nonallowed CSG cell

### A.4.2.7.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-FDD inter-frequency cell reselection requirements specified in section 4.2.2.4 when there is the interference from non-allowed CSG cell and the layers have equal priority.

The test scenario comprises of 2 E-UTRA FDD cells on 2 different carriers and 1 non-allowed E-UTRA FDD CSG cell as given in tables A.4.x.x.1-1 and A.4.x.x.1-2. The test consists of two successive time periods, with time duration of T1

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and T2 respectively. Both cell 1 and cell 3 are already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas and cell 3 is a non-allowed CSG cell. Furthermore, UE has not registered with network for the tracking area containing cell 2.

Table A.4.2.7.1-1: General test parameters for FDD-FDD inter frequency cell re-selection test case
with non-allowed CSG cell

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	UE shall be forced to cell 1 in the initialisation phase
Final condition	Active cell		Cell2	UE shall perform reselection to cell 2 during T2
E-UTRA R	F Channel Number		1, 2	Two FDD carrier frequencies are used.
Time offset	t between cells		3 ms	Asynchronous cells
PRACH co	nfiguration		4	As specified in table 5.7.1-2 in TS 36.211
Access Ba	rring Information	-	Not Sent	No additional delays in random access procedure.
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
T1		S	[15]	T1 need to be defined so that the non-allowed CSG cell is identified.
T2		S	[40]	T2 need to be defined so that cell re-selection reaction time is taken into account.
Т3		S	[15]	T2 need to be defined so that whether cell re- selection would not occur is insured.

Parameter	Unit	Cell 1				Cell 2		Cell 3(Non-allowed CSG cell)		
		T1	T2	Т3	T1	T2	Т3	T1	T2	Т3
E-UTRA RF Channel Number			1			2			1	
BW <sub>channel</sub>	MHz		10			10			10	
OCNG Patterns										
defined in A.3.2.1.2										
(OP.2 FDD)			OP.2 FDE	)	0	P.2 FDD	)		OP.2 FD	D
PBCH_RA	dB									
PBCH_RB	dB									
PSS_RA	dB									
SSS_RA	dB									
PCFICH_RB	dB									
PHICH_RA	dB	1								
PHICH_RB	dB		0			0			0	
PDCCH_RA	dB		0			0			0	
PDCCH_RB	dB									
PDSCH_RA	dB									
PDSCH_RB	dB									
OCNG_RA <sup>Note 1</sup>	dB									
OCNG_RB <sup>Note</sup>	dB									
Qrxlevmin	dBm		-140			-140		-140		
Qqualmin	dB					[-20]				
$N_{_{oc}}$ Note 2	dBm/15 kHz					-98				
RSRP <sup>Note 3</sup>	dBm/15 kHz	[-90]	[-90]	[-85]	[- Infinity]	[-85]	[-90]	[-90]	[-85]	[-60]
RSRQ Note 3	dB	[-14.1]	[-17.1]	[-35.8]				[-14.1]	[-12.1]	[-10.8]
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	[-0.64]	[-5.21]	[-25]	[- Infinity]	[13]	[8]	[-0.64]	[4.36]	[24.8]
$\hat{E}_{s}/N_{oc}$	dB	[8]	[8]	[13]	[- Infinity]	[13]	[8]	[8]	[13]	[38]
Treselection	S		0		0		0			
Snonintrasearch	dB	TBD			Not sent Not sent		t			
Propagation Condition					1	AWGN		I		
Note 1: OCNG shall I density is ach Note 2: Interference f	nieved for a	II OFDM s	ymbols.	-						
subcarriers a Note 3: RSRP and R settable pa		have bee	n derived					00		e not

## Table A.4.2.7.1-2: Cell specific test parameters for FDD-FDD inter frequency cell re-selection test case with non-allowed CSG cell

### A.4.2.7.2 Test Requirements

The cell reselection delay to a newly detectable cell is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on Cell 2.

The cell re-selection delay to a newly detectable cell shall be less than 34 s.

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The rate of correct cell reselections observed during repeated tests shall be at least 90%.

The probability of reselection from Cell 2 to Cell 1 during T3 observed during testing shall be less than [10%].

NOTE: The cell re-selection delay to a newly detectable cell can be expressed as:  $T_{detect,EUTRAN_{Inter}} + T_{SI}$ , Where:

T<sub>detect,EUTRAN\_Inter</sub> See Table 4.2.2.4-1 in section 4.2.2.4

 $T_{SI}$  Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 33.28 s, allow 34 s for the cell re-selection delay to a newly detectable cell in the test case.

### A.4.3 E-UTRAN to UTRAN Cell Re-Selection

### A.4.3.1 E-UTRAN FDD – UTRAN FDD:

### A.4.3.1.1 EUTRA FDD-UTRA FDD cell reselection: UTRA FDD is of higher priority

### A.4.3.1.1.1 Test Purpose and Environment

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This test is to verify the requirement for the E-UTRA FDD- UTRA FDD inter-RAT cell reselection requirements specified in section 4.2.2.5 when the UTRA cell is of higher priority.

The test scenario comprises of one E-UTRA FDD and one UTRA FDD cells as given in tables A.4.3.1.1.1-1, A.4.3.1.1.1-2 and A.4.3.1.1.1-3. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Both E-UTRA cell 1 and UTRA cell 2 are already identified by the UE prior to the start of the test. Cell 2 is of higher priority than cell 1.

Table A.4.3.1.1.1-1: General test parameters for E-UTRA FDD- higher priority UTRA FDD inter RAT         cell re-selection test case				
	Parameter	Unit	Value	Comment
امنئنما	A otivio opli			LIE shall be forced to call 2 in the initialization

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell2	UE shall be forced to cell 2 in the initialisation phase, so that reselection to cell 1 occurs during the first T1 phase
T1 end	Active cell		Cell1	UE shall perform reselection to cell 1 during T1
condition	Neighbour cell		Cell2	
T3 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T3
condition	Neighbour cell		Cell 1	
E-UTRA P	RACH configuration		4	As specified in table 5.7.1-2 in TS 36.211
E_UTRA A	ccess Barring	-	Not Sent	No additional delays in random access
Information	1			procedure.
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
T1		S	25	T1 need to be defined so that cell re-selection reaction time is taken into account.
Τ2		S	5	During T2, cell 2 shall be powered off, and during the off time the primary scrambling code shall be changed, The intention is to ensure that cell 2 has not been detected by the UE prior to the start of period T3
ТЗ		S	85	T3 need to be defined so that cell re-selection reaction time is taken into account.

Parameter	Unit		Cell 1	
		T1	T2	T3
E-UTRA RF Channel			1	
number				
BW <sub>channel</sub>	MHz		10	
OCNG Patterns defined in				
A.3.2.1.1 (OP.2 FDD)			OP.2 FDD	)
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB	7		
SSS_RA	dB	7		
PCFICH_RB	dB	7		
PHICH_RA	dB			
PHICH_RB	dB	0		
PDCCH_RA	dB	7		
PDCCH_RB	dB	1		
PDSCH_RA	dB	]		
PDSCH_RB	dB	7		
OCNG_RA <sup>Note 1</sup>	dB	7		
OCNG_RB <sup>Note 1</sup>	dB	7		

Table A.4.3.1.1.1-2: Cell specific test parameters for cell 1(E-UTRA)

	almin for UTRA eighbour cell	dB		-20		
	evmin for UTRA eighbour cell	dBm		-115		
	Qrxlevmin	dBm		-140		
	$N_{oc}$	dBm/15 kHz		-98		
	RSRP	dBm/15 KHz	-84	-84	-84	
	$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	14	14	14	
$\hat{E}_s/N_{oc}$		dB	14	14	14	
Tres	SelectionEUTRAN	S		0		
Sn	onintrasearch	dB	50			
Thre	sh <sub>x, high</sub> (Note 2)	dB	40			
Propa	gation Condition			AWGN		
Note 1:	CNG shall be used			•		
Note 2 :	a constant total tran for all OFDM symbol his refers to the valu UTRA system inform target cell	ols. ue of Thresh <sub>x, hi</sub>	<sub>gh</sub> which i	s include	d in E-	

Table A.4.3.1.1.1-3: Cell specific test parameters for cell 2(UTRA)

Parameter	Unit	C	ell 2 (UT	RA)
		T1	T2	T3
UTRA RF Channel Number		Channe	2	•
CPICH_Ec/lor	dB	-10		
PCCPCH_Ec/lor	dB	-12		
SCH_Ec/lor	dB	-12		
PICH_Ec/lor	dB	-15		
OCNS_Ec/lor	dB	-0.941		
$\hat{I}_{or}/I_{oc}$	dB	-5	<b>_</b> ∞	11
I <sub>oc</sub>	dBm/3,84 MHz	-70		
CPICH_Ec/lo	dB	-16.19	<b>_</b> 00	-10.33
CPICH_RSCP	dBm	-85	<b>_</b> 00	-69
Propagation Condition		AWGN		
Qqualmin	dB	-20		
Qrxlevmin	dBm	-115		
QrxlevminEUTRA	dBm	-140		
UE_TXPWR_MAX_RACH	dBm	21		
Treselection	S	0		
Sprioritysearch1	dB	62		
Sprioritysearch2	dB	0		
Thresh <sub>serving, low</sub>	dB	36		
Thresh <sub>x, low</sub> (Note 1)	dB	50		
Note 1: his refers to the value	e of Thresh <sub>x, k</sub>	which i	s include	d in
UTRA system inform target cell	ation, and is a	threshold	for the l	E-UTRA

### A.4.3.1.1.2 Test Requirements

The cell reselection delay to higher priority is defined as the time from the beginning of time period T3, to the moment when the UE camps on cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message on cell 2.

The cell re-selection delay to higher priority shall be less than 81 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

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NOTE: The cell re-selection delay to higher priority cell can be expressed as:  $T_{higher\_priority\_search} + T_{evaluateUTRA\_FDD} + T_{SI-UTRA}$ 

### Where:

$T_{higher\_priority\_search}$	See section 4.4.2; 60s is assumed in this test case
$T_{evaluateUTRA-FDD}$	See Table 4.2.2.5.1-1
T <sub>SI-UTRA</sub>	Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 80.48 s for higher priority cell search, allow 81 s for higher priority cell reselection in the test case.

### A.4.3.1.2 EUTRA FDD-UTRA FDD cell reselection: UTRA FDD is of lower priority

### A.4.3.1.2.1 Test Purpose and Environment

This test is to verify the requirement for the EUTRA FDD- UTRA FDD inter-RAT cell reselection requirements specified in section 4.2.2.5.1 when the UTRA cell is of lower priority.

The test scenario comprises of one UTRA FDD and one E-UTRA FDD cells as given in tables A.4.3.1.2.1-1, A.4.3.1.2.1-2 and A.4.3.1.2.1-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. Both UTRA cell 1 and E-UTRA cell 2 are already identified by the UE prior to the start of the test. Cell 2 is of lower priority than cell 1.

# Table A.4.3.1.2.1-1: General test parameters for EUTRA FDD- lower priority UTRA FDD inter RAT cell re-selection test case

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell2	UE shall be forced to cell 2 in the initialisation phase, so that reselection to cell 1 occurs during the first T1 phase
T1 end	Active cells		Cell1	UE shall perform reselection to cell 1 during T1
condition	Neighbour cell		Cell2	
T2 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T2
condition	Neighbour cell		Cell1	
E-UTRA P	RACH configuration		4	As specified in table 5.7.1-2 in TS 36.211
E_UTRA Access Barring		-	Not Sent	No additional delays in random access
Information	1			procedure.
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
T1		S	85	T1 need to be defined so that cell re-selection
				reaction time is taken into account.
T2		S	25	T2 need to be defined so that cell re-selection
				reaction time is taken into account.

Table A.4.3.1.2.1-2: Cell specific test parameters for cell 1 (E-UTRA)

Parameter	Unit		Cell 1	
		T1	T2	
E-UTRA RF Channel			1	
number				
BW <sub>channel</sub>	MHz		10	
OCNG Patterns defined in				
A.3.2.1.1 (OP.2 FDD)		O	P.2 FDD	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB	-		
SSS_RA	dB	1		
PCFICH_RB	dB			
PHICH_RA	dB		-	
PHICH_RB	dB		0	
PDCCH_RA	dB			
PDCCH_RB	dB	1		
PDSCH_RA	dB	]		
PDSCH_RB	dB			
OCNG_RA <sup>Note 1</sup>	dB	]		
OCNG_RB <sup>Note 1</sup>	dB	]		

Qqualmin for UTRA neighbour cell		dB		-20
Qrxlevmin for U neighbour cell	TRA	dBm		-115
Qrxlevmin		dBm		-140
N <sub>oc</sub>		dBm/15 kHz		-98
RSRP		dBm/15 KHz	-86	-102
$\hat{E}_{s}/I_{ot}$		dB	12	-4
$\hat{E}_s/N_{oc}$		dB	12	-4
TreselectionEUTR	RAN	S		0
Snonintrasearch	า	dB	N	lot sent
Thresh <sub>serving, low</sub>		dB		44
Thresh <sub>x, low</sub> (Not	te 2)	dB		42
Propagation Co	ndition		A	AWGN
a cor for al Note 2 : his re	nstant total tran I OFDM symbo efers to the value A system inform	such that both c nsmitted power s bls. ue of Thresh <sub>x, lo</sub> mation, and is a	pectral den w which is in	sity is achieved ncluded in E-

Table A.4.3.1.2.1-3: Cell specific test parameters for cell 2 (UTRA)

Parameter	Unit	Cell 2	(UTRA)
		T1	T2
UTRA RF Channel Number		Channel 2	2
CPICH_Ec/lor	dB	-10	
PCCPCH_Ec/lor	dB	-12	
SCH_Ec/lor	dB	-12	
PICH_Ec/lor	dB	-15	
OCNS_Ec/lor	dB	-0.941	
$\hat{I}_{or}/I_{oc}$	dB	13	13
I <sub>oc</sub>	dBm/3,84 MHz	-70	
CPICH_Ec/lo	dB	-10.21	-10.21
CPICH_RSCP	dBm	-67	-67
Propagation Condition		AWGN	
Qqualmin	dB	-20	
Qrxlevmin	dBm	-115	
QrxlevminEUTRA	dBm	-140	
UE_TXPWR_MAX_RACH	dBm	21	
Treselection	S	0	
Sprioritysearch1	dB	42	
Sprioritysearch2	dB	0	
Thresh <sub>x, high</sub> (Note 1)	dB	48	
Note 1 : his refers to the value in UTRA system info E-UTRA target cell			

### A.4.3.1.2.2 Test Requirements

The cell reselection delay to lower priority is defined as the time from the beginning of time period T2, to the moment when the UE camps on cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message on cell 2.

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The cell re-selection delay to lower priority shall be less than 21 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to lower priority cell can be expressed as:  $T_{evaluateUTRA_FDD} + T_{SI-UTRA}$ 

Where:

$T_{evaluateUTRA-FDD}$	See Table 4.2.2.5.1-1
T <sub>SI-UTRA</sub>	Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 20.48 s for lower priority cell reselection, allow 21 s.

### A.4.3.1.3 EUTRA FDD-UTRA FDD cell reselection in fading propagation conditions: UTRA FDD is of lower priority

#### A.4.3.1.3.1 Test Purpose and Environment

This test is to verify the requirement for the EUTRA FDD- UTRA FDD inter-RAT cell reselection requirements specified in section 4.2.2.5.1 when the UTRA cell is of lower priority, and to verify the robustness of the UE measurement filtering in a fading environment. The E-UTRA cell is in fading propagation conditions and the UTRA cell is in AWGN propagation conditions.

The test scenario comprises of one UTRA FDD and one E-UTRA FDD cells as given in tables A.4.3.1.3.1-1, A.4.3.1.3.1-2 and A.4.3.1.3.1-3. The test consists of four successive time periods, with time duration of T1 T2, T3 and T4 respectively. Both UTRA cell 1 and E-UTRA cell 2 are already identified by the UE prior to the start of the test. Cell 2 is of lower priority than cell 1.

	Parameter Unit Value Comment		Comment	
Initial condition	Active cell		Cell2	UE shall be forced to cell 2 in the initialisation phase, so that reselection to cell 1 occurs during the first T1 phase
T1 end	Active cells		Cell1	UE shall perform reselection to cell 1 during T1
condition	Neighbour cell		Cell2	
T2 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T2
condition	Neighbour cell		Cell1	
E-UTRA P	RACH configuration		4	As specified in table 5.7.1-2 in TS 36.211
E_UTRA A	ccess Barring	-	Not Sent	No additional delays in random access
Information	า			procedure.
DRX cycle	DRX cycle length		1.28	The value shall be used for all cells in the test.
T1		S	<85	T1 need to be defined so that cell re-selection reaction time is taken into account. T1 is terminated when the UE starts to send preambles to cell 1
T2		S	64	The start of T2 is defined as the time when the UE starts to send PRACH preambles to cell 1
Т3		S	<25	T3 need to be defined so that cell re-selection reaction time is taken into account. T3 is terminated when the UE starts to send preambles to cell 1
T4		S	64	The start of T4 is defined as the time when the UE starts to send PRACH preambles to cell 2

# Table A.4.3.1.3.1-1: General test parameters for EUTRA FDD- lower priority UTRA FDD inter RAT cell re-selection test case

Table A.4.3.1.3.1-2: Cell specific test parameters for cell 1 (E-UTRA)

Parameter	Unit	Cell 1					
		T1	T2	T3	T4		
E-UTRA RF Channel number		1					
BW <sub>channel</sub>	MHz	10					
OCNG Patterns defined in A.3							
		OP.2 FE	DD				
PSS_RA	dB	0					
SSS_RA	dB	0					
PCFICH_RB	dB	0					
PHICH_RA	dB	0					
PHICH_RB	dB	0					
PDCCH_RA	dB	0					
PDCCH_RB	dB	0					
PDSCH_RA	dB	0					
PDSCH_RB	dB	0	0				
OCNG_RA <sup>Note 1</sup>	dB	0	0				
OCNG_RB <sup>Note 1</sup>	dB	0					
Qqualmin for UTRA neighbour	dB	-20					
Qrxlevmin for UTRA neighbou	dBm	-115					
Qrxlevmin	dBm	-140					
N <sub>oc</sub>	dBm/15 kHz	-104					
RSRP	dBm/15 KHz	-82	-82	-107	-107		
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	22	22	-3	-3		
$\hat{E}_s/N_{oc}$	dB	22	22	-3	-3		
Treselection <sub>EUTRAN</sub>	S	0					
Snonintrasearch	dB	Not sen	t				
Thresh <sub>serving, low</sub>	dB	44					
Thresh <sub>x, low</sub> (Note 2)	dB	42					
Propagation Condition		ETU70					

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total t spectral density is achieved for all OFDM symbols.
 Note 2 : This refers to the value of Thresh<sub>x, low</sub> which is included in E-UTRA system inforr threshold for the UTRA target cell.

Parameter		Cell	2 (UTRA)						
		T1	T2	T3	T4				
UTRA RF Channel Number		Channel	2						
CPICH_Ec/lor	dB	-10							
PCCPCH_Ec/lor	dB	-12	-12						
SCH_Ec/lor	dB	-12							
PICH_Ec/lor	dB	-15							
OCNS_Ec/lor	dB	-0.941							
$\hat{I}_{or}/I_{oc}$	dB	13	13	13	13				
I <sub>oc</sub>	dBm/3,84 MHz	-70							
CPICH_Ec/lo	dB	-10.21	-10.21	-10.21	-102.1				
CPICH_RSCP	dBm	-67	-67	-67	-67				
Propagation Condition		AWGN							
Qqualmin	dB	-20							
Qrxlevmin	dBm	-115							
QrxlevminEUTRA	dBm	-140							
UE_TXPWR_MAX_RACH	dBm	21							
Treselection	S	0							
Sprioritysearch1	dB	42							
Sprioritysearch2	dB	0							
Thresh <sub>x, high</sub> (Note 1)	dB	44							
				Note 1 : This refers to the value of Thresh <sub>x, high</sub> which is included in UTRA system information, and is a threshold for the E-UTRA target cell					

Table A.4.3.1.3.1-3: Cell specific test parameters for cell 2 (UTR)	A)
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### A.4.3.1.3.2 Test Requirements

The probability of reselection from cell 1to cell 2 during T2 observed during testing shall be less than 10%

The probability of reselection from cell 2 to cell 1 during T4 observed during testing shall be less than 10%

The cell reselection delay to lower priority is defined as the time from the beginning of time period T3, to the moment when the UE camps on cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message on cell 2. In order to evaluate reselection delay, the system simulator first needs to verify that the UE is camped on cell 1 at the start of T3

The cell re-selection delay to lower priority shall be less than 21 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to lower priority cell can be expressed as:  $T_{evaluateUTRA_FDD} + T_{SI-UTRA}$ 

Where:

$T_{evaluateUTRA-FDD}$	See Table 4.2.2.5.1-1
T <sub>SI-UTRA</sub>	Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 20.48 s for lower priority cell reselection, allow 21 s.

### A.4.3.2 E-UTRAN FDD – UTRAN TDD:

### A.4.3.2.1 Test Purpose and Environment

### A.4.3.2.1.1 3.84Mcps TDD option

### A.4.3.2.1.2 1.28Mcps TDD option

This test is to verify the requirement for the E-UTRA FDD to UTRA TDD inter-RAT cell reselection requirements specified in section 4.2.2.5.2 when the UTRA cell is of lower priority.

This test scenario comprised of 1 E-UTRA FDD serving cell, and 1 UTRA TDD cell to be re-selected. Test parameters are given in table A.4.3.2.1.2-1, A.4.3.2.1.2-2, and A.4.3.2.1.2-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. Cell 2 is of lower priority than cell 1.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS36.304.

# Table A.4.3.2.1.2-1: General test parameters for E-UTRA FDD to UTRA (1.28 Mcps TDD OPTION) Cell Re-selection

Para	meter	Unit	Value	Comment
Initial	Active cell		Cell2	UE shall be forced to cell 2 in the initialisation phase, so that
condition				reselection to cell 1 occurs during the first T1 phase
T1 end	Active cell		Cell1	UE shall perform reselection to cell 1 during T1
condition	Neighbour cell		Cell2	1.28 Mcps TDD OPTION cell
T2 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T2
condition	Neighbour cell		Cell1	E-UTRA FDD cell
CP length of o	cell 1		normal	
E-UTRA PRA	E-UTRĂ PRACH		4	As specified in table 5.7.1-2 in TS 36.211
configuration				
Time offset be	etween cells		3 ms	Asynchronous cells
Access Barrin	ng Information	-	Not	No additional delays in random access procedure.
5			sent	
Treselection		S	0	
DRX cycle ler	RX cycle length		1,28	
HCS			Not	
			used	
T1		S	85	T1 need to be defined so that cell re-selection reaction time is
				taken into account.
T2		S	25	

Parameter	Unit	Ce	ell 1		
		T1	T2		
E-UTRA RF Channel			1		
Number					
BW <sub>channel</sub>	MHz		10		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RB	dB				
SSS_RB	dB				
PCFICH_PA	dB				
PHICH_PA	dB				
PHICH_PB	dB	0	0		
PDCCH_PA	dB	]			
PDCCH_PB	dB				
PDSCH_PA	dB				
PDSCH_PB	dB				
OCNG_RA <sup>Note1</sup>	dB				
OCNG_RB <sup>Note1</sup>	dB				
Qrxlevmin	dBm/15kHz	-140	-140		
$N_{oc}$	dBm/15kHz	-	98		
RSRP	dBm/15kHz	-87	-101		
$\hat{E}_{s}/I_{ot}$	dB	11	-3		
Snonintrasearch	dB	Not	sent		
Thresh <sub>serving, low</sub>	dB	46 (-9	94dBm)		
Thresh <sub>x, low</sub> (Note2)	dB	24 (-7	/9dBm)		
Propagation Condition		AV	VGN		
Note 1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.					
Note2: This refers to the UTRA system info target cell	value of Threshx, lo prmation, and is a th				

# Table A.4.3.2.1.2-2: Cell specific test parameters for cell re-selection E-UTRA FDD to UTRA TDD test case (cell 1)

Parameter	Unit	Cell 2 (UTRA)			
Timeslot Number		(			PTS
		T1	T2	T1	T2
UTRA RF Channel Number (Note1)			Channel 2		
PCCPCH_Ec/lor	dB	-3	-3		
DwPCH_Ec/lor	dB			0	0
OCNS_Ec/lor	dB	-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	11	11	11	11
I <sub>oc</sub>	dBm/1.28 MHz	-80			
PCCPCH RSCP	dBm	-72	-72	n.a.	n.a.
Propagation Condition		AWGN			
Qrxlevmin	dBm	-103			
Qoffset1 <sub>s,n</sub>	dB	C1, C2: 0			
Qhyst1 <sub>s</sub>	dB	0			
Thresh <sub>x, high</sub> (Note2)	dB		46 (-94	4dBm)	
Note1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.					
Note2: This refers to the value of Thresh <sub>x, high</sub> which is included in UTRA system information, and is a threshold for the E-UTRA target cell					

# Table A.4.3.2.1.2-3: Cell specific test parameters for cell re-selection E-UTRA FDD to UTRA TDD test case (cell 2)

### A.4.3.2.1.3 7.68Mcps TDD option

### A.4.3.2.1 Test Requirements

### A.4.3.2.1.1 3.84Mcps TDD option

### A.4.3.2.1.2 1.28Mcps TDD option

The cell reselection delay to lower priority is defined as the time from the beginning of time period T2, to the moment when the UE camps on cell 2, and starts to send the SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST message on cell 2.

The cell re-selection delay to lower priority shall be less than 21 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to lower priority cell can be expressed as:  $T_{evaluateUTRA_TDD} + T_{SI-UTRA}$ 

Where:

$T_{evaluateUTRA\_TDD}$	19.2s, See table 4.2.2.5.2-1
T <sub>SI-UTRA</sub>	Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 20.48 s, allow 21 s for lower priority cell reselection in the test case.

A.4.3.2.2.2.3 7.68Mcps TDD option

### A.4.3.3 E-UTRAN TDD – UTRAN FDD:

### A.4.3.3.1 Test Purpose and Environment

This test is to verify the requirement for the EUTRA TDD- UTRA FDD inter-RAT cell reselection requirements specified in section 4.2.2.5.1 when the UTRA cell is of lower priority.

The test scenario comprises of one UTRA FDD and one E-UTRA TDD cells as given in tables A.4.3.3.1-1, A.4.3.3.1-2 and A.4.3.3-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. Both E-UTRA cell 1 and UTRA cell 2 are already identified by the UE prior to the start of the test. Cell 2 is of lower priority than cell 1.

### Table A.4.3.3.1-1: General test parameters for EUTRA TDD- lower priority UTRA FDD inter RAT cell reselection test case

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell2	UE shall be forced to cell 2 in the initialisation phase, so that reselection to cell 1 occurs during the first T1 phase
T1 end	Active cells		Cell1	UE shall perform reselection to cell 1 during T1
condition	Neighbour cell		Cell2	
T2 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T2
condition	Neighbour cell		Cell1	
E-UTRA I	PRACH configuration		53	As specified in table 5.7.1-3 in TS 36.211
Uplink-dov	wnlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special sub	oframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
	RA Access Barring Information	-	Not Sent	No additional delays in random access procedure.
DR	X cycle length	S	1.28	The value shall be used for all cells in the test.
	T1	S	85	T1 need to be defined so that cell re-selection reaction time is taken into account.
	T2	S	25	T2 need to be defined so that cell re-selection reaction time is taken into account.

Parameter	Unit		Cell 1
		T1	T2
E-UTRA RF Channel			1
number			
BW <sub>channel</sub>	MHz		10
OCNG Patterns defined in			
A.3.2.2.2 (OP.2 TDD)		O	P.2 TDD
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB	7	
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB	0	
PHICH_RB	dB		
PDCCH_RA	dB		
PDCCH_RB	dB	1	
PDSCH_RA	dB	1	
PDSCH_RB	dB		
OCNG_RA <sup>Note 1</sup>	dB		
OCNG_RB <sup>Note 1</sup>	dB		

Qqualmin for UTRA neighbour cell	dB		-20		
Qrxlevmin for UTRA neighbour cell	dBm	-115			
Qrxlevmin	dBm		-140		
N <sub>oc</sub>	dBm/15 kHz	-98			
RSRP	dBm/15 KHz	-86	-102		
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	12	-4		
$\hat{E}_s/N_{oc}$	dB	12 -4			
Treselection <sub>EUTRAN</sub>	S	0			
Snonintrasearch	dB	N	lot sent		
Thresh <sub>serving, low</sub>	dB		44		
Thresh <sub>x, low</sub> (Note 2)	dB		42		
Propagation Condition		A	AWGN		
Note 1:OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.Note 2 :This refers to the value of Thresh <sub>x, low</sub> which is included in E- UTRA system information, and is a threshold for the UTRA target cell					

Table A.4.3.3.1-3: Cell specific test parameters for cell 2 (UTRA)

Parameter	Unit	Cell 2 (UTRA)			
		T1	T2		
UTRA RF Channel Number		Channel 2			
CPICH_Ec/lor	dB	-10			
PCCPCH_Ec/lor	dB	-12			
SCH_Ec/lor	dB	-12			
PICH_Ec/lor	dB	-15			
OCNS_Ec/lor	dB	-0.941			
$\hat{I}_{or}/I_{oc}$	dB	13	13		
I <sub>oc</sub>	dBm/3,84 MHz	-70			
CPICH_Ec/lo	dB	-10.21	-10.21		
CPICH_RSCP	dBm	-67	-67		
Propagation Condition		AWGN			
Qqualmin	dB	-20			
Qrxlevmin	dBm	-115			
QrxlevminEUTRA	dBm	-140			
UE_TXPWR_MAX_RACH	dBm	21			
Treselection	S	0			
Sprioritysearch1	dB	42			
Sprioritysearch2	dB	0			
Thresh <sub>x, high</sub> (Note 1) dB 48					
Note 1 : This refers to the value of Thresh <sub>x, high</sub> which is included in UTRA system information, and is a threshold for the E-UTRA target cell					

### A.4.3.3.2 Test Requirements

The cell reselection delay to lower priority is defined as the time from the beginning of time period T2, to the moment when the UE camps on cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message on cell 2.

The cell re-selection delay to lower priority shall be less than 21 s.

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The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to lower priority cell can be expressed as:  $T_{evaluateUTRA FDD} + T_{SI-UTRA}$ 

Where:

T\_evaluateUTRA-FDDSee Table 4.2.2.5.1-1T\_SI-UTRAMaximum repetition period of relevant system info blocks that needs to be received by the<br/>UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 20.48 s for lower priority cell reselection, allow 21 s.

### A.4.3.4 E-UTRAN TDD – UTRAN TDD:

A.4.3.4.1 E-UTRA to UTRA TDD cell re-selection: UTRA is of higher priority

- A.4.3.4.1.1 Test Purpose and Environment
- A.4.3.4.1.1.1 3.84 Mcps TDD option
- A.4.3.4.1.1.2 1.28 Mcps TDD option

This test is to verify the requirement for the E-UTRA TDD to UTRA TDD inter-RAT cell re-selection requirements specified in section 4.2.2.5 when the UTRA cell is of higher priority.

This test scenario comprised of 1 E-UTRA TDD serving cell, and 1 UTRA TDD cell to be re-selected. Test parameters are given in table A.4.3.4.1.1.2-1, A.4.3.4.1.1.2-2, and A.4.3.4.1.1.2-3. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Both UTRA cell 1 and E-UTRA cell 2 are already identified by the UE prior to the start of the test. Cell 2 is of higher priority than cell 1.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS36.304.

Parameter		Unit	Value	Comment
Initial	Active cell		Cell 2	UE shall be forced to cell 2 in the initialisation phase, so that
condition				reselection to cell 1 occurs during the first T1 phase
T1 end	Active cell		Cell1	UE shall perform reselection to cell 1 during T1
condition	Neighbour cell		Cell2	1.28 Mcps TDD OPTION cell
T3 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T3
condition	Neighbour cell		Cell1	E-UTRA TDD cell
Uplink-down configuratior			1	As specified in table 4.2.2 in TS 36.211
Special subf configuratior			6	As specified in table 4.2.1 in TS 36.211
PRACH con cell 1	PRACH configuration of cell 1		53	As specified in table 4.7.1-3 in TS 36.211
CP length of	f cell 1		Normal	
	between cells		3 ms	Asynchronous cells
Access Barr	ing	-	Not	No additional delays in random access procedure.
Information			sent	
Treselection		S	0	
DRX cycle le	ength	S	1,28	
HCS			Not used	
T1		S	25	T1 need to be defined so that cell re-selection reaction time is taken into account.
T2		S	5 During T2, cell 2 shall be powered off, and during the c the scrambling code shall be changed, The intention is ensure that cell 2 has not been detected by the UE price start of period T3	
Т3	3		85	T3 need to be defined so that cell re-selection reaction time is taken into account.

# Table A.4.3.4.1.1.2-1: General test parameters for E-UTRAN to UTRAN (1.28 Mcps TDD OPTION) Cell Re-selection

# Table A.4.3.4.1.1.2-2: Cell specific test parameters for cell re-selection E-UTRA TDD to UTRA TDD test case (cell 1)

Parameter	Unit		Cell 1		
		T1	T2	T3	
E-UTRA RF Channel			1		
Number					
BW <sub>channel</sub>	MHz		10		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RB	dB				
SSS_RB	dB				
PCFICH_PA	dB				
PHICH_PA	dB				
PHICH_PB	dB	0	0	0	
PDCCH_PA	dB				
PDCCH_PB	dB				
PDSCH_PA	dB				
PDSCH_PB	dB				
OCNG_RA <sup>Note 1</sup>	dB				
OCNG_RB <sup>Note 1</sup>	dB				

Qrxlevmin	dBm/15kHz	-140	-140	-140		
$N_{oc}$	dBm/15kHz	-98				
RSRP	dBm/15kHz	-87	-87	-87		
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	11 11 11				
Thresh <sub>x, high</sub> (Note2)	dB	24(-79dBm)				
Propagation Condition		AWGN				
Note1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.						
Note2: This refers to the value of Thresh <sub>x, high</sub> which is included in E-UTRA system information, and is a threshold for the UTRA target cell						

## Table A.4.3.4.1.1.2-3: Cell specific test parameters for cell re-selection E-UTRA TDD to UTRA TDD test case (cell 2)

Parameter	Unit	Cell 2 (UTRA)					
Timeslot Number		0 DwPTS					
		T1	T2	T3	T1	T2	T3
UTRA RF Channel Number (Note1)		Channel 2					
PCCPCH_Ec/lor	dB	-3	-3	-3			
DwPCH_Ec/lor	dB				0	0	0
OCNS_Ec/lor	dB	-3	-3	-3			
$\hat{I}_{or}/I_{oc}$	dB	-3	-inf	11	-3	-inf	11
I <sub>oc</sub>	dBm/1.28 MHz	-80					
PCCPCH RSCP	dBm	-86 -inf -72 n.a.					
Propagation Condition				AW	'GN		
Qrxlevmin	dBm			-1	03		
Qoffset1 <sub>s,n</sub>	dB			C1, 0	C2: 0		
Qhyst1 <sub>s</sub>	dB			(	)		
Snonintrasearch	dB			Not	sent		
Thresh <sub>serving, low</sub>	dB			24 (-7	9dBm)		
Thresh <sub>x, low</sub> (Note2)	dB				4dBm)		
Note1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.							
Note2: This refers to the value of Thresh <sub>x, low</sub> which is included in UTRA system information, and is a threshold for the E-UTRA target cell							

A.4.3.4.1.1.3 7.68 Mcps TDD option

- A.4.3.4.1.2 Test Requirements
- A.4.3.4.1.2.1 3.84 Mpcs TDD option
- A.4.3.4.1.2.2 1.28 Mpcs TDD option

The cell reselection delay to higher priority is defined as the time from the beginning of time period T2, to the moment when the UE camps on cell 2, and starts to send the SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST message on cell 2.

The cell re-selection delay to higher priority shall be less than 81 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

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NOTE: The cell re-selection delay to higher priority cell can be expressed as:  $T_{higher\_priority\_search} + T_{evaluateUTRA\_TDD} + T_{SI\_UTRA}$ ,

### Where:

$T_{higher\_priority\_search}$	60s, See section 4.2.2.5
$T_{evaluateUTRA_TDD}$	19.2s, See Table 4.2.2.5.2-1
T <sub>SI_UTRA</sub>	Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 80.48 s, allow 81 s for higher priority cell reselection in the test case.

A.4.3.4.1.2.3	7.68 Mpcs TDD option
A.4.3.4.2	E-UTRA to UTRA TDD cell re-selection: UTRA is of lower priority
A.4.3.4.2.1	Test Purpose and Environment
A.4.3.4.2.1.1	3.84 Mcps TDD option

A.4.3.4.2.1.2 1.28 Mcps TDD option

This test is to verify the requirement for the E-UTRA TDD to UTRA TDD inter-RAT cell re-selection requirements specified in section 4.2.2.5 when the UTRA cell is of lower priority.

This test scenario comprised of 1 E-UTRA TDD serving cell, and 1 UTRA TDD cell to be re-selected. Test parameters are given in table A.4.3.4.2.1.2-1, A.4.3.4.2.1.2-2, and A.4.3.4.2.1.2-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. Cell 2 is of lower priority than cell 1.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS36.304.

# Table A.4.3.4.2.1.2-1: General test parameters for E-UTRAN to UTRAN (1.28 Mcps TDD OPTION) Cell Re-selection

Parameter		Unit	Value	Comment
Initial	Active cell		Cell 2	UE shall be forced to cell 2 in the initialisation phase, so that
condition				reselection to cell 1 occurs during the first T1 phase
T1 end	Active cell		Cell1	UE shall perform reselection to cell 1 during T1
condition	Neighbour cell		Cell2	1.28 Mcps TDD OPTION cell
T2 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T2
condition	Neighbour cell		Cell1	E-UTRA TDD cell
Uplink-downlin of cell 1	k configuration		1	As specified in table 4.2.2 in TS 36.211
	Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
PRACH config	uration of cell 1		53	As specified in table 4.7.1-3 in TS 36.211
CP length of ce	ell 1		Normal	
Time offset bet	ween cells		3 ms	Asynchronous cells
Access Barring	Information	-	Not sent	No additional delays in random access procedure.
Treselection	Treselection		0	
DRX cycle leng	gth	S	s 1,28	
HCS			Not	
			used	
T1	T1		85	
T2		S	25	

Parameter	Unit	Ce	ell 1			
		T1	T2			
E-UTRA RF Channel			1			
Number						
BW <sub>channel</sub>	MHz	1	0			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RB	dB					
SSS_RB	dB					
PCFICH_PA	dB					
PHICH_PA	dB					
PHICH_PB	dB	0	0			
PDCCH_PA	dB					
PDCCH_PB	dB					
PDSCH_PA	dB					
PDSCH_PB	dB					
OCNG_RA <sup>Note1</sup>	dB					
OCNG_RB <sup>Note1</sup>	dB					
Qrxlevmin	dBm/15kHz	-140	-140			
$N_{oc}$	dBm/15kHz	-9	98			
RSRP	dBm/15kHz	-87	-101			
$\hat{E}_{s}/I_{ot}$	dB	11	-3			
Snonintrasearch	dB	Not	sent			
Thresh <sub>serving, low</sub>	dB	46 (-9	4dBm)			
Thresh <sub>x, low</sub> (Note2)	dB	24 (-7	9dBm)			
Propagation Condition		AW	/GN			
Note1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.						
Note2: This refers to the value of Thresh <sub>x, low</sub> which is included in E-UTRA system information, and is a threshold for the UTRA target cell						

# Table A.4.3.4.2.1.2-2: Cell specific test parameters for cell re-selection E-UTRA TDD to UTRA TDD test case (cell 1)

Parameter	Unit	Cell 2 (UTRA)				
Timeslot Number		0		DwPTS		
		T1	T2	T1	T2	
UTRA RF Channel Number (Note1)		Channel 2				
PCCPCH_Ec/lor	dB	-3	-3			
DwPCH_Ec/lor	dB			0	0	
OCNS_Ec/lor	dB	-3	-3			
$\hat{I}_{or}/I_{oc}$	dB	11	11	11	11	
$I_{oc}$	dBm/1.28 MHz	-80				
PCCPCH RSCP	dBm	-72	-72	n.a.	n.a.	
Propagation Condition		AWGN				
Qrxlevmin	dBm		-1	03		
Qoffset1 <sub>s,n</sub>	dB		C1, 0	C2: 0		
Qhyst1 <sub>s</sub>	dB		(	)		
Thresh <sub>x, high</sub> (Note2)	dB		46 (-9	4dBm)		
Note1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.						
Note2: This refers to the value of Thresh <sub>x, high</sub> which is included in UTRA system information, and is a threshold for the E-UTRA target cell						

## Table A.4.3.4.2.1.2-3: Cell specific test parameters for cell re-selection E-UTRA TDD to UTRA TDD test case (cell 2)

A.4.3.4.2.1.3 7.68 Mcps TDD option

- A.4.3.4.2.2 Test Requirements
- A.4.3.4.2.2.1 3.84 Mpcs TDD option
- A.4.3.4.2.2.2 1.28 Mpcs TDD option

The cell reselection delay to lower priority is defined as the time from the beginning of time period T2, to the moment when the UE camps on cell 2, and starts to send the SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST message on cell 2.

The cell re-selection delay to lower priority shall be less than 21 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to lower priority cell can be expressed as: T<sub>evaluateUTRA TDD</sub> + T<sub>SI UTRA</sub>,

Where:

T\_evaluateUTRA\_TDD19.2s, See Table 4.2.2.5.2-1T\_{SI\_UTRA}Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 20.48 s, allow 21 s for lower priority cell reselection in the test case.

A.4.3.4.2.2.3 7.68 Mpcs TDD option

## A.4.4 E-UTRAN to GSM Cell Re-Selection

### A.4.4.1 E-UTRAN FDD – GSM:

### A.4.4.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to GSM cell re-selection delay reported in section 4.2.2.5.

This scenario implies the presence of 1 E-UTRAN serving cell, and 1 GSM cell to be re-selected. The UE is requested to monitor neighbouring cells on 1 E-UTRA carrier and 12 GSM cells. Test parameters are given in Table, A.4.4.1-1, A.4.4.1-2, A.4.4.1-3. E-UTRA FDD cell (Cell 1) and GSM cell (cell 2) shall belong to different Location Areas. The test comprises two successive time periods, T1 and T2. During initialization before the start of the test, the UE is camped on cell 1. By the end of T1, the UE has identified BSIC on the GSM BCCH carrier of cell 2 but the signal levels do not meet the reselection criterion during T1. At the start of T2, the signal levels change such that cell 2 satisfies reselection criterion. The GSM layer is configured at a lower priority than the serving E-UTRA FDD layer.

### Table A.4.4.1-1: General test parameters for E-UTRA FDD GSM cell re-selection test case

	Parameter	Unit	Value	Comment	
Initial condition	Active cell		Cell1	UE shall be forced to cell 1 in the initialisation phase and shall be able to detect and monitor the 4 strongest GSM BCCH carriers in T1. Cell 1 is an E-UTRA FDD cell.	
Final condition	Neighbour cell		Cell2	UE shall perform reselection to cell 2 during T2. Cell 2 is a GSM cell.	
E-UTRA R	F Channel Number		1	1 E-UTRA FDD carrier frequency	
GSM ARF	CN		1	12 GSM BCCH carriers are used	
PRACH co	onfiguration		4	As specified in table 5.7.1-2 in TS 36.211	
Access Barring Information		-	Not Sent	No additional delays in random access procedure.	
CP length	of cell 1		Normal		
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.	
T1		S	35	T1 need to be defined so that cell re-selection reaction time is taken into account.	
T2		S	35	T2 need to be defined so that the higher layer search periodicity and cell re-selection reaction time are taken into account.	
Propagatio	n channel		AWGN		

 Table A.4.4.1-2: Cell-specific test parameters for Cell 1 – E-UTRA FDD cell

Parameter	Unit	Cell 1		
		T1	T2	
E-UTRA RF Channel		1		
number				
BW <sub>channel</sub>	MHz		10	
OCNG Patterns defined in				
A.3.2.1.1 (OP.2 FDD)		0	P.2 FDD	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB		0	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB	]		
OCNG_RA <sup>Note 1</sup>	dB	]		
	dB			

Qrxlevmin	dBm	-140			
N <sub>oc</sub>	dBm/15 kHz	-98			
RSRP	dBm/15 KHz	-89	-102		
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	9	-4		
$\hat{E}_s/N_{oc}$	dB	9	-4		
<b>Treselection</b> <sub>EUTRAN</sub>	S	0			
Snonintrasearch	dB	Not sent			
Thresh <sub>serving, low</sub>	dB	44			
Thresh <sub>x, low</sub> (Note 2)	dB	24			
Note 1: OCNG shall be used such that both cells are fully allocated and a constant					
total transmitted power spectral density is achieved for all OFDM symbols. Note 2: This refers to Thresh <sub>x, low</sub> which is included in E-UTRA system information,					
and is a threshold for GSM target cell.					

Parameter	Unit	Cell 2 (GSM)		
Farameter	Onic	T1	T2	
Absolute RF Channel Number		ARFCN <sup>2</sup>	1	
RXLEV	dBm	-90	-75	
RXLEV_ACCESS_MIN	dBm	-104		
MS_TXPWR_MAX_CCH	dBm	33		

### A.4.4.1.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RR Channel Request message for location update to Cell 2.

The cell re-selection delay shall be less than  $26 \text{ s} + T_{BCCH}$ , where  $T_{BCCH}$  is the maximum time allowed to read BCCH data from GSM cell [8].

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:  $4*T_{measureGSM} + T_{BCCH}$ , where:

T <sub>measureGSM</sub>	See Table 4.2.2.5.3-1 in section 4.2.2.5.3.
T <sub>BCCH</sub>	Maximum time allowed to read BCCH data from GSM cell [8]. According to [8], the maximum time allowed to read the BCCH data, when being synchronized to a BCCH carrier, is 1.9 s.

This gives a total of 25.6 s +  $T_{BCCH}$ , allow 26 s +  $T_{BCCH}$  in the test case.

### A.4.4.2 E-UTRAN TDD – GSM:

### A.4.4.2.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN TDD to GSM cell re-selection delay reported in section 4.2.2.5.

This scenario implies the presence of 1 E-UTRAN serving cell, and 1 GSM cell to be re-selected. The UE is requested to monitor neighbouring cells on 1 E-UTRA carrier and 12 GSM cells. Test parameters are given in Table, A.4.4.2-1, A.4.4.2-2, A.4.4.2-3. E-UTRA TDD cell (Cell 1) and GSM cell (cell 2) shall belong to different Location Areas. The test comprises two successive time periods, T1 and T2. During initialization before the start of the test, the UE is

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camped on cell 1. By the end of T1, the UE has identified BSIC on the GSM BCCH carrier of cell 2 but the signal levels do not meet the reselection criterion during T1. At the start of T2, the signal levels change such that cell 2 satisfies reselection criterion. The GSM layer is configured at a lower priority than the serving E-UTRA TDD layer.

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	UE shall be forced to cell 1 in the initialisation phase and shall be able to detect and monitor the 4 strongest GSM BCCH carriers in T1. Cell 1 is an E-UTRA TDD cell.
Final condition	Neighbour cell		Cell2	UE shall perform reselection to cell 2 during T2. Cell 2 is a GSM cell.
E-UTRA R	F Channel Number		1	1 E-UTRA TDD carrier frequency
GSM ARFO	CN		1	12 GSM BCCH carriers are used
Uplink-dow cell 1	nlink configuration of		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration for cell 1			6	As specified in table 4.2.1 in TS 36.211
PRACH configuration for cell 1			4	As specified in table 5.7.1-2 in TS 36.211
CP length	of cell 1		Normal	
Access Barring Information		-	Not Sent	No additional delays in random access procedure.
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
T1		S	35	T1 need to be defined so that cell re-selection reaction time is taken into account.
Т2	T2		35	T2 need to be defined so that the higher layer search periodicity and cell re-selection reaction time are taken into account.
Propagatio	n channel		AWGN	

Table A.4.4.2-1: General test parameters for E-UTRA TDD GSM cell re-selection test case

Parameter	Unit	Cell 1		
		T1	T2	
E-UTRA RF Channel			1	
number				
BW <sub>channel</sub>	MHz		10	
OCNG Patterns defined in				
A.3.2.1.1 (OP.2 TDD)		O	P.2 TDD	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB		0	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB	]		
PDSCH_RB	dB	]		
OCNG_RA <sup>Note 1</sup>	dB	]		
OCNG_RB <sup>Note 1</sup>	dB			

Qrxlevmin	dBm	-140			
N <sub>oc</sub>	dBm/15 kHz	-98			
RSRP	dBm/15 KHz	-89	-102		
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	9	-4		
$\hat{E}_s/N_{oc}$	dB	9	-4		
<b>Treselection</b> <sub>EUTRAN</sub>	S	0			
Snonintrasearch	dB	Not sent			
Thresh <sub>serving, low</sub>	dB	44			
Thresh <sub>x, low</sub> (Note 2)	dB	24			
Note 1: OCNG shall be used such that both cells are fully allocated and a					
constant total transmitted power spectral density is achieved for					
all OFDM symbols.					
Note 2: This refers to Thresh <sub>x, low</sub> which is included in E-UTRA system					
information, and is a threshold for GSM target cell.					

Parameter	Unit	Cell 2 (GSM)	
	Onit	T1	T2
Absolute RF Channel Number		ARFCN <sup>2</sup>	1
RXLEV	dBm	-90	-75
RXLEV_ACCESS_MIN	dBm	-104	
MS_TXPWR_MAX_CCH	dBm	33	

### A.4.4.2.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RR Channel Request message for location update to Cell 2.

The cell re-selection delay shall be less than  $26 \text{ s} + T_{BCCH}$ , where  $T_{BCCH}$  is the maximum time allowed to read BCCH data from GSM cell [8].

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:  $4* T_{measureGSM} + T_{BCCH}$ , where:

T <sub>measureGSM</sub>	See Table 4.2.2.5.3-1 in section 4.2.2.5.3.
T <sub>BCCH</sub>	Maximum time allowed to read BCCH data from GSM cell [8]. According to [8], the maximum time allowed to read the BCCH data, when being synchronized to a BCCH carrier, is 1.9 s.

This gives a total of 25.6 s +  $T_{BCCH}$ , allow 26 s +  $T_{BCCH}$  in the test case.

### A.4.5 E-UTRAN to HRPD Cell Re-Selection

### A.4.5.1 E-UTRAN FDD – HRPD

### A.4.5.1.1 E-UTRAN FDD – HRPD Cell Reselection: HRPD is of Lower Priority

### A.4.5.1.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD- HRPD inter-RAT cell reselection requirements specified in section 4.2.2.5.4 when the HRPD cell is of lower priority.

The test scenario comprises of one HRPD and one E-UTRAN FDD cells as given in tables A.4.5.1.1.1-1, A.4.5.1.1.1-2 and A.4.5.1.1.1-3.

The test consists of two successive time periods, with time duration of T1 and T2 respectively. Both E-UTRAN FDD cell 1 and HRPD cell 2 are already identified by the UE prior to the start of the test. At T1 the UE is camped on to cell 1. Cell 2 is of lower priority than cell 1. Cell 1 and cell 2 shall belong to different tracking areas.

### Table A.4.5.1.1.1-1: General Test Parameters for E-UTRAN FDD - lower priority HRPD Cell Reselection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell 1	E-UTRAN FDD cell
	Neighbour cell		Cell 2	HRPD cell
Final condition	Active cell		Cell 2	HRPD cell is selecting during T2
DRX cycle length		S	1.28	
E-UTRA FDD RF (	Channel Number		1	Only one FDD carrier frequency is used.
E-UTRA FDD Cha	nnel Bandwidth (BW <sub>channel</sub> )	MHz	10	
HRPD RF Channel Number			1	Only one HRPD carrier frequency is used.
E-UTRA FDD PRACH configuration			4	As specified in table 5.7.1-2 in TS 36.211
E_UTRA FDD Access Barring Information		-	Not Sent	No additional delays in random access procedure.
T1		S	30	
T2		S	30	

Parameter	Unit	Cell 1		
		T1	T2	
E-UTRA RF Channel number		1		
BW <sub>channel</sub>	MHz	10		
OCNG Patterns defined in A.3.2.1.1				
(OP.2 FDD)		OP.2	FDD	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	(	)	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA <sup>Note 1</sup>	dB			
OCNG_RB <sup>Note 1</sup>	dB			
N <sub>oc</sub>	dBm/15 kHz	-98		
RSRP	dBm/15 KHz	-89	-100	
$\hat{E}_{s}/I_{ot}$	dB	9	-2	
$\hat{E}_s/N_{oc}$	dB	9	-2	
Treselection <sub>EUTRAN</sub>	S	(	)	
Snonintrasearch	dB	Not	sent	
cellReselectionPriority	-	1		
Qrxlevmin	dBm	-140		
Qrxlevminoffset	dB	0		
Pcompensation	dB	(	)	
S <sub>ServingCell</sub>	dB	51	40	
Thresh <sub>serving, low</sub>	dB	4	3	
Propagation Condition		AWGN		
Note 1: CNG shall be used such that both cells are fully allocated and a constant total transmitted				
power spectral density is achi	eved for all OFD	VI symbols.		

### Table A.4.5.1.1.1-2: Cell Specific Test Parameters for E-UTRAN FDD (Cell # 1)

Parameter	Unit	Cell 2		
		T1	T2	
HRPD RF Channel Number		1		
$\frac{\text{Control}  \text{E}_{\text{b}}}{\text{N}_{\text{t}}}  \text{(38.4 kbps)}$	dB	21		
$\frac{\text{Control}  \text{E}_{\text{b}}}{\text{N}_{\text{t}}} \text{ (76.8 kbps)}$	dB	18		
$\hat{I}_{or}/I_{oc}$	dB	0	0	
I <sub>oc</sub>	dBm/ 1.2288 MHz	-55		
CDMA2000 HRPD Pilot Strength	dB	-3	-3	
Propagation Condition		AWGN		
S <sub>nonServingCell,x</sub>		-6		
Treselection	S	0		
hrpd-CellReselectionPriority	-	0		
Thresh <sub>x, low</sub>		-14		

Table A.4.5.1.1.1-3: Cell Specific Te	est Parameters for HRPD (cell # 2)
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### A.4.5.1.1.2 Test Requirements

The cell reselection delay to lower priority is defined as the time from the beginning of time period T2, to the moment when the UE camps on cell 2 and starts to send access probe preambles on the Access Channel on cell 2.

The cell re-selection delay to the lower priority cell 2 shall be less than 21 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to lower priority cell can be expressed as: T<sub>evaluateHRPD</sub> + T<sub>SI-HRPD</sub>

Where:

T\_evaluatHRPDSee Table 4.2.2.5.4-1T\_SI-HRPDMaximum repetition period of relevant system information blocks that need to be received<br/>by the UE to camp on cell 2; 1704 ms is assumed in this test case.

This gives a total of 20.904 s for the lower priority cell reselection, allow 21 s in the test case.

### A.4.6 E-UTRAN to cdma2000 1X Cell Re-Selection

### A.4.6.1 E-UTRAN FDD – cdma2000 1X

A.4.6.1.1 E-UTRAN FDD – cdma2000 1X Cell Reselection: cdma2000 1X is of Lower Priority

### A.4.6.1.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD- cdma2000 1X inter-RAT cell reselection requirements specified in section 4.2.2.5.5 when the cdma2000 1X cell is of lower priority.

The test scenario comprises of one cdma2000 1X and one E-UTRAN FDD cells as given in tables A.4.6.1.1.1-1, A.4.6.1.1.1-2 and A.4.6.1.1.1-3.

The test consists of two successive time periods, with time duration of T1 and T2 respectively. Both E-UTRAN FDD cell 1 and cdma2000 1X cell 2 are already identified by the UE prior to the start of the test. At T1 the UE is camped on to cell 1. Cell 2 is of lower priority than cell 1. Cell 1 and cell 2 shall belong to different tracking areas.

### Table A.4.6.1.1.1-1: General Test Parameters for E-UTRAN FDD - lower priority cdma2000 1X Cell Reselection

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell 1	E-UTRAN FDD cell
	Neighbour cell		Cell 2	cdma2000 1X cell
Final condition	Active cell		Cell 2	cdma2000 1X cell is selecting during T2
DRX cycle length		S	1.28	
E-UTRA FDD RF Channel Number			1	Only one FDD carrier frequency is used.
E-UTRA FDD Channel Bandwidth (BW channel)		MHz	10	
cdma2000 1X RF Channel Number			1	Only one cdma2000 1X carrier frequency is used.
E-UTRA FDD PRACH configuration			4	As specified in table 5.7.1-2 in TS 36.211
E_UTRA FDD Access Barring Information		-	Not Sent	No additional delays in random access procedure.
T1		S	30	
T2		S	30	

Parameter	Unit	ll 1		
		T1 T2		
E-UTRA RF Channel number		-		
BW <sub>channel</sub>	MHz	10		
OCNG Patterns defined in A.3.2.1.1				
(OP.2 FDD)		OP.2	FDD	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	(	)	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA <sup>Note 1</sup>	dB			
OCNG_RB <sup>Note 1</sup>	dB			
			0	
$N_{oc}$ Note 2	dBm/15 kHz	-9	18	
RSRP <sup>Note 3</sup>	dBm/15 KHz	-89	-100	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	9	-2	
$\hat{E}_s/N_{oc}$	dB	9	-2	
Treselection <sub>EUTRAN</sub>	S	(	)	
Snonintrasearch	dB	Not	sent	
cellReselectionPriority	-	1		
Qrxlevmin	dBm	-14	40	
Qrxlevminoffset	dB	(	)	
Pcompensation	dB	(	)	
S <sub>Serving</sub> Cell	dB	51	40	
Thresh <sub>serving, low</sub>	dB	4	-	
Propagation Condition	Propagation Condition AWGN			
<ul> <li>Note 1: CNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.</li> <li>Note 2: Iterference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for</li> </ul>				
<ul> <li>Note 3: SRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.</li> </ul>				

### Table A.4.6.1.1.1-2: Cell Specific Test Parameters for E-UTRAN FDD (Cell # 1)

Parameter	Unit	Cell	2	
		T1	T2	
cdma2000 1X RF Channel Number		1		
$\frac{\text{Pilot}  \text{E}_{c}}{\text{I}_{\text{or}}}$	dB	[-7]		
Sync E <sub>c</sub> I <sub>or</sub>	dB	[-16]		
$\frac{\text{Paging}  \text{E}_{c}}{\text{I}_{\text{or}}} \text{ (4.8 kbps)}$	dB	[-12]		
$\hat{I}_{or}/I_{oc}$	dB	[0] [0]		
I <sub>oc</sub>	dBm/ 1.2288 MHz	-55		
CDMA2000 1xRTT Pilot Strength	dB	[-10] [-10]		
Propagation Condition		AWGN		
SnonServingCell,x		[-20]		
Treselection	S	0		
oneXRTT-CellReselectionPriority	-	0		
Thresh <sub>x, low</sub>		[-28]		

Table A.4.6.1.1.1-3: Cell Specific Test Parameters for cdma2000 1X (cell # 2)

### A.4.6.1.1.2 Test Requirements

The cell reselection delay to lower priority is defined as the time from the beginning of time period T2, to the moment when the UE camps on cell 2 and starts to send access probe preambles on the Access Channel on cell 2.

The cell re-selection delay to the lower priority cell 2 shall be less than 21 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to lower priority cell can be expressed as:  $T_{evaluatecdma2000 1X} + T_{SI-cdma2000 1X}$ 

Where:

Tevaluatcdma2000 1X	See Table 4.2.2.5.5-1
T <sub>SI-cdma2000 1X</sub>	Maximum repetition period of relevant system information blocks that need to be received by the UE to camp on cell 2; 1280 ms is assumed in this test case.

This gives a total of 20.48 s for the lower priority cell reselection, allow 21 s in the test case.

## A.5 E-UTRAN RRC CONNECTED Mode Mobility

### A.5.1 E-UTRAN Handover

### A.5.1.1 E-UTRAN FDD - FDD Intra frequency handover

### A.5.1.1.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-FDD intra frequency handover requirements specified in section 5.1.2.1.

The test scenario comprises of 1 E-UTRA FDD carrier and 2 cells as given in tables A.5.1.1.1-1 and A.5.1.1.1-2. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

E-UTRAN shall send a RRC message implying handover to cell 2. The RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event A3. T3 is defined as the end of the last TTI containing the RRC message implying handover.

Parameter		Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters			DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chan	nel Number		1	Only one FDD carrier frequency is used.
Channel Bandwidt	h (BW <sub>channel</sub> )	MHz	10	
A3-Offset		dB	0	
Hysteresis		dB	0	
Time To Trigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX				OFF
CP length			Normal	
Access Barring Inf	ormation	-	Not Sent	No additional delays in random
				access procedure.
PRACH configuration			4	As specified in table 5.7.1-2 in TS 36.211
Time offset betwee	en cells		3 ms	Asynchronous cells
T1		S	5	
T2		S	≤5	
Т3		S	1	

Parameter	Unit	Cell 1			Cell 2				
		T1	T2	Т3	T1	T2	T3		
E-UTRA RF Channel			1	•	1				
Number									
BW <sub>channel</sub>	MHz		10			10			
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 FDD	OP.2 FDD	OP.1 FDD		
defined in A.3.2.1.1		FDD	FDD	FDD					
(OP.1 FDD) and in									
A.3.2.1.2 (OP.2 FDD)									
PBCH_RA	dB								
PBCH_RB	dB								
PSS_RA	dB								
SSS_RA	dB								
PCFICH_RB	dB								
PHICH_RA	dB								
PHICH_RB	dB		0			0			
PDCCH_RA	dB		0			0			
PDCCH_RB	dB								
PDSCH_RA	dB								
PDSCH_RB	dB								
OCNG_RA <sup>Note 1</sup>	dB								
OCNG_RB <sup>Note 1</sup>	dB								
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	8	-3.3	-3.3	-Infinity	2.36	2.36		
$N_{oc}$ Note 2	dBm/15 KHz				-98				
$\hat{E}_s/N_{oc}$	dB	8	8	8	- Infinity	11	11		
RSRP Note 3	dBm/15 KHz	-90	-90	-90	- Infinity	-87	-87		
Propagation Condition AWGN						•			
Note 1: CNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. Note 2: nterference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time									
and shall be model	and shall be modelled as AWGN of appropriate power for $N_{_{oc}}$ to be fulfilled.								
			Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters						

## Table A.5.1.1.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra frequency handover test case

### A.5.1.1.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 50 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T<sub>interrupt</sub>, where:

RRC procedure delay = 15 ms and is specified in section 11.2 in [2].

 $T_{interrupt} = 35$  ms in the test;  $T_{interrupt}$  is defined in section 5.1.2.1.2.

This gives a total of 50 ms.

### A.5.1.2 E-UTRAN TDD - TDD Intra frequency handover

### A.5.1.2.1 Test Purpose and Environment

This test is to verify the requirement for the TDD-TDD intra frequency handover requirements specified in section 5.2.2.4.

The test scenario comprises of 1 E-UTRA TDD carrier and 2 cells as given in tables A.5.1.2.1-1 and A.5.1.2.1-2. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

E-UTRAN shall send a RRC message implying handover to cell 2. The RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event A3. T3 is defined as the end of the last TTI containing the RRC message implying handover.

Table A.5.1.2.1-1: General test parameters for E-UTRAN TDD-TDD Intra frequency handover test case
---

Parameter		Unit	Value	Comment
			DL Reference Measurement	
PDSCH parameters			Channel R.0 TDD	As specified in section A.3.1.1.2
			DL Reference Measurement	
PCFICH/PDCCHPHICH parameters			Channel R.6 TDD	As specified in section A.3.1.2.2
Initial conditions			Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chanr	nel Number		1	Only one TDD carrier frequency is used.
Channel Bandwidtl	n (BW <sub>channel</sub> )	MHz	10	
A3-Offset	<u>_</u>	dB	0	
Hysteresis		dB	0	
Time To Trigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX				OFF
CP length			Normal	
Access Barring Information		-	Not Sent	No additional delays in random access procedure.
Special subframe configuration			6	As specified in table 4.2-1 in TS 36.211
Uplink-downlink configuration			1	As specified in table 4.2-2 in TS 36.211
PRACH configuration index			53	As specified in table 5.7.1-3 in TS 36.211
Time offset between cells			3 μs	Synchronous cells
T1		S	5	
T2		S	≤5	
Т3		S	1	

Parameter	Unit	Cell 1			Cell 2		
	Γ	T1	T2	Т3	T1	T2	Т3
E-UTRA RF Channel			1		1		
Number							
BW <sub>channel</sub>	MHz		10			10	-
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 TDD	OP.2 TDD	OP.1 TDD
defined in A.3.2.1.1		TDD	TDD	TDD			
(OP.1 TDD) and in							
A.3.2.1.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB		0			0	
PDCCH_RA	dB		0			0	
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA <sup>Note 1</sup>	dB						
OCNG_RB <sup>Note 1</sup>	dB						
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	8	-3.3	-3.3	-Infinity	2.36	2.36
$N_{_{oc}}$ Note 2	dBm/15 KHz	-98					
$\hat{E}_s / N_{oc}$	dB	8	8	8	-Infinity	11	11
RSRP Note 3	dBm/15 KHz	-90	-90	-90	- Infinity	-87	-87
Propagation Condition		AWGN					
Note 1: OCNG shall be use	d such that both ce	lls are fully al	located and a	constant total	transmitted powe	er spectral densi	ty is achieved

## Table A.5.1.2.1-2: Cell specific test parameters for E-UTRAN TDD-TDD Intra frequency handover test case

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time

and shall be modelled as AWGN of appropriate power for  $\,N_{_{oc}}\,$  to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

### A.5.1.2.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 50 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T<sub>interrupt</sub>, where:

RRC procedure delay = 15 ms and is specified in section 11.2 in [2].

 $T_{interrupt} = 35$  ms in the test;  $T_{interrupt}$  is defined in section 5.2.2.4.2.

This gives a total of 50 ms.

### A.5.1.3 E-UTRAN FDD – FDD Inter frequency handover

### A.5.1.3.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-FDD inter-frequency handover requirements specified in section 5.1.2.1.

The test scenario comprises of two E-UTRA FDD carriers and one cell on each carrier as given in tables A.5.1.3.1-1 and A.5.1.3.1-2. PDCCHs indicating new transmissions should be sent continuously to ensure that the UE would not enter the DRX state. The test consists of three successive time periods, with time durations of T1, T2 and T3

respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-frequency monitoring.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event A3. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE.

Table A.5.1.3.1-1: General test parameters for E-UTRAN FDD-FDD Inter frequency handover test case
---

Parameter		Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters			DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Initial conditions Active cell			Cell 1	Cell 1 is on RF channel number 1
	Neighbouring cell		Cell 2	Cell 2 is on RF channel number 2
Final condition	Active cell		Cell 2	
E-UTRA RF chanr	nel number		1, 2	Two FDD carriers are used
Channel Bandwidt	h (BW <sub>channel</sub> )	MHz	10	
Gap Pattern Id			1	As specified in 3GPP TS 36.133 section 8.1.2.1.
A3-Offset		dB	-4	
Hysteresis		dB	0	
TimeToTrigger		dB	0	
Filter coefficient			0	L3 filtering is not used
DRX			DRX_L	As specified in section A.3.3
PRACH configuration			4	As specified in table 5.7.1-2 in 3GPP TS 36.211
Access Barring Information		-	Not sent	No additional delays in random access procedure
Time offset between cells			3 ms	Asynchronous cells
Gap pattern configuration Id			0	As specified in Table 8.1.2.1-1 started before T2 starts
T1		S	5	
T2		S	≤5	
ТЗ		S	1	

$\begin{array}{c c c c c c } \mbox{defined in A.3.2.1.1} & FDD & $	Cell 2				
numberMHz10BW channelMHz10OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD) and in A.3.2.1.2 (OP.2 FDD)OP.1 FDDOP.1 FDDOP.2 FDD FDDOP.2 FDDPBCH_RAdBPBCH_RBdBPSS_RAdBPSS_RAdBPCFICH_RBdBPHICH_RAdBPDCCH_RAdBPDCCH_RAdBPDCCH_RAdBPDSCH_RAdBOCNG_RAdBOCNG_RBdBCOCNG_RBdBCOCNG_RBdBOCNG_RBdBA44-Infinity	T2	Т3			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	2				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	10				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	.2 FDD	OP.1 FDD			
$ \hat{A}.3.2.1.2 (OP.2 FDD) $ $ PBCH_RA & dB \\ PBCH_RB & dB \\ PSS_RA & dB \\ PSS_RA & dB \\ PSS_RA & dB \\ PCFICH_RB & dB \\ PHICH_RA & dB \\ PDCCH_RA & dB \\ PDCCH_RB & dB \\ PDSCH_RA & dB \\ PDSCH_RA & dB \\ PDSCH_RB & dB \\ PDSCH_RB & dB \\ POSCH_RB & dB \\ OCNG_RB^{Note 1} & dB \\ \hat{E}_s/I_{ot} & dB & 4 & 4 & -Infinity \\ \hline $					
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					
PBCH_RBdBPSS_RAdBPSS_RAdBPSS_RAdBPSS_RAdBPCFICH_RBdBPHICH_RAdBPDCCH_RAdBPDCCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RBdBOCNG_RA <sup>NOTE 1</sup> dB $\hat{E}_s/I_{ot}$ dBdB44					
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					
PHICH_RAdBPHICH_RBdBPDCCH_RAdBPDCCH_RBdBPDSCH_RAdBPDSCH_RBdBOCNG_RA^Note 1dBOCNG_RB^Note 1dB $\hat{E}_s/I_{ot}$ dB44					
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $					
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	0				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					
$\frac{\text{DCNG}_{RA}^{\text{Note 1}}  \text{dB}}{\text{DCNG}_{RB}^{\text{Note 1}}  \text{dB}}$ $\hat{E}_s / I_{ot} \qquad \qquad \text{dB} \qquad \qquad 4 \qquad 4 \qquad 4 \qquad -\text{Infinity}$					
$\frac{\text{DCNG}_{\text{RB}}^{\text{Note 1}}}{\hat{E}_s/I_{ot}} \qquad $					
$\frac{\text{DCNG}_{\text{RB}}^{\text{Note 1}}}{\hat{E}_s/I_{ot}} \qquad $					
$\hat{E}_s/I_{ot}$ dB 4 4 -Infinity					
Note 2 dBm/15 kHz -08	7	7			
N <sub>oc</sub> <sup>Note 2</sup> dBm/15 kHz -98	-98				
$\hat{E}_s/N_{oc}$ dB 4 4 4 -Infinity	7	7			
RSRP Note 3 dBm/15 KHz -94 -94 -94 -1nfinity	-91	-91			
Propagation Condition AWGN					
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spec	tral density is	is achieved for			

#### Table A.5.1.3.1-2: Cell specific test parameters for E-UTRAN FDD-FDD Inter frequency handover test case

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and

shall be modelled as AWGN of appropriate power for  $\,N_{\scriptscriptstyle oc}\,$  to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

### A.5.1.3.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 50 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay  $+ T_{interrupt}$ , where:

RRC procedure delay = 15 ms and is specified in section 11.2 in [2].

 $T_{interrupt} = 35$  ms in the test;  $T_{interrupt}$  is defined in section 5.1.2.1.2.

This gives a total of 50 ms.

### A.5.1.4 E-UTRAN TDD – TDD Inter frequency handover

### A.5.1.4.1 Test Purpose and Environment

This test is to verify the requirement for the TDD-TDD intra frequency handover requirements specified in section 5.2.2.4.

The test scenario comprises of 1 E-UTRA TDD carrier and 2 cells as given in tables Table A.5.1.4.1-1 and Table A.5.1.4.1-2. PDCCHs indicating new transmissions should be sent continuously to ensure that the UE would not enter the DRX state. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

E-UTRAN shall send a RRC message implying handover to cell 2. The RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event A3.

### Table A.5.1.4.1-1: General test parameters for E-UTRAN TDD-TDD Inter frequency handover test case

Parameter		Unit	Value	Comment
			DL Reference Measurement	
PDSCH parameters			Channel R.0 TDD	As specified in section A.3.1.1.2
			DL Reference Measurement	
PCFICH/PDCCH/	PHICH		Channel R.6 TDD	As specified in section A.3.1.2.2
parameters				
Gap Pattern Id			1	As specified in 3GPP TS 36.133 section 8.1.2.1.
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
E-UTRA RF chan	nel number		1, 2	Two TDD carriers are used
Channel Bandwic	lth (BW <sub>channel</sub> )	MHz	10	
A3-Offset		dB	-4	
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	
DRX			DRX_L	As specified in section A.3.3
CP length			Normal	
Access Barring Information		-	Not Sent	No additional delays in random access procedure.
Special subframe configuration			6	As specified in table 4.2-1 in 3GPP TS 36.211
Uplink-downlink configuration			1	As specified in table 4.2-2 in 3GPP TS 36.211
PRACH configuration			53	As specified in table 5.7.1-3 in 3GPP TS 36.211
Time offset between cells			3 μs	Synchronous cells
T1		S	5	
T2		S	≤5	
Т3		S	1	

Parameter	Unit		Cell 1			Cell 2			
		T1	T2	Т3	T1	T2	T3		
E-UTRA RF Channel			1	<u>.</u>		2	·		
number									
BW <sub>channel</sub>	MHz		10			10			
OCNG Patterns		OP.1	OP.1	OP.2 FDD	OP.2	OP.2 FDD	OP.1 FDD		
defined in A.3.2.1.1		FDD	FDD		FDD				
(OP.1 FDD) and in									
A.3.2.1.2 (OP.2 FDD)									
PBCH_RA	dB								
PBCH_RB	dB	_							
PSS_RA	dB								
SSS_RA	dB								
PCFICH_RB	dB								
PHICH_RA	dB		0			0			
PHICH_RB	dB		0			0			
PDCCH_RA	dB								
PDCCH_RB	dB								
PDSCH_RA	dB								
PDSCH_RB	dB								
OCNG_RA <sup>Note 1</sup>	dB								
OCNG_RB <sup>Note 1</sup>	dB								
$\hat{\mathbf{E}}_{_{\mathrm{s}}}/\mathbf{I}_{_{\mathrm{oc}}}$	dB	4	4	4	-Infinity	7	7		
$N_{_{oc}}$ Note 2	dBm/15 kHz	-98							
$\hat{E}_{s}/N_{oc}$	dB	4	4	4	-Infinity	7	7		
RSRP Note 3	dBm/15 KHz	-94	-94	-94	-infinity	-91	-91		
Propagation Condition		AWGN							
Note 1: OCNG shall be use		ls are fully all	ocated and a o	constant total tra	ansmitted powe	r spectral densit	y is achieved for		

## Table A.5.1.4.1-2: Cell specific test parameters for E-UTRAN TDD-TDD Inter frequency handover test case

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for  $N_{ac}$  to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

### A.5.1.4.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 50 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T<sub>interrupt</sub>, where:

RRC procedure delay = 15 ms and is specified in section 11.2 in [2].

 $T_{interrupt} = 35$  ms in the test;  $T_{interrupt}$  is defined in section 5.2.2.4.2.

This gives a total of 50 ms.

# A.5.1.5 E-UTRAN FDD – FDD Inter frequency handover: unknown target cell

### A.5.1.5.1 Test Purpose and Environment

This test is to verify the FDD-FDD inter-frequency handover requirements for the case when the target cell is unknown as specified in section 5.1.2.1.

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The test scenario comprises of two E-UTRA FDD carriers and one cell on each carrier as given in tables A.5.1.5.1-1 and A.5.1.5.1-2. No gap patterns are configured in the test case. The test consists of two successive time periods, with time durations of T1 and T2 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and start to transmit the PRACH to Cell 2.

A RRC message implying handover shall be sent to the UE during period T1. The start of T2 is the instant when the last TTI containing the RRC message implying handover is sent to the UE.

# Table A.5.1.5.1-1: General test parameters for the E-UTRAN FDD-FDD Inter frequency handover test case when the target cell is unknown

Parameter		Unit	Value	Comment
PDSCH parameters			DL Reference Measurement	As specified in section A.3.1.1.1
-			Channel R.0 FDD	
PCFICH/PDCCH/F	PHICH parameters		DL Reference Measurement	As specified in section A.3.1.2.1
			Channel R.6 FDD	
Initial conditions	Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbouring cell			Cell 2	Cell 2 is on RF channel number 2
Final condition	Active cell		Cell 2	
E-UTRA RF chann	nel number		1, 2	Two FDD carriers are used
Channel Bandwidt	h (BW <sub>channel</sub> )	MHz	10	
DRX			OFF	Non-DRX test
PRACH configurat	ion		4	As specified in table 5.7.1-2 in
				3GPP TS 36.211
Access Barring Information		-	Not sent	No additional delays in random
				access procedure
Time offset between cells			3 ms	Asynchronous cells
T1		S	≤5	
T2		S	1	

Parameter	Unit	Cel	l 1	Cel	12				
		T1	T2	T1	T2				
E-UTRA RF Channel		1		2					
number									
BW <sub>channel</sub>	MHz	1(		10					
OCNG Patterns		OP.1 FDD	OP.2 FDD	OP.2 FDD	OP.1 FDD				
defined in A.3.2.1.1									
(OP.1 FDD) and in									
A.3.2.1.2 (OP.2 FDD)									
PBCH_RA	dB								
PBCH_RB	dB								
PSS_RA	dB								
SSS_RA	dB								
PCFICH_RB	dB								
PHICH_RA	dB	0							
PHICH_RB	dB	0		0					
PDCCH_RA	dB								
PDCCH_RB	dB								
PDSCH_RA	dB								
PDSCH_RB	dB								
OCNG_RA <sup>Note 1</sup>	dB								
OCNG_RB <sup>Note 1</sup>	dB								
$\hat{E}_{s}/I_{ot}$	dB	4	4	-Infinity	7				
$N_{_{oc}}$ Note 2	dBm/15 kHz			-98					
$\hat{E}_s / N_{oc}$	dB	4	4	-Infinity	7				
RSRP Note 3	dBm/15 KHz	-94	-94	-Infinity	-91				
Propagation Condition				AWGN					
Note 1: OCNG shall b density is achi	ieved for all OFDN	l symbols.	located and a con	stant total transmitted					
subcarriers an Note 3: RSRP levels h	Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{oc}$ to be fulfilled.								

## Table A.5.1.5.1-2: Cell specific test parameters for the E-UTRAN FDD-FDD Inter frequency handover test case when the target cell is unknown

### A.5.1.5.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 130 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay +  $T_{interrupt}$ , where:

RRC procedure delay = 15 ms, which is specified in section 11.2 in [2].

 $T_{interrupt}$  = 115 ms in the test. See section 5.1.2.1.2

This gives a total of 130 ms.

# A.5.1.6 E-UTRAN TDD – TDD Inter frequency handover; unknown Target Cell

### A.5.1.6.1 Test Purpose and Environment

This test is to verify the TDD-TDD inter-frequency handover requirements for the case when the target cell is unknown as specified in section 5.2.2.4.

The test scenario comprises of two E-UTRA TDD carriers and one cell on each carrier as given in tables A.5.1.6.1-1 and A.5.1.6.1-2. No gap patterns are configured in the test case. The test consists of two successive time periods, with time durations of T1, T2 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE receives a RRC handover command from the network. The start of T2 is the instant when the last TTI containing the RRC message implying handover is sent to the UE.

## Table A.5.1.6.1-1: General test parameters for the E-UTRAN TDD-TDD Inter-Frequency handover test case when the target cell is unknown

Parameter		Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 TDD	As specified in section A.3.2.2.1
PCFICH/PDCCH/PHICH parameters			DL Reference Measurement Channel R.6 TDD	As specified in section A.3.2.2.2
Initial conditions	Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbouring cell			Cell 2	Cell 2 is on RF channel number 2
Final condition	Active cell		Cell 2	
E-UTRA RF chanr	nel number		1, 2	Two TDD carriers
DRX			OFF	Non-DRX test
Access Barring Inf	ormation	-	Not sent	No additional delays in random
				access procedure
Special subframe	configuration		6	As specified in table 4.2-1 in
	-			3GPP TS 36.211
Uplink-downlink configuration			1	As specified in table 4.2-2 in
	-			3GPP TS 36.211
PRACH configuration			53	As specified in table 5.7.1-3 in
, i i i i i i i i i i i i i i i i i i i				3GPP TS 36.211
Time offset between cells			3 μs	Synchronous cells
Gap pattern configuration			-	No gap pattern configured
T1		S	≤5	
T2		S	1	

Parameter	Unit	Ce	ll 1	C	ell 2	
		T1	T2	T1 T2		
E-UTRA RF Channel					2	
Number						
BW <sub>channel</sub>	MHz	1	-		10	
OCNG Patterns		OP.1 TDD	OP.2 TDD	OP.2 TDD	OP.1 TDD	
defined in A.3.2.2.1						
(OP.1 TDD) and in						
A.3.2.2.2 (OP.2 TDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB				0	
PHICH_RB	dB		)		0	
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA <sup>Note 1</sup>	dB					
OCNG_RB <sup>Note 1</sup>	dB					
$N_{_{oc}}$ Note 3	dBm/15 kHz			-98		
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-93	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4	-Infinity	5	
SCH_RP <sup>Note 4</sup>	dBm/15 kHz	-94	-94	-Infinity	-93	
$\hat{E}_s/N_{oc}$	dB	4	4	-Infinity	5	
Propagation Condition			A	WGN		
	ty is achieved for all				-	
Note 3: Interference fr	Interference from other cells and noise sources not specified in the test is assumed to be constant					
over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{_{oc}}$ to be						
fulfilled.						
	H_RP levels have b		m other parame	ters for information	on purposes.	
They are not s	ettable parameters	memserves.				

## Table A.5.1.6.1-2: Cell specific test parameters for the E-UTRAN TDD-TDD Inter frequency handover test case when the target cell is unknown

### A.5.1.6.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 130 ms from the beginning of time period T2. The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay +  $T_{interrupt}$ , where:

RRC procedure delay = 15 ms, which is specified in section 11.2 in [2].

 $T_{interrupt}$  = 115 ms in the test. See section 5.2.2.4.2

This gives a total of 130 ms.

## A.5.2 E-UTRAN Handover to other RATs

## A.5.2.1 E-UTRAN FDD – UTRAN FDD Handover

### A.5.2.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to UTRAN FDD handover requirements specified in section 5.3.1.

The test parameters are given in Tables A.5.2.1.1-1, A.5.2.1.1-2 and A.5.2.1.1-3. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of Cell 2. Starting T2, Cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-RAT frequency monitoring.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

### Table A.5.2.1.1-1: General test parameters for E-UTRAN FDD to UTRAN FDD handover test case

Para	neter	Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PH	IICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
	Active cell		Cell 1	E-UTRAN cell
	Neighbouring cell		Cell 2	UTRAN cell
	Active cell		Cell 2	UTRAN cell
Channel Bandwidth	(BW <sub>channel</sub> )	MHz	10	
Gap Pattern Id	· · ·		0	As specified in Table 8.1.2.1-1 started before T2 starts
E-UTRAN FDD mea	surement quantity		RSRP	
Inter-RAT (UTRAN F	DD) measurement		CPICH Ec/N0	
quantity				
b2-Threshold1		dBm	-91	Absolute E-UTRAN RSRP
		abiii	01	threshold for event B2
b2-Threshold2-UTR	Α	dB	-18	Absolute UTRAN CPICH Ec/N0
	•			threshold for event B2
Hysteresis		dB	0	
TimeToTrigger		dB	0	
Filter coefficient			0	L3 filtering is not used
DRX			OFF	Non-DRX test
Access Barring Infor	mation	-	Not sent	No additional delays in random access procedure
E-UTRA RF Channe	el Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Ba (BWchannel)	andwidth	MHz	10	
UTRA RF Channel N	Number		1	One UTRA FDD carrier frequency is used.
Monitored UTRA FD	D cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell before T2.
Post-verification period			False	
T1		s	5	
T2		S	≤5	
Т3		s	1	

Parameter	Unit	Cell 1 (E-UTRA)				
		T1	T2	Т3		
E-UTRA RF Channel		1				
number						
BW <sub>channel</sub>	MHz		10			
OCNG Patterns		OP.1	OP.1	OP.2		
defined in A.3.2.1.1		FDD	FDD	FDD		
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB		-			
PHICH_RB	dB		0			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA <sup>Note 1</sup>	dB					
OCNG_RB <sup>Note 1</sup>	dB			_		
$\hat{E}_{s}/I_{ot}$	dB	0	0	0		
$N_{oc}$	dBm/15 kHz		-98			
$\hat{E}_s/N_{oc}$	dB	0 0 0				
RSRP	dBm/15 KHz	-98	-98	-98		
Propagation Condition			AWGN			
Note 1: OCNG shall be u	used such that bot	h cells are	fully allocate	d and a		
	transmitted power	spectral d	ensity is ach	ieved for all		
OFDM symbols.						

## Table A.5.2.1.1-2: Cell specific test parameters for E-UTRAN FDD to UTRAN FDD handover test case (cell 1)

Table A.5.2.1.1-3: Cell specific test parameters for E-UTRAN FDD to UTRAN FDD handover test case (cell 2)

Parameter	Unit	Cell 2 (UTRA)			
		T1	T2	Т3	
CPICH_Ec/lor	dB	-10			
PCCPCH_Ec/lor	dB	-12			
SCH_Ec/lor	dB	-12			
PICH_Ec/lor	dB	-15			
DCH_Ec/lor	dB	N/A	N/A	Note 1	
OCNS_Ec/lor	dB	-0.941	0.941	Note 2	
$\hat{I}_{or}/I_{oc}$	dB	-infinity	-1.8	-1.8	
I <sub>oc</sub>	dBm/3,84 MHz	-70	-70	-70	
CPICH_Ec/lo	dB	-infinity	-14	-14	
Propagation Condition AWGN					
Note 1: The DPCH level is controlled by the power control loop					
Note 2: The power of the OCNS channel that is added shall make					
the total powe	er from the cell t	o be equal to	DI <sub>or</sub>		

### A.5.2.1.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 190 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

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NOTE: The handover delay can be expressed as: RRC procedure delay + T<sub>interrupt</sub>, where:

RRC procedure delay = 50 ms, which is specified in section 5.3.1.1.1.

 $T_{interrupt} = 140$  ms in the test;  $T_{interrupt}$  is defined in section 5.3.1.1.2.

This gives a total of 190 ms.

### A.5.2.2 E-UTRAN TDD - UTRAN FDD Handover

### A.5.2.2.1 Test Purpose and Environment

This test is to verify the E-UTRAN TDD – UTRAN FDD handover requirements specified in section 5.3.1.

The test scenario comprises of one E-UTRAN TDD cell and one UTRAN FDD cell as given in the tables A.5.2.2.1-1, A5.2.2.1-2 and A.5.2.2.1-3. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. At start of time duration T1, the UE does not have any timing information of cell 2. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before the start of T2 to enable the monitoring of UTRAN FDD. A neighbouring cell list, including the UTRAN cell (cell2), shall be sent to the UE before T2 starts. During the time T2 cell 2 becomes detectable and the UE is expected to detect and send the measurement report. A RRC message implying handover shall be sent to the UE during T2, after the UE has reported event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Par	ameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)			DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/ (E-UTRAN TDD)	PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Initial conditions	Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
	Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
Final conditions	Active cell		Cell 2	
Special subframe	configuration		6	As specified in table 4.2-1 in 3GPP TS 36.211. Applicable to cell 1.
Uplink-downlink c	0		1	As specified in table 4.2-2 in 3GPP TS 36.211. Applicable to cell 1
	easurement quantity		RSRP	
quantity	FDD) measurement		CPICH Ec/lo	
b2-Threshold1		dBm	-91	Absolute E-UTRAN RSRP threshold for event B2
b2-Threshold2-U	TRA	dB	-18	UTRAN FDD CPICH Ec/lo threshold for event B2
Hysteresis		dB	0	
DRX			OFF	No DRX configured.
Time to Trigger		ms	0	
Filter coefficient			0	
CP length			Normal	Applicable to cell 1
Gap pattern confi	guration Id		0	As specified in Table 8.1.2.1-1; to start before T2 starts
E-UTRA RF Char	nnel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel (BW <sub>channel</sub> )	Bandwidth	MHz	10	
UTRA RF Channe	el Number		1	One UTRA FDD carrier frequency is used.
Monitored UTRA	FDD cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell list before T2.
Post-verification period			False	Post verification is not used.
T1		S	5	
T2		S	≤5	
Т3		s	1	

### Table A.5.2.2.1-1: General test parameters for E-UTRAN TDD-UTRAN FDD handover

Parameter	Unit		Cell 1 (E-UTRAN	)	
		T1	T2	T3	
E-UTRA RF Channel			1		
Number					
BW <sub>channel</sub>	MHz		10		
OCNG Pattern defined					
in A.3.2.2.1 (OP.1 TDD)		OP	1 TDD	OP.2 TDD	
and in A.3.2.2.2 (OP.2		01.	1100	01.2100	
TDD)					
PBCH_RA	-				
PBCH_RB	-				
PSS_RA	-				
SSS_RA	-				
PCFICH_RB	-				
PHICH_RA			_		
PHICH_RB	dB		0		
PDCCH_RA	-				
PDCCH_RB	-				
PDSCH_RA	-				
PDSCH_RB	-				
OCNG_RA <sup>Note 1</sup>	-				
OCNG_RB <sup>Note 1</sup>					
RSRP	dBm/15 kHz	-98	-98	-98	
$\hat{E}_{s}/I_{ot}$	dB	0	0	0	
s / ot					
$\hat{E}_s/N_{oc}$	dB	0	0	0	
$L_s/IV_{oc}$					
N <sub>oc</sub>	dBm/15 kHz		-98		
	Propagation Condition         AWGN           Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted				
			eu and a constant to	nai transmitted	
power spectral density is	achieved for all O	FDIVI SYTTDOIS.			

# Table A.5.2.2.1-2: Cell specific test parameters for E-UTRAN TDD (cell 1) for handover to UTRAN FDD (cell # 2)

# Table A.5.2.2.1-3: Cell specific test parameters for UTRAN FDD (cell # 2) for handover from E-UTRAN TDD cell (cell #1)

Parameter	arameter Unit		Cell 1 (UTRA)		
		T1	T2	Т3	
CPICH_Ec/lor	dB		-10		
PCCPCH_Ec/lor	dB		-12		
SCH_Ec/lor	dB		-12		
PICH_Ec/lor	dB		-15		
DPCH_Ec/lor	dB	N/A	N/A	Note 1	
OCNS	dB	-0.941	-0.941	Note 2	
$\hat{I}_{or}/I_{oc}$	dB	-infinity -1.8 -1.8		-1.8	
I <sub>oc</sub>	I oc dBm/3.84 MHz		-70		
CPICH_Ec/lo	dB	-infinity	-14	-14	
Propagation Condition		AWGN			
Note 1:The DPCH level is controlled by the power control loopNote 2:The power of the OCNS channel that is added shall make the total power from the cell to be equal to I or					

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### A.5.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 190 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T<sub>interrupt</sub>, where:

RRC procedure delay = 50 ms, which is specified in section 5.1.1.1.1.

 $T_{interrupt} = 140$  ms in the test;  $T_{interrupt}$  is defined in section 5.3.1.1.2.

This gives a total of 190 ms.

### A.5.2.3 E-UTRAN FDD- GSM Handover

### A.5.2.3.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN to GSM cell handover delay specified in section 5.3.3.

The test parameters are given in Table A.5.2.3.1 -1, A.5.2.3.1 -2 and A.5.2.3.1 -3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 shall be used. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

The RRC message implying handover to cell 2 shall be sent to the UE during period T2, after the UE has reported Event B1. The start of T3 is defined as the end of last E-UTRAN TTI containing the RRC message implying handover.

The requirements are also applicable for a UE not requiring measurement gap, in which case no measurement gap pattern should be sent for the parameters specified in Table A.5.2.3.1 -1.

Para	Parameter Unit		Value	Comment
PDSCH paramete	PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/	/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1
parameters			Channel R.6 FDD	
Gap Pattern Id			1	As specified in TS 36.133 section8.1.2.1.
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Inter-RAT measu	rement quantity		GSM Carrier RSSI	
Threshold other s	system	dBm	-80	Absolute GSM carrier RSSI threshold for event B1.
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	L3 filtering is not used
DRX				OFF
T1		S	20	
T2		S	7	
T3		S	1	

Parameter	Unit	Се	ll 1	
		T1, T2	Т3	
BW <sub>channel</sub>	MHz	10		
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD) and in A.3.2.1.2 (OP.2 FDD)		OP.1 FDD	OP.2 FDD	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	0		
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA <sup>Note1</sup>	dB			
OCNG_RB <sup>Note1</sup>	dB			
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4		
$N_{oc}$ Note 2	dBm/15 kHz	-98 (AWGN)		
$\hat{E}_{s}/N_{oc}$	dB	4		
RSRP <sup>Note 3</sup>	dBm/15kH z	-94		
Propagation Condition		AWGN		
Note 1: OCNG sh	all be used si	uch that cell 1 is fully allocate	d and a constant total	
transmitted power spectral density is achieved for all OFDM symbols.				
Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as				
AWGN of appropriate power for ${}^{N_{oc}}$ to be fulfilled.				
	Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.			

## Table A. A.5.2.3.1 - 2: Cell Specific Parameters for Handover from E- UTRAN FDD to GSM cell case (cell 1)

Table A.5.2.3.1 - 3: Cell Specific Parameters for Handover from E-UTRAN FDD to GSM cell case (cell 2)

Parameter	Unit	Cell 2 (GSM)		
Farameter	Unit	T1	T2, T3	
Absolute RF Channel Number		ARFCN 1		
RXLEV	dBm	-85	-75	

### A.5.2.3.2 Test Requirements

The UE shall begin to send access bursts on the new DCCH of the target cell less than 100 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The test requirement in this test case is expressed as:

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 $T_{Handover delay} = 90 \text{ ms} (Table 5.3.3.2.1-1) + T_{offset} + T_{UL}$ 

- T<sub>offset</sub>: Equal to 4.65 ms, GSM timing uncertainty between the time from when the UE is ready to transmit until the start of the next timeslot in GSM 26 multiframe structure
- $T_{UL}$ : Equal to 4.65 ms, the time the UE has to wait in case the next timeslot is an idle frame or a SACCH frame.

This gives a total of 99.3 ms, allow 100 ms in the test case.

### A.5.2.4 E-UTRAN TDD - UTRAN TDD Handover

### A.5.2.4.1 Test Purpose and Environment

- A.5.2.4.1.1 3.84 Mcps TDD option
- A.5.2.4.1.2 1.28 Mcps TDD option

This test is to verify the requirement for E-UTRAN TDD to UTRAN TDD handover requirements specified in section 5.3.2.

The test scenario comprises of 1 E-UTRA TDD cell and 1 UTRA TDD cell as given in tables Table A.5.2.4.1.2-1, Table A.5.2.4.1.2-2, and Table A.5.2.4.1.2-3. Gap pattern configuration #0 as defined in table 8.1.2.1-1 is provided.

The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively.

E-UTRAN shall send a RRC message implying handover to UE. The RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event B2. The end of the last TTI containing handover message is begin of T3 duration.

Parameter		Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCC parameters	H/PHICH		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Initial	Active cell		Cell 1	E-UTRA TDD cell
conditions	Neighbour cell		Cell 2	UTRA 1.28Mcps TDD Cell
Final conditions	Active cell		Cell 2	
Gap Pattern Id	·		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
Uplink-downlink cell 1	k configuration of		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cell 1			6	As specified in table 4.2.1 in TS 36.211
CP length of cell 1			Normal	
Time offset between cells			3 ms	Asynchronous cells
Access Barring	Information		Not Sent	No additional delays in random access procedure.

## Table A.5.2.4.1.2-1: General test parameters for E-UTRA TDD to UTRA(1.28 Mcps TDD OPTION) handover test case

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Hysteresis	dB	0	
Time To Trigger	dB	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
Ofn	dB	0	
Hys	dB	0	
Thresh1	dBm	-94	E-UTRA event B2 threshold
Thresh2	dBm	-79	UTRA event B2 threshold
T1	s	5	
T2	S	≤10	
T3	S	1	

# Table A.5.2.4.1.2-2: Cell specific test parameters for E-UTRA TDD to UTRA TDD handover test case (cell 1)

Parameter	Unit	Cell 1			
		T1	T2	Т3	
E-UTRA RF Channel		1			
Number					
BW <sub>channel</sub>	MHz	10			
OCNG Pattern defined in A.3.2.2.1 (OP.1 TDD) and in A.3.2.1.2 (OP.2 TDD)				OP.2 TDD	
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RB	dB				
SSS_RB	dB				
PCFICH_PA	dB				
PHICH_PA	dB				
PHICH_PB	dB	0	0	0	
PDCCH_PA	dB				
PDCCH_PB	dB				
PDSCH_PA	dB				
PDSCH_PB	dB				
OCNG_RA <sup>Note 1</sup>	dB				
OCNG_RB <sup>Note 1</sup>	dB				
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	11	-3	-3	
$\hat{E}_s/N_{oc}$	dB	11	-3	-3	
$N_{oc}$	dBm/15kHz	-98			
RSRP	dBm/15kHz	-87	-101	-101	
SCH_RP	dBm/15 kHz	-87	-101	-101	
Propagation Condition		AWGN			
Note 1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.					

Parameter	Unit	Cell 2 (UTRA)					
Timeslot Number		0			DwPTS		
		T1	T2	T3	T1	T2	T3
UTRA RF Channel Number*		Channel 2					
PCCPCH_Ec/lor	dB	-3					
DwPCH_Ec/lor	dB				0		
OCNS_Ec/lor	dB	-3					
$\hat{I}_{or}/I_{oc}$	dB	-3	11	11	-3	11	11
I <sub>oc</sub>	dBm/1.28 MHz	-80					
PCCPCH RSCP	dBm	-86	-72	-72	n.a.		
Propagation Condition		AWGN					
	Note: In the case of multi-frequency cell, the UTRA RF Channel Number						
is the primary frequency's channel number.							

Table A.5.2.4.1.2-3: Cell specific test parameters for cell search E-UTRA to UTRA case (cell 2)

### A.5.2.4.1.3 7.68 Mcps TDD option

A.5.2.4.2 Test Requirements

A.5.2.4.2.1 3.84 Mcps TDD option

A.5.2.4.2.2 1.28 Mcps TDD option

The UE shall start to transmit the SYNCH-UL sequence in the UpPTS to Cell 2 less than 90 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T<sub>interrupt</sub>, where:

RRC procedure delay = 50 ms, which is specified in section 5.3.2.2.1.

 $T_{interrupt} = 40$  ms in the test;  $T_{interrupt}$  is defined in section 5.3.2.2.2.

This gives a total of 90 ms.

A.5.2.4.2.3 7.68 Mcps TDD option

### A.5.2.5 E-UTRAN FDD – UTRAN TDD Handover

### A.5.2.5.1 Test Purpose and Environment

- A.5.2.5.1.1 3.84 Mcps TDD option
- A.5.2.5.1.2 1.28 Mcps TDD option

This test is to verify the requirement for the E-UTRAN FDD to UTRAN TDD handover requirements specified in section 5.3.2.

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The test scenario comprises of two cells, E-UTRA TDD cell1 and UTRA TDD cell2. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of Cell 2. Starting T2, Cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #1 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-RAT frequency monitoring. The test parameters are given in Tables A.5.2.5.1-1, A.5.2.5.1-2 and A.5.2.5.1-3.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Table A.5.2.5.1.2-1: General test parameters for E-UTRA FDD to UTRA (1.28 Mcps TDD option)
handover test case

Parameter		Unit	Value	Comment
PDSCH parameters			DL Reference Measurement	As specified in section
			Channel R.0 FDD	A.3.1.1.1
PCFICH/PDCCH/PHICH			DL Reference Measurement	As specified in section
parameters			Channel R.6 FDD	A.3.1.2.1
Initial conditions	Active cell		Cell 1	E-UTRA FDD cell
	Neighbour cell		Cell 2	UTRA 1.28Mcps TDD Cell
Final conditions	Active cell		Cell 2	
Gap Pattern Id	Gap Pattern Id		1	As specified in 3GPP TS
				36.133 section 8.1.2.1.
E-UTRAN FDD m	E-UTRAN FDD measurement		RSRP	
quantity				
UTRAN TDD mea	UTRAN TDD measurement		RSCP	
quantity	quantity			
CP length of cell 1			Normal	
Access Barring Information			Not Sent	No additional delays in random access procedure.
Hysteresis		dB	0	
Time To Trigger		dB	0	
Filter coefficient			0	L3 filtering is not used
DRX			OFF	
Ofn	n		0	
Hys	5		0	
Thresh1		dBm	-94	Absolute E-UTRAN RSRP threshold for event B2
Thresh2		dBm	-79	Absolute UTRAN RSCP
	THESHE			threshold for event B2
T1		s	5	
T2			≤ 10	1
T3		S S	1	

Parameter	Unit	nit Cell 1 (E-UTRA)								
		T1	T2	Т3						
E-UTRA RF Channel			1							
number										
BW <sub>channel</sub>	MHz		10	-						
OCNG Patterns		OP.1 FDD	OP.1 FDD	OP.2						
defined in A.3.2.1.1				FDD						
(OP.1 FDD) and in										
A.3.2.1.2 (OP.2 FDD)										
PBCH_RA	dB	-								
PBCH_RB	dB									
PSS_RA	dB									
SSS_RA	dB									
PCFICH_RB	dB									
PHICH_RA	dB									
PHICH_RB	dB		0							
PDCCH_RA	dB									
PDCCH_RB	dB									
PDSCH_RA	dB									
PDSCH_RB	dB									
OCNG_RA <sup>Note 1</sup>	dB									
OCNG_RB <sup>Note 1</sup>	dB									
$\hat{E}_{s}/N_{oc}$	dB	11	-3	-3						
N <sub>oc</sub>	dBm/15 kHz		-98							
$\hat{E}_{s}/I_{ot}$	dB	11	-3	-3						
RSRP	dBm/15 KHz	-87	-101	-101						
Propagation Condition			AWGN							
Note 1: OCNG shall be u	used such that bot	h cells are fu	ully allocated and	d a constant						
total transmitte	ed power spectral	density is a	chieved for all O	Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.						

## Table A.5.2.5.1.2-2: Cell specific test parameters for E-UTRAN FDD to UTRAN (1.28 Mcps TDD option) handover test case (cell 1)

## Table A.5.2.5.1.2-3: Cell specific test parameters for E-UTRAN FDD to UTRAN (1.28 Mcps TDD option) handover test case (cell 2)

Parameter	Unit	nit Cell 2 (UTRA)							
Timeslot Number		0			0 DwF		DwPTS	6	
		T1 T2 T3		T1 T2 T3			T1	T2	T3
UTRA RF Channel Number*		Channel 2							
PCCPCH_Ec/lor	dB		-3						
DwPCH_Ec/lor	dB				0				
OCNS_Ec/lor	dB	-3							
$\hat{I}_{or} / I_{oc}$	dB	-3	11	11	-3	11	11		
I <sub>oc</sub>	dBm/1.28 MHz	-80							
PCCPCH RSCP	dBm	-86	-72	-72		n.a.			
Propagation Condition		AWGN							
* Note: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.									

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A.5.2.5.1.3 7.68 Mcps TDD option

A.5.2.5.2 Test Requirements

A.5.2.5.2.1 3.84 Mcps TDD option

A.5.2.5.2.2 1.28 Mcps TDD option

The UE shall start to transmit the SYNCH-UL sequence in the UpPTS to Cell 2 less than 90 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T<sub>interrupt</sub>, where:

RRC procedure delay = 50 ms, which is specified in section 5.3.2.2.1.

 $T_{interrupt} = 40$  ms in the test;  $T_{interrupt}$  is defined in section 5.3.2.2.2.

This gives a total of 90 ms.

#### A.5.2.5.2.3 7.68 Mcps TDD option

#### A.5.2.6 E-UTRAN TDD - GSM Handover

#### A.5.2.6.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN to GSM cell handover delay specified in section 5.3.3.

The test parameters are given in Table A.5.2.6.1-1, A.5.2.6.1-2 and A.5.2.6.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 shall be used. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

The RRC message implying handover to cell 2 shall be sent to the UE during period T2, after the UE has reported Event B1. The start of T3 is defined as the end of last E-UTRAN TTI containing the RRC message implying handover.

The requirements are also applicable for a UE not requiring measurement gap, in which case no measurement gap pattern should be sent for the parameters specified in Table A.5.2.6.1-1.

# Table A.5.2.6.1-1: General test parameters for E-UTRAN TDD toGSM neighbours handover test case in AWGN propagation condition

Pai	rameter	Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/	PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Gap Pattern Id			1	As specified in TS 36.133 section 8.1.2.1.
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Uplink-downlink c	configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe	Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
CP length of cell	1		Normal	
Inter-RAT measu	rement quantity		GSM Carrier RSSI	
E-UTRA RF Char	nnel Number		1	E-UTRA RF Channel Number
E-UTRA Channel (BW <sub>channel</sub> )	Bandwidth	MHz	10	E-UTRA Channel Bandwidth (BW <sub>channel</sub> )
Threshold other s	ystem	dBm	-80	Absolute GSM carrier RSSI threshold for event B1.
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	L3 filtering is not used
DRX			OFF	
T1		S	20	
T2		S	7	
T3		S	1	

	Parameter	Unit	Се	ll 1	
			T1, T2	Т3	
E-UTRA R	RF Channel Number			1	
<b>BW</b> <sub>channel</sub>		MHz	1	0	
OCNG Pa	tterns defined in				
A.3.2.2.1 (	(OP.1 TDD) and in		OP.1 TDD OP.2 TDD		
	(OP.2 TDD)				
PBCH_RA		dB			
PBCH_R	В	dB			
PSS_RA		dB			
SSS_RA		dB			
PCFICH_		dB			
PHICH_R		dB			
PHICH_R		<u>dB</u> 0		0	
PDCCH_		dB			
PDCCH_		dB			
PDSCH_I		dB			
PDSCH_I	RB	dB			
OCNG_R	A Note1	dB			
	B <sup>Note1</sup>	dB			
$\hat{E}_{s}/N_{oc}$		dB		4	
$N_{\it oc}$ Note 2		dBm/15 kHz	-98 (A	WGN)	
$\hat{E}_{s}/I_{ot}$		dB		4	
RSRP <sup>Note</sup>	3	dBm/15kHz	-9	94	
Propagatio	on Condition		AW	/GN	
	density is achieved for	all OFDM symbo	fully allocated and a constant tot ols. sources not specified in the test		
			modelled as AWGN of appropria		
fulfilled. Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.					

#### Table A.5.2.6.1-2: Cell Specific Parameters for Handover E- UTRAN TDD to GSM handover test case

#### Table A A.5.2.6.1-3: Cell Specific Parameters for Handover E-UTRAN to GSM cell case (cell 2)

Parameter	Unit	Cell 2 (GSM) T1 T2, T3	
Farameter	Unit		
Absolute RF Channel Number		AR	FCN 1
RXLEV	dBm	-85	-75

#### A.5.2.6.2 Test Requirements

The UE shall begin to send access bursts on the new DCCH of the target cell less than 100 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The test requirement in this test case is expressed as:

 $T_{Handover delay} = 90 \text{ ms} (Table 5.3.3.2.1-1) + T_{offset} + T_{UL}$ 

- T<sub>offset</sub>: Equal to 4.65 ms, GSM timing uncertainty between the time from when the UE is ready to transmit until the start of the next timeslot in GSM 26 multiframe structure
- $T_{UL}$ : Equal to 4.65 ms, the time the UE has to wait in case the next timeslot is an idle frame or a SACCH frame.

This gives a total of 99.3 ms, allow 100 ms in the test case.

## A.5.2.7 E-UTRAN FDD – UTRAN FDD Handover; Unknown Target Cell

### A.5.2.7.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to UTRAN FDD handover requirements for the case when the target cell is unknown as specified in section 5.3.1.

The test parameters are given in Tables A.5.2.7.1-1, A.5.2.7.1-2 and A.5.2.7.1-3. The test consists of two successive time periods, with time durations of T1, T2. At the start of time duration T1, the UE does not have any timing information of Cell 2. Starting T2, cell 2 becomes detectable and the UE receives a RRC handover command from the network. The start of T2 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. No Gap pattern configuration shall be used.

#### Table A.5.2.7.1-1: General test parameters for E-UTRAN FDD to UTRAN FDD handover test case

Parameter		Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters			DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Initial conditions	Active cell		Cell 1	E-UTRAN cell
	Neighbouring cell		Cell 2	UTRAN cell
Final condition	Active cell		Cell 2	UTRAN cell
Channel Bandwidt	h (BW <sub>channel</sub> )	MHz	10	
E-UTRAN FDD me	easurement quantity		RSRP	
Inter-RAT (UTRAN quantity	I FDD) measurement		CPICH Ec/N0	
DRX			OFF	Non-DRX test
Access Barring Inf	ormation	-	Not sent	No additional delays in random access procedure
E-UTRA RF Chan	nel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel I (BWchannel)	Bandwidth	MHz	10	
UTRA RF Channe	l Number		1	One UTRA FDD carrier frequency is used.
Monitored UTRA F	DD cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell before T2.
Post-verification pe	eriod		False	
T1		s	≤5	
T2		s	1	

	Parameter	Unit	Coll 1 (	E-UTRA)	
	raiametei	Onit	T1	T2	
	RF Channel			1	
number				'	
BW <sub>channel</sub>		MHz	10		
	atterns defined in		OP.1 FDD	OP.2 FDD	
	(OP.1 FDD) and in		01.1100	01.2100	
	(OP.2 FDD)				
PBCH_R	· · · ·	dB			
PBCH_R		dB			
PSS_RA		dB			
SSS RA		dB			
PCFICH		dB			
PHICH_F		dB			
PHICH_F		dB		0	
PDCCH		dB	—		
	PDCCH_RB		-		
PDSCH	-	dB dB	-		
PDSCH		dB			
OCNG_F		dB			
OCNG F		dB	-		
		dB	0	0	
$\hat{E}_{s}/I_{ot}$					
$N_{oc}$ Note	2	dBm/15 kHz	-	98	
$\hat{E}_s / N_{oc}$		dB	0	0	
RSRP <sup>Not</sup>	e 3	dBm/15 KHz	-98	-98	
Propagat	ion Condition		AV	/GN	
Note 1:	OCNG shall be use	d such that both	cells are fully	allocated and	
Note 2:	a constant total transmitted power spectral density is achieved for all OFDM symbols.				
Note 3:	and shall be modelled as AWGN of appropriate power for $N_{oc}^{}$ to be fulfilled.				

# Table A.5.2.7.1-2: Cell specific test parameters for E-UTRAN FDD to UTRAN FDD handover test case (cell 1)

Parameter	Unit	nit Cell 2 (UTR		
		T1	T2	
CPICH_Ec/lor	dB	-10		
PCCPCH_Ec/lor	dB	-	12	
SCH_Ec/lor	dB	-	12	
PICH_Ec/lor	dB	-	15	
DCH_Ec/lor	dB	Note 1		
OCNS_Ec/lor	dB	Note 2		
$\hat{I}_{or}/I_{oc}$	dB	-infinity	-1.8	
I <sub>oc</sub>	dBm/3,84 MHz	-70	-70	
CPICH_Ec/lo	dB	-infinity	-14	
Propagation Condition	AWGN			
Note 2: The power o	evel is controlled by the power control loop f the OCNS channel that is added shall make ver from the cell to be equal to $I_{or}$ .			

## Table A.5.2.7.1-3: Cell specific test parameters for E-UTRAN FDD to UTRAN FDD handover test case (cell 2)

### A.5.2.7.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 290 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay  $+ T_{interrupt}$ , where:

RRC procedure delay is 50ms. See section 5.3.1.1.1.

 $T_{interrupt}$  is 240ms. See section 5.3.1.1.2.

This gives a total of 290ms in the test case.

## A.5.2.8 E-UTRAN FDD - GSM Handover; Unknown Target Cell

### A.5.2.8.1 Test Purpose and Environment

This test is to verify the E-UTRAN FDD to GSM handover requirements for the case when the target GSM cell is unknown as specified in section 5.3.3.

The test parameters are given in Table A.5.2.8.1-1, A.5.2.8.1-2 and A.5.2.8.1-3 below. The test consists of two successive time periods, with time duration of T1, T2 respectively. At the start of time duration T1, the UE will not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE receives a RRC handover command from the network. The start of T2 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. No Gap pattern configuration shall be used.

# Table A.5.2.8.1-1: General test parameters for E-UTRAN FDD to GSM handover test case; unknown target cell

Para	Parameter Unit		Value	Comment
PDSCH paramete	PDSCH parameters		DL Reference Measurement	As specified in section A.3.1.1.1
			Channel R.0 FDD	
PCFICH/PDCCH	/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1
parameters			Channel R.6 FDD	
Gap Pattern Id	Gap Pattern Id		None	No measurement gaps shall be
				provided.
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
DRX			OFF	No DRX configured
T1		S	7	
T2		S	1	

T1BWchannelMHzOCNG Patterns defined in A.3.2.1.1 (OP.1 FDD) and in A.3.2.1.2 (OP.2 FDD)OP.1 FDDPBCH_RAdBPBCH_RBdBPSS_RAdBSSS_RAdBPCFICH_RBdBPHICH_RAdBPUHCH_RAdB	T2 10 OP.2 FDD				
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD) and in A.3.2.1.2 (OP.2 FDD)OP.1 FDDPBCH_RAdBPBCH_RBdBPSS_RAdBSSS_RAdBPCFICH_RBdBPHICH_RAdB	OP.2 FDD				
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD) and in A.3.2.1.2 (OP.2 FDD)OP.1 FDDPBCH_RAdBPBCH_RBdBPSS_RAdBSSS_RAdBPCFICH_RBdBPHICH_RAdB					
(OP.1 FDD) and in A.3.2.1.2 (OP.2 FDD)OP.1 FDDPBCH_RAdBPBCH_RBdBPSS_RAdBSSS_RAdBPCFICH_RBdBPHICH_RAdB					
À.3.2.1.2 (ÒP.2FDD)PBCH_RAPBCH_RBdBPSS_RAdBSSS_RAdBPCFICH_RBdBPHICH_RAdB					
FDD)PBCH_RAdBPBCH_RBdBPSS_RAdBSSS_RAdBPCFICH_RBdBPHICH_RAdB					
PBCH_RAdBPBCH_RBdBPSS_RAdBSSS_RAdBPCFICH_RBdBPHICH_RAdB					
PBCH_RBdBPSS_RAdBSSS_RAdBPCFICH_RBdBPHICH_RAdB					
PSS_RAdBSSS_RAdBPCFICH_RBdBPHICH_RAdB	_				
SSS_RAdBPCFICH_RBdBPHICH_RAdB	_				
PCFICH_RB dB PHICH_RA dB	_				
PHICH_RA dB	_				
PHICH_RB dB	0				
PDCCH_RA dB					
PDCCH_RB dB					
PDSCH_RA dB					
PDSCH_RB dB					
OCNG_RA <sup>Note1</sup> dB					
OCNG_RB <sup>Note1</sup> dB					
$\hat{\mathbf{E}}_{_{\mathrm{s}}}/\mathbf{I}_{_{\mathrm{ot}}}$ dB	4				
N <sub>oc</sub> Note 2 dBm/15 kHz	-98				
$\hat{E}_s/N_{oc}$ dB	4				
RSRP Note 3 dBm/15 kHz	-94				
Propagation	AWGN				
Condition	AWGN				
Note 1: OCNG shall be used such that cell 1 is fully allo					
transmitted power spectral density is achieved					
Note 2: Interference from other cells and noise sources not specified in the test is					
assumed to be constant over subcarriers and time and shall be modelled as					
AWGN of appropriate power for ${}^{N_{oc}}$ to be fulfilled.					
Note 3: RSRP levels have been derived from other par purposes. They are not settable parameters the	Note 3: RSRP levels have been derived from other parameters for information				

#### Table A.5.2.8.1 - 2: Cell specific parameters for cell # 1 in E-UTRAN FDD to GSM handover test case; unknown target cell

 Table A.5.2.8.1-3: Cell specific parameters for cell # 2 in E-UTRAN FDD to GSM handover test case;

 unknown target cell

Parameter	Unit	Cell	2 (GSM)
Farameter	Unit	T1 T2	
Absolute RF Channel Number		AR	FCN 1
RXLEV	dBm	-Infinity	-75

### A.5.2.8.2 Test Requirements

The UE shall begin to send access bursts on the new DCCH of the target cell less than 200 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The test requirement in this test case is expressed as:

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 $T_{Handover delay} = 190 \text{ ms} (Table 5.3.3.2.1-1) + T_{offset} + T_{UL}$ 

 $T_{offset}$ : Equal to 4.65 ms is the GSM timing uncertainty from the time when the UE is ready to transmit until the start of the next timeslot in GSM 26 multiframe structure

T<sub>UL</sub>: Equal to 4.65 ms is the time the UE has to wait in case the next timeslot is an idle frame or a SACCH frame.

This gives a total of 199.3 ms, allow 200 ms in the test case.

## A.5.2.9 E-UTRAN TDD - GSM Handover; Unknown Target Cell

#### A.5.2.9.1 Test Purpose and Environment

This test is to verify the E-UTRAN TDD to GSM handover requirements for the case when the target GSM cell is unknown as specified in section 5.3.3.

The test parameters are given in Table A.5.2.9.1 -1, A.5.2.9.1 -2 and A.5.2.9.1 -3 below. The test consists of two successive time periods, with time duration of T1, T2 respectively. At the start of time duration T1, the UE will not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE receives a RRC handover command from the network. The start of T2 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. No Gap pattern configuration shall be used.

## Table A.5.2.9.1-1: General test parameters for E-UTRAN TDD to GSM handover test case; unknown target cell

Para	meter	Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 TDD	As specified in section A.3.2.2.1
PCFICH/PDCCH/ parameters	PHICH		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.2.2.2
Gap Pattern Id			None	No measurement gaps shall be provided.
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
DRX			OFF	No DRX configured
Special subframe	configuration		6	As specified in table 4.2-1 in 3GPP TS 36.211
Uplink-downlink configuration			1	As specified in table 4.2-2 in 3GPP TS 36.211
T1		S	7	
T2		S	1	

Parameter	Unit	(	Cell 1			
		T1	T2			
BW <sub>channel</sub>	MHz		10			
OCNG Patterns						
defined in A.3.2.2.1						
(OP.1 TDD) and in		OP.1 TDD	OP.2 TDD			
A.3.2.2.2 (OP.2						
TDD)						
PBCH_RA PBCH RB	dB dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB		0			
PDCCH_RA	dB		C C			
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH RB	dB					
OCNG_RA <sup>Note1</sup>	dB					
OCNG_RB <sup>Note1</sup>	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB		4			
N <sub>oc</sub> Note 2	dBm/15 kHz		-98			
$\hat{E}_s/N_{oc}$	dB		4			
RSRP <sup>Note 3</sup>	dBm/15 kHz		-94			
Propagation		Δ	WGN			
Condition			-			
		hat cell 1 is fully allocate				
		density is achieved for al				
Note 2: Interference from other cells and noise sources not specified in the test is						
	assumed to be constant over subcarriers and time and shall be modelled as					
AWGN of appropriate power for ${}^{N_{oc}}$ to be fulfilled.						
		rived from other paramet				
purposes.	They are not sett	able parameters themse	lves.			

#### Table A.5.2.9.1 - 2: Cell specific parameters for cell # 1 in E-UTRAN TDD to GSM handover test case; unknown target cell

Table A.5.2.9.1 - 3: Cell specific parameters for cell # 2 in E-UTRAN TDD to GSM handover test case; unknown target cell

Parameter	Unit	Cell 2 (GSM)		
Farameter	Unit	T1 T2		
Absolute RF Channel Number		AR	FCN 1	
RXLEV	dBm	-Infinity	-75	

### A.5.2.9.2 Test Requirements

The UE shall begin to send access bursts on the new DCCH of the target cell less than 200 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The test requirement in this test case is expressed as:

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 $T_{Handover delay} = 190 \text{ ms} (Table 5.3.3.2.1-1) + T_{offset} + T_{UL}$ 

 $T_{offset}$ : Equal to 4.65 ms is the GSM timing uncertainty from the time when the UE is ready to transmit until the start of the next timeslot in GSM 26 multiframe structure

T<sub>UL</sub>: Equal to 4.65 ms is the time the UE has to wait in case the next timeslot is an idle frame or a SACCH frame.

This gives a total of 199.3 ms, allow 200 ms in the test case.

### A.5.2.10 E-UTRAN TDD to UTRAN TDD handover: unknown target cell

#### A.5.2.10.1 Test Purpose and Environment

This test is to verify the requirement for E-UTRAN TDD to UTRAN TDD handover requirements specified in section 5.3.2 when the target UTRAN TDD cell is unknown.

The test scenario comprises of 1 E-UTRAN TDD cell and 1 UTRAN TDD cell as given in tables A.5.2.10.1-1, A.5.2.10.1-2, and A.5.2.10.1-3. No gap pattern is configured in the test case.

The test consists of two successive time periods, with time durations of T1 and T2 respectively. During time duration T1, a RRC message implying handover to UTRA 1.28Mcps TDD cell shall be sent to the UE. The end of the last TTI containing handover message is the beginning of T2 duration.

Table A.5.2.10.1-1: General test parameters for E-UTRAN TDD to unknown UTRAN TDD cell handover
test case

Parar	Parameter		Value	Comment
PDSCH param	PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCC parameters	CH/PHICH		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Initial	Active cell		Cell 1	E-UTRAN TDD cell
conditions	Neighbour cell		Cell 2	UTRA 1.28Mcps TDD cell
Final conditions	Active cell		Cell 2	UTRA 1.28Mcps TDD cell
CP length of ce	ell 1		Normal	
Uplink-downlin of cell 1	k configuration		1	As specified in table 4.2.2 in TS 36.211
Special subfrar configuration o			6	As specified in table 4.2.1 in TS 36.211
Time offset bet	ween cells		3 ms	Asynchronous cells
Access Barring	g Information		Not Sent	No additional delays in random access procedure.
TimeToTrigger		dB	0	
Filter coefficien	nt		0	L3 filtering is not used
DRX			OFF	
T1		S	5	During T1, cell 2 shall be powered off, and during the off time the physical layer cell identity shall be changed.
T2		S	1	

Parameter	Unit	Ce	ll 1		
		T1	T2		
E-UTRA RF Channel			1		
Number					
BWchannel	MHz	1	0		
OCNG Patterns defined in		OP.1 TDD	OP.2 TDD		
TS36.133 A.3.2.2.1 (OP.1					
TDD) and in A.3.2.2.2					
(OP.2 TDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RB	dB				
SSS_RB	dB				
PCFICH_PA	dB				
PHICH_PA	dB				
PHICH_PB	dB	0	0		
PDCCH_PA	dB				
PDCCH_PB	dB				
PDSCH_PA	dB				
PDSCH_PB	dB				
OCNG_RANote 1	dB				
OCNG_RBNote 1	dB				
$\hat{E}_s/I_{ot}$	dB	3	3		
$\hat{E}_s/N_{oc}$	dB	3	3		
N <sub>oc</sub>	dBm/15kHz	-9	98		
RSRP	dBm/15kHz	-95	-95		
SCH_RP	dBm/15 kHz	-95	-95		
Propagation Condition		AW	÷		
<ul> <li>Note 1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.</li> <li>Note 2: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.</li> </ul>					

# Table A.5.2.10.1-2: Cell specific test parameters for E-UTRAN TDD to unknown UTRAN TDD cell handover test case (cell 1)

## Table A.5.2.10.1-3: Cell specific test parameters for E-UTRAN TDD to unknown UTRAN TDD cell test case (cell 2)

Parameter	Unit		Cell 2	(UTRA)		
Timeslot Number		0		0 DwF		PTS
		T1	T2	T1	T2	
UTRA RF Channel Number <sup>Note1</sup>		Channel 2				
PCCPCH_Ec/lor	dB	-3	3			
DwPCH_Ec/lor	dB			C	)	
OCNS_Ec/lor	dB	-3				
$\hat{I}_{or}/I_{oc}$	dB	-infinity	13	-infinity	13	
I <sub>oc</sub>	dBm/1.28 MHz		-8	30		
PCCPCH RSCP	dBm	-infinity	-70	n.a	a.	
Propagation Condition			AW	/GN		
Note1: In the case of	Note1: In the case of multi-frequency cell, the UTRA RF Channel Number is the					
primary frequency's channel number. Note2: P-CCPCH RSCP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.						

#### A.5.2.10.2 Test Requirements

The UE shall start to transmit the SYNCH-UL sequence in the UpPTS to Cell 2 less than [280] ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

## A.5.3 E-UTRAN Handover to Non-3GPP RATs

### A.5.3.1 E-UTRAN FDD – HRPD Handover

#### A.5.3.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to HRPD handover requirements specified in section 5.4.1.

The test parameters are given in Tables A.5.3.1.1-1, A.5.3.1.1-2 and A.5.3.1.1-3. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of Cell 2. Starting T2, Cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-RAT frequency monitoring.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Para	meter	Unit	Value	Comment
PDSCH parameters	3		DL Reference Measurement	As specified in section A.3.1.1.1
			Channel R.0 FDD	
PCFICH/PDCCH/P	HICH parameters		DL Reference Measurement	As specified in section A.3.1.2.1
			Channel R.6 FDD	
Initial conditions	Active cell		Cell 1	E-UTRAN FDD cell
	Neighbouring cell		Cell 2	HRPD cell
Final condition	Active cell		Cell 2	HRPD cell
Channel Bandwidth	(BW <sub>channel</sub> )	MHz	10	
Gap Pattern Id			0	As specified in Table 8.1.2.1-1
				started before T2 starts
E-UTRAN FDD mea	asurement quantity		RSRP	
Inter-RAT (HRPD) I	measurement		CDMA2000 HRPD Pilot	
quantity			Strength	
b2-Threshold1		dBm	-90	Absolute E-UTRAN RSRP
				threshold for event B2
b2-Threshold2-CDM	/IA2000	dB	-7	Absolute 'CDMA2000 HRPD Pilot
				Strength' threshold for event B2
Hysteresis		dB	0	
TimeToTrigger		dB	0	
Filter coefficient			0	L3 filtering is not used
DRX			OFF	Non-DRX test
Access Barring Info	rmation	-	Not sent	No additional delays in random
-				access procedure
E-UTRA RF Chann	el Number		1	One E-UTRA FDD carrier
				frequency is used.
E-UTRA Channel B	andwidth	MHz	10	
(BWchannel)				
HRPD RF Channel	Number		1	One HRPD carrier frequency is
				used.
HRPD neighbour cell list size			8	HRPD cells on HRPD RF channel
				1 provided in the cell list before
				T2.
cdma2000-SearchWindowSize			8 (60 PN chips)	Search window size as defined in
				section 6.3.5 in 3GPP TS 36.331
T1		S	5	
T2		S	≤10	
T3		s	1	

## Table A.5.3.1.1-1: General test parameters for E-UTRAN FDD to HRPD handover test case

Parameter	Unit	Cell 1 (E-UTRA)				
		T1 T2 T3				
E-UTRA RF Channel			1			
number						
BW <sub>channel</sub>	MHz		10			
OCNG Patterns defined in		OP.1	FDD	OP.2		
A.3.2.1.1 (OP.1 FDD) and				FDD		
in A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB		0			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA <sup>Note 1</sup>	dB					
OCNG_RB <sup>Note 1</sup>	dB					
$N_{oc}^{}$ Note 2	dBm/15		-98			
	kHz					
RSRP <sup>Note 3</sup>	dBm/15	-98	-98	-98		
	KHz					
$\hat{E}_s/N_{oc}$	dB	0	0	0		
$\hat{E}_s/I_{ot}$	dB	0	0	0		
Propagation Condition			AWGN			
Note 1: OCNG shall be used						
constant total tran	smitted powe	r spectral de	nsity is achiev	ved for all		
OFDM symbols.						
Note 2: Interference from other cells and noise sources not specified in the test						
is assumed to be cor	nstant over su	bcarriers and	I time and sh	all be		
modelled as AWGN of appropriate power for $N_{_{oc}}$ to be fulfilled.						
Note 3: RSRP levels have be				nformation		
purposes. They a	re not settable	e parameters	themselves.			

## Table A.5.3.1.1-2: Cell specific test parameters for E-UTRAN FDD cell#1 for handover to HRPD cell # 2

Parameter	Unit		Cell 2 (HRPD)		
		T1	T2	Т3	
$\frac{\text{Control} \ \text{E}_{\text{b}}}{\text{N}_{\text{t}}} $ (38.4 kbps)	dB		21		
$\frac{\text{Control}  \text{E}_{b}}{\text{N}_{t}} $ (76.8 kbps)	dB		18		
$\hat{I}_{or}/I_{oc}$	dB	-infinity	0	0	
I <sub>oc</sub>	dBm/1.2288 MHz		-55		
CDMA2000 HRPD Pilot Strength	dB	-infinity	-3	-3	
Propagation Condition			AWGN		

## Table A.5.3.1.1-3: Cell specific test parameters for HRPD (cell # 2) for handover from E-UTRAN FDD cell (cell #1)

### A.5.3.1.2 Test Requirements

The UE shall start transmission of the reverse control channel in HRPD to Cell 2 less than 127 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T<sub>interrupt</sub>, where:

RRC procedure delay = 50 ms, which is specified in section 5.4.1.1.1.

 $T_{interrupt} = 76.66$  ms in the test;  $T_{interrupt}$  is defined in section 5.4.1.1.2.

This gives a total of 126.66 ms, allow 127 ms in the test.

## A.5.3.2 E-UTRAN FDD – cdma2000 1X Handover

#### A.5.3.2.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to cdma2000 1X handover requirements specified in section 5.4.2.

The test parameters are given in Tables A.5.3.2.1-1, A.5.3.2.1-2 and A.5.3.2.1-3. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of Cell 2. Starting T2, Cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-RAT frequency monitoring.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

## Table A.5.3.2.1-1: General test parameters for E-UTRAN FDD to cdma2000 1X handover test case

Parameter		Unit	Value	Comment
PDSCH parameters	5		DL Reference Measurement	As specified in section A.3.1.1.1
			Channel R.0 FDD	
PCFICH/PDCCH/PI	HICH parameters		DL Reference Measurement	As specified in section A.3.1.2.1
			Channel R.6 FDD	
	Active cell		Cell 1	E-UTRAN FDD cell
	Neighbouring cell		Cell 2	cdma2000 1X cell
	Active cell		Cell 2	cdma2000 1X cell
Channel Bandwidth	(BW <sub>channel</sub> )	MHz	10	
Gap Pattern Id			0	As specified in Table 8.1.2.1-1
				started before T2 starts
E-UTRAN FDD mea			RSRP	
Inter-RAT (cdma200	00 1X) measurement		CDMA2000 1xRTT Pilot	
quantity			Strength	
b2-Threshold1		dBm	-90	Absolute E-UTRAN RSRP
				threshold for event B2
b2-Threshold2-CDN	/A2000	dB	-14	Absolute 'CDMA2000 1xRTT Pilot
				Strength' threshold for event B2
Hysteresis		dB	0	
TimeToTrigger		dB	0	
Filter coefficient			0	L3 filtering is not used
DRX			OFF	Non-DRX test
Access Barring Info	rmation	-	Not sent	No additional delays in random
				access procedure
E-UTRA RF Channe	el Number		1	One E-UTRA FDD carrier
				frequency is used.
E-UTRA Channel B	andwidth	MHz	10	
(BWchannel)				
cdma2000 1X RF C	hannel Number		1	One HRPD carrier frequency is
				used.
cdma2000 1X neighbour cell list size			8	cdma2000 1X cells on cdma2000
				1X RF channel 1 provided in the
				cell list before T2.
cdma2000-SearchV	VindowSize		8 (60 PN chips)	Search window size as defined in
				section 6.3.5 in 3GPP TS 36.331
T1		S	5	
T2		S	≤10	
Т3		s	1	

Parameter	Unit	Cell 1 (E-UTRA)					
		T1 T2		Т3			
E-UTRA RF Channel			1				
number							
BW <sub>channel</sub>	MHz		10				
OCNG Patterns defined in		OP.1	FDD	OP.2			
A.3.2.1.1 (OP.1 FDD) and				FDD			
in A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB		0				
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA <sup>Note 1</sup>	dB						
OCNG_RB <sup>Note 1</sup>	dB						
$N_{oc}$ Note 2	dBm/15		-98				
	kHz						
RSRP Note 3	dBm/15	-98	-98	-98			
	KHz						
$\hat{E}_s/N_{oc}$	dB	0	0	0			
$\hat{E}_s/I_{ot}$	dB	0	0	0			
Propagation Condition			AWGN				
Note 1: OCNG shall be us	ed such that	both cells are	fully allocate	ed and a			
	constant total transmitted power spectral density is achieved for all						
OFDM symbols.							
Note 2: Interference from							
test is assumed to	test is assumed to be constant over subcarriers and time and shall						
			, N <sub>ec</sub>				
be modelled as A	be modelled as AWGN of appropriate power for $N_{oc}$ to be fulfilled.						
Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselve							
information purpos	ses. They are	not settable	parameters t	nemseives.			

## Table A.5.3.2.1-2: Cell specific test parameters for E-UTRAN FDD cell#1 for handover to cdma2000 1X cell # 2

Parameter	Unit	Cell 2 (cdma2000 1X)			
		T1	Т2	Т3	
$\frac{\text{Pilot } E_{c}}{I_{\text{or}}}$	dB	-7			
$\frac{\text{Sync } E_{c}}{I_{\text{or}}}$	dB	-16			
$\frac{Paging E_{c}}{I_{or}}$ (4.8 kbps)	dB	-12			
$\hat{I}_{or}/I_{oc}$	dB	-infinity	0	0	
I <sub>oc</sub>	dBm/1.2288 MHz		-55		
CDMA2000 1xRTT Pilot Strength	dB	-infinity	-10	-10	
Propagation Condition			AWGN		

## Table A.5.3.2.1-3: Cell specific test parameters for cdma2000 1X (cell # 2) for handover from E-UTRAN FDD cell (cell #1)

#### A.5.3.2.2 Test Requirements

The UE shall start transmission of the reverse control channel in cdma2000 1X to Cell 2 less than 200 ms from the beginning of time period T3.

NOTE: The handover delay can be expressed as: RRC procedure delay + T<sub>interrupt</sub>, where:

RRC procedure delay = 130 ms, which is specified in section 5.4.2.1.1.

 $T_{interrupt} = 70$  ms in the test;  $T_{interrupt}$  is defined in section 5.4.2.1.2.

This gives a total of 200 ms.

## A.5.3.3 E-UTRAN FDD – HRPD Handover; Unknown Target Cell

#### A.5.3.3.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to HRPD handover requirements for the case when the target HRPD cell is unknown as specified in section 5.4.1.

The test parameters are given in Tables A.5.3.3.1-1, A.5.3.3.1-2 and A.5.3.3.1-3. The test consists of two successive time periods, with time durations of T1 and T2 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. During time period T1, message containing Information Element *systemTimeInfo* as defined in section 6.3.1 of TS 36.331 [2] shall be sent by the System Simulator (SS). No gap patterns are configured in the test case. No HRPD neighbour cell list shall be provided to the UE.

A RRC message implying handover to the unknown HRPD cell shall be sent to the UE towards the end of the time period T1. The start of T2 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

# Table A.5.3.3.1-1: General test parameters for E-UTRAN FDD to HRPD handover test case; unknown target HRPD cell

Parameter		Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters			DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Initial conditions	Active cell		Cell 1	E-UTRAN FDD cell
	Neighbouring cell		Cell 2	HRPD cell
Final condition	Active cell		Cell 2	HRPD cell
Channel Bandwidt	h (BW <sub>channel</sub> )	MHz	10	
DRX	DRX		OFF	Non-DRX test
Access Barring Information		-	Not sent	No additional delays in random access procedure
E-UTRA RF Channel Number			1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth (BWchannel)		MHz	10	
HRPD RF Channel Number			1	One HRPD carrier frequency is used.
cdma2000-SearchWindowSize			8 (60 PN chips)	Search window size as defined in section 6.3.5 in 3GPP TS 36.331
T1		S	≤5	
T2		S	1	

Parameter	Unit	Cell 1 (E-UTRAN FDD)				
		T1	T2			
E-UTRA RF Channel		1	1			
number						
BW <sub>channel</sub>	MHz	1	0			
OCNG Patterns defined in		OP.1	FDD			
A.3.2.1.1 (OP.1 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB		)			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA Note 1	dB					
OCNG_RB Note 1	dB					
$N_{_{oc}}$ Note 2	dBm/15 kHz	-9	98			
RSRP <sup>Note 3</sup>	dBm/15 kHz	-98	-98			
$\hat{E}_s/N_{oc}$	dB	0	0			
$\hat{E}_s/I_{ot}$	dB	0	0			
Propagation Condition AWGN						
Note 1: OCNG shall be used	nsity is achieved for	all OFDM symbols.				
		nall be modelled as AWGN o				
$N_{_{oc}}$ to be fulfilled.						

## Table A.5.3.3.1-2: Cell specific test parameters for E-UTRAN FDD cell#1 for handover to unknown HRPD cell # 2

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Parameter	Unit	Cell 2 (	Cell 2 (HRPD)		
		T1	T2		
$\frac{\text{Control } E_{b}}{N_{t}} (38.4)$	dB	2'	1		
kbps)					
$\frac{\text{Control}  \text{E}_{b}}{\text{N}_{b}} (76.8)$	dB	18			
kbps)	<sup>QD</sup>				
$\hat{I}_{or}/I_{oc}$	dB	-infinity	0		
I <sub>oc</sub>	dBm/1.22 88 MHz	-5	5		
CDMA2000 HRPD Pilot Strength	dB	-infinity	-3		
Propagation Condition		AW	GN		

#### Table A.5.3.3.1-3: Cell specific test parameters for unknown HRPD (cell # 2) for handover from E-UTRAN FDD cell (cell #1)

#### A.5.3.3.2 Test Requirements

The UE shall start transmission of the reverse control channel in HRPD to Cell 2 less than 127 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay is expressed as: RRC procedure delay + T<sub>interrupt</sub>, where:

T<sub>interrupt</sub> also includes time to detect HRPD cell; see section 5.4.1.1.2

This gives a total of 126.66 ms, allow 127 ms in the test case.

## A.5.3.4 E-UTRAN FDD – cdma2000 1X Handover; Unknown Target cell

### A.5.3.4.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to cdma2000 1X handover requirements for the case when the target cdma2000 1X cell is unknown as specified in section 5.4.2.

The test parameters are given in Tables A.5.3.4.1-1, A.5.3.4.1-2 and A.5.3.4.1-3. The test consists of two successive time periods, with time durations of T1 and T2 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. During time period T1, message containing Information Element *systemTimeInfo* as defined in section 6.3.1 of TS 36.331 [2] shall be sent by the System Simulator (SS). No gap patterns are configured in the test case. No cdma2000 1X neighbour cell list shall be provided to the UE.

A RRC message implying handover to the unknown cdma2000 1X cell shall be sent to the UE towards the end of the time period T1. The start of T2 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

#### Table A.5.3.2.1-1: General test parameters for E-UTRAN FDD to cdma2000 1X handover test case; unknown target cdma2000 1X cell

Parameter		Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters			DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Initial conditions	Active cell		Cell 1	E-UTRAN FDD cell
	Neighbouring cell		Cell 2	cdma2000 1X cell
Final condition	Active cell		Cell 2	cdma2000 1X cell
Channel Bandwidth	n (BW <sub>channel</sub> )	MHz	10	
DRX			OFF	Non-DRX test
Access Barring Information		-	Not sent	No additional delays in random access procedure
E-UTRA RF Channel Number			1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel E (BWchannel)	Bandwidth	MHz	10	
cdma2000 1X RF Channel Number			1	One HRPD carrier frequency is used.
cdma2000-SearchWindowSize			8 (60 PN chips)	Search window size as defined in section 6.3.5 in 3GPP TS 36.331
T1		S	≤5	
T2		S	1	

## Table A.5.3.2.1-2: Cell specific test parameters for E-UTRAN FDD cell#1 for handover to unknown cdma2000 1X cell # 2

Parameter	Unit	Cell 1 (E-UTRAN FDD)			
		T1	T2		
E-UTRA RF Channel number			1		
BW <sub>channel</sub>	MHz	1	0		
OCNG Patterns defined in		OP.1	FDD		
A.3.2.1.1 (OP.1 FDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	(	)		
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA Note 1	dB				
OCNG_RB Note 1	dB				
$N_{_{oc}}$ Note 2	dBm/15 kHz	-98			
RSRP <sup>Note 3</sup>	dBm/15 kHz	-98	-98		
$\hat{E}_s/N_{oc}$	dB	0	0		
$\hat{E}_s/I_{ot}$	dB	0	0		
Propagation Condition		AW	GN		
Note 1: OCNG shall be used suc	h that both cells are ful	ly allocated and a const	ant total transmitted		
power spectral density is					
Note 2: Interference from other c	ells and noise sources	not specified in the test			
constant over subcarriers	s and time and shall be	modelled as AWGN of	appropriate power for		
N <sub>1</sub> , , , , , , , , , , , , , , , , , , ,					
$N_{oc}$ to be fulfilled.					
Note 3: RSRP levels have been of		ameters for information	purposes. They are		
not settable parameters t	hemselves.				

## Table A.5.3.2.1-3: Cell specific test parameters for unknown cdma2000 1X (cell # 2) for handover from E-UTRAN FDD cell (cell #1)

Parameter	Unit	Cell 2 (cdn	na2000 1X)		
		T1	Т2		
Pilot E <sub>c</sub> I <sub>or</sub>	dB	-	7		
Sync E <sub>c</sub> I <sub>or</sub>	dB	-16			
$\frac{Paging E_{c}}{I_{or}}$ (4.8 kbps)	dB	-12			
$\hat{I}_{or}/I_{oc}$	dB	-infinity 0			
I <sub>oc</sub>	dBm/1.22 88 MHz	-55			
CDMA2000 1xRTT Pilot Strength	dB	-infinity -10			
Propagation Condition		AW	GN		

#### A.5.3.4.2 Test Requirements

The UE shall start transmission of the reverse control channel in cdma2000 1X to Cell 2 less than 200 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay is expressed as: RRC procedure delay + T<sub>interrupt</sub>, where:

T<sub>interrupt</sub> also includes time to detect cdma2000 1X cell; see section 5.4.2.1.2

This gives a total of 200 ms.

## A.6 RRC Connection Control

## A.6.1 RRC Re-establishment

### A.6.1.1 E-UTRAN FDD Intra-frequency RRC Re-establishment

#### A.6.1.1.1 Test Purpose and Environment

The purpose is to verify that the E-UTRA FDD intra-frequency RRC re-establishment delay is within the specified limits. These tests will verify the requirements in section 6.1.2.

The test parameters are given in table A.6.1.1.1-1 and table A.6.1.1.1-2 below. The test consists of 3 successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time period T2, cell 1, which is the active cell, is deactivated. The time period T3 starts after the occurrence of the radio link failure.

Parameter		Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/I	PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Initial conditions	nitial conditions Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chan	-UTRA RF Channel Number		1	Only one FDD carrier frequency is used.
Channel Bandwidt	th (BW <sub>channel</sub> )	MHz	10	
N310		-	1	Maximum consecutive out-of-sync indications from lower layers
N311		-	1	Minimum consecutive in-sync indications from lower layers
T310		ms	0	Radio link failure timer; T310 is disabled
T311		ms	3000	RRC re-establishment timer
DRX			OFF	
CP length			Normal	
Access Barring Information		-	Not Sent	No additional delays in random access procedure.
PRACH configuration index			4	As specified in table 5.7.1-2 in TS 36.211
Time offset betwee	en cells	ms	3	Asynchronous cells
T1		s	5	
T2		ms	200	
Т3		S	3	

## Table A.6.1.1.1-1: General test parameters for E-UTRAN FDD intra-frequency RRC Re-establishment test case

#### Table A.6.1.1.1-2: Cell specific test parameters for E-UTRAN FDD intra-frequency RRC Reestablishment test case

Parameter	Unit	Cell 1		Cell 2			
		T1	T2	Т3	T1	T2	Т3
E-UTRA RF Channel			1			1	
Number							
BW <sub>channel</sub>	MHz		10			10	
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 FDD	OP.2 FDD	OP.1 FDD
defined in A.3.2.1.1		FDD	FDD	FDD			
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB		0			0	
PDCCH_RA	dB		0			0	
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA <sup>Note 1</sup>	dB						
OCNG_RB <sup>Note 1</sup>	dB						

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$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	1.54	-Infinity	-Infinity	-3.79	4	4
$N_{oc}$ Note 2	dBm/15 KHz	-98					
$\hat{E}_s/N_{oc}$	dB	7	-Infinity	-Infinity	4	4	4
RSRP Note 3	dBm/15 KHz	-91	-Infinity	-Infinity	-94	-94	-94
Propagation Condition	AWGN						
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over							
subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{_{oc}}$ to be fulfilled.							
Note 3: RSRP levels hav parameters the		rom other pa	arameters for	information p	ourposes. They a	re not settable	e

#### A.6.1.1.2 Test Requirements

The RRC re-establishment delay is defined as the time from the start of time period T3, to the moment when the UE starts to send PRACH preambles to cell 2 for sending the *RRCConnectionReestablishmentRequest* message to cell 2.

The RRC re-establishment delay to a known E-UTRA FDD intra frequency cell shall be less than 1.5 s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in the test is derived from the following expression:

$$T_{re-establish\_delay} = T_{UL\_grant} + T_{UE\_re-establish\_delay}$$
.

Where:

 $T_{UL_{grant}} = It$  is the time required to acquire and process uplink grant from the target cell. The PRACH reception at the system simulator is used as a trigger for the completion of the test; hence  $T_{UL_{grant}}$  is not used.

 $T_{UE\_re-establish\_delay} = 50 \text{ ms} + N_{freq} * T_{search} + T_{SI} + T_{PRACH}$ 

 $N_{\text{freq}} = 1$ 

 $T_{search} = 100 \text{ ms}$ 

 $T_{SI} = 1280$  ms; it is the time required for receiving all the relevant system information as defined in 3GPP TS 36.331 for the target E-UTRAN FDD cell.

 $T_{PRACH} = 15$  ms; it is the additional delay caused by the random access procedure.

This gives a total of 1445 ms, allow 1.5 s in the test case.

## A.6.1.2 E-UTRAN FDD Inter-frequency RRC Re-establishment

#### A.6.1.2.1 Test Purpose and Environment

The purpose is to verify that the E-UTRA FDD inter-frequency RRC re-establishment delay is within the specified limits. These tests will verify the requirements in section 6.1.2.

The test parameters are given in table A.6.1.1.2-1 and table A.6.1.1.2-2 below. The test consists of 3 successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time period T2, cell 1, which is the active cell, is deactivated. The time period T3 starts after the occurrence of radio link failure. At the start of time period T3, cell 2, which is the neighbour cell, is activated.

# Table A.6.1.2.1-1: General test parameters for E-UTRAN FDD inter-frequency RRC Re-establishment test case

Para	ameter	Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/P	PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chann	el Number (cell 1)		1	
E-UTRA RF Chann	el Number (cell 2)		2	
E-UTRA FDD inter- size	E-UTRA FDD inter-frequency carrier list		1	2 E-UTRA FDD carrier frequencies in total: 1 intra- frequency and 1 inter-frequency
Channel Bandwidth	Channel Bandwidth (BW <sub>channel</sub> )		10	
N310	<u> </u>	-	1	Maximum consecutive out-of-sync indications from lower layers
N311		-	1	Minimum consecutive in-sync indications from lower layers
T310		ms	0	Radio link failure timer; T310 is disabled
T311		ms	5000	RRC re-establishment timer
DRX			OFF	
CP length			Normal	
Access Barring Information		-	Not Sent	No additional delays in random access procedure.
PRACH configurati	on index		4	As specified in table 5.7.1-2 in TS 36.211
Time offset betwee	n cells	ms	3	Asynchronous cells
T1		s	5	
T2		ms	200	
Т3		s	5	

#### ETSI

T1 OP.1 FDD	T2 1 0P.1 FDD	T3 OP.2 FDD	T1 OP.2 FDD	T2         2           10         OP.2 FDD	T3 OP.1 FDI
	OP.1 FDD	-	OP.2 FDD	10 OP.2 FDD	OP.1 FDI
	OP.1 FDD	-	OP.2 FDD	OP.2 FDD	OP.1 FDI
	OP.1 FDD	-	OP.2 FDD	OP.2 FDD	OP.1 FDI
	FDD	-	OP.2 FDD		OP.1 FDI
FDD		FDD		0	
-	0			0	
-	0			0	
-	0			0	
-	0			0	
-	0			0	
-	0			0	
-	0			0	
-	0			0	
-	0			0	
_	0			0	
_					
7					
4	-Infinity	-Infinity	-Infinity	-Infinity	7
-98					
4	-Infinity	-Infinity	- Infinity	- Infinity	7
-94	-Infinity	-Infinity	- Infinity	-Infinity	-91
			-		
	4 -94 poth cells are	4 -Infinity -94 -Infinity poth cells are fully allocate	4 -Infinity -Infinity -94 -Infinity -Infinity	-98 4 -Infinity -Infinity - Infinity -94 -Infinity -Infinity - Infinity AWGN both cells are fully allocated and a constant total transi	-98 4 -Infinity -Infinity - Infinity - Infinity -94 -Infinity -Infinity - Infinity - Infinity

#### Table A.6.1.2.1-2: Cell specific test parameters for E-UTRAN FDD inter-frequency RRC Reestablishment test case

subcarriers and time and shall be modelled as AWGN of appropriate power for  $\,N_{_{oc}}\,$  to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

## A.6.1.2.2 Test Requirements

The RRC re-establishment delay is defined as the time from the start of time period T3, to the moment when the UE starts to send PRACH preambles to cell 2 for sending the *RRCConnectionReestablishmentRequest* message to cell 2.

The RRC re-establishment delay to an unknown E-UTRA FDD inter frequency cell shall be less than 3 s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in the test is derived from the following expression:

 $T_{re\text{-establish\_delay}} = T_{UL\_grant} + T_{UE\_re\text{-establish\_delay}}.$ 

Where:

 $T_{UL\_grant}$  = It is the time required to acquire and process uplink grant from the target cell. The PRACH reception at the system simulator is used as a trigger for the completion of the test; hence  $T_{UL\_grant}$  is not used.

 $T_{UE\_re\text{-}establish\_delay} = 50 \text{ ms} + N_{freq} * T_{search} + T_{SI} + T_{PRACH}$ 

$$N_{\text{freq}} = 2$$

 $T_{search} = 800 \text{ ms}$ 

 $T_{SI} = 1280$  ms; it is the time required for receiving all the relevant system information as defined in 3GPP TS 36.331 for the target E-UTRAN FDD cell.

 $T_{PRACH} = 15$  ms; it is the additional delay caused by the random access procedure.

This gives a total of 2945 ms, allow 3 s in the test case.

## A.6.1.3 E-UTRAN TDD Intra-frequency RRC Re-establishment

#### A.6.1.3.1 Test Purpose and Environment

The purpose is to verify that the E-UTRA TDD intra-frequency RRC re-establishment delay is within the specified limits. These tests will verify the requirements in section 6.1.2.

The test parameters are given in table A.6.1.3.1-1 and table A.6.1.3.1-2 below. The test consists of 3 successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time period T2, cell 1, which is the active cell, is deactivated. The time period T3 starts after the occurrence of the radio link failure.

## Table A.6.1.3.1-1: General test parameters for E-UTRAN TDD intra-frequency RRC Re-establishment test case

Parameter		Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters			DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chann	el Number		1	Only one TDD carrier frequency is used.
Channel Bandwidth	n (BW <sub>channel</sub> )	MHz	10	
N310		-	1	Maximum consecutive out-of-sync indications from lower layers
N311		-	1	Minimum consecutive in-sync indications from lower layers
T310		ms	0	Radio link failure timer; T310 is disabled
T311		ms	3000	RRC re-establishment timer
DRX			OFF	
CP length			Normal	
Access Barring Info	ormation	-	Not Sent	No additional delays in random access procedure.
Special subframe configuration			6	As specified in table 4.2-1 in TS 36.211
Uplink-downlink configuration			1	As specified in table 4.2-2 in TS 36.211
PRACH configuration	on index		53	As specified in table 5.7.1-3 in TS 36.211
Time offset betwee	n cells	μs	3	Synchronous cells
T1		s	5	-
T2		ms	200	
Т3		S	3	

Parameter	Unit Cell 1				Cell 2			
		T1	T2	Т3	T1	T2	Т3	
E-UTRA RF Channel			1	•		1		
Number								
BW <sub>channel</sub>	MHz		10			10		
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 TDD	OP.2 TDD	OP.1 TDD	
defined in A.3.2.2.1		TDD	TDD	TDD				
(OP.1 TDD) and in								
A.3.2.2.2 (OP.2 TDD)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB							
PHICH_RB	dB							
PDCCH_RA	dB		0			0		
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA <sup>Note 1</sup>	dB							
OCNG_RB <sup>Note 1</sup>	dB							
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	1.54	-Infinity	-Infinity	-3.79	4	4	
$N_{oc}^{\rm Note 2}$	dBm/15 KHz		·		-98	·	·	
$\hat{E}_s/N_{oc}$	dB	7	-Infinity	-Infinity	4	4	4	
RSRP Note 3	dBm/15 KHz	-91	-Infinity	-Infinity	-94	-94	-94	
Propagation Condition		AWGN						
Note 1: OCNG shall be u density is achieve	ed for all OFDM s	ymbols.			stant total trans		pectral	

#### Table A.6.1.3.1-2: Cell specific test parameters for E-UTRAN TDD intra-frequency RRC Reestablishment test case

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over

subcarriers and time and shall be modelled as AWGN of appropriate power for  $N_{oc}$  to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

#### A.6.1.3.2 **Test Requirements**

The RRC re-establishment delay is defined as the time from the start of time period T3, to the moment when the UE starts to send PRACH preambles to cell 2 for sending the RRCConnectionReestablishmentRequest message to cell 2.

The RRC re-establishment delay to a known E-UTRA TDD intra frequency cell shall be less than 1.5 s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in the test is derived from the following expression:

 $T_{re-establish\_delay} = T_{UL\_grant} + T_{UE\_re-establish\_delay}$ .

Where:

T<sub>UL\_grant</sub> = It is the time required to acquire and process uplink grant from the target cell. The PRACH reception at the system simulator is used as a trigger for the completion of the test; hence T<sub>UL grant</sub> is not used.

 $T_{UE\_re-establish\_delay} = 50 \text{ ms} + N_{freq} * T_{search} + T_{SI} + T_{PRACH}$ 

 $N_{\text{freg}} = 1$ 

 $T_{search} = 100 \text{ ms}$ 

 $T_{SI} = 1280$  ms; it is the time required for receiving all the relevant system information as defined in 3GPP TS 36.331 for the target E-UTRAN TDD cell.

 $T_{PRACH} = 15$  ms; it is the additional delay caused by the random access procedure.

This gives a total of 1445 ms, allow 1.5 s in the test case.

## A.6.1.4 E-UTRAN TDD Inter-frequency RRC Re-establishment

### A.6.1.4.1 Test Purpose and Environment

The purpose is to verify that the E-UTRA TDD inter-frequency RRC re-establishment delay is within the specified limits. These tests will verify the requirements in section 6.1.2.

The test parameters are given in table A.6.1.4.1-1 and table A.6.1.4.1-2 below. The test consists of 3 successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time period T2, cell 1, which is the active cell, is deactivated. The time period T3 starts after the occurrence of radio link failure. At the start of time period T3, cell 2, which is the neighbour cell, is activated.

## Table A.6.1.4.1-1: General test parameters for E-UTRAN TDD inter-frequency RRC Re-establishment test case

Parameter		Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters			DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chan	nel Number (cell 1)		1	
E-UTRA RF Channel Number (cell 2)			2	
E-UTRA TDD inte	r-frequency carrier list		1	2 E-UTRA TDD carrier
size				frequencies in total: 1 intra- frequency and 1 inter-frequency
Channel Bandwidt	th (BW <sub>channel</sub> )	MHz	10	
N310	( ••••••••	-	1	Maximum consecutive out-of-sync indications from lower layers
N311		-	1	Minimum consecutive in-sync indications from lower layers
T310		ms	0	Radio link failure timer; T310 is disabled
T311		ms	5000	RRC re-establishment timer
DRX			OFF	
CP length			Normal	
Access Barring Int	formation	-	Not Sent	No additional delays in random access procedure.
Special subframe configuration			6	As specified in table 4.2-1 in TS 36.211
Uplink-downlink co	onfiguration		1	As specified in table 4.2-2 in TS 36.211
PRACH configura	tion index		53	As specified in table 5.7.1-3 in TS 36.211
Time offset between cells		μs	3	Synchronous cells
T1		S	5	-
T2		ms	200	
T3		S	5	
		-	1-	1

Parameter	Unit	Unit Cell 1			Cell 2		
		T1	T2	Т3	T1	T2	Т3
E-UTRA RF Channel			1	•		2	
Number							
BW <sub>channel</sub>	MHz		10			10	
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 TDD	OP.2 TDD	OP.1 TDD
defined in A.3.2.2.1		TDD	TDD	TDD			
(OP.1 TDD) and in							
A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB						
PDCCH_RA	dB		0			0	
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA <sup>Note 1</sup>	dB						
OCNG_RB <sup>Note 1</sup>	dB						
$\hat{E}_{s}/I_{ot}$	dB	4	-Infinity	-Infinity	-Infinity	-Infinity	7
$N_{oc}^{\rm Note 2}$	dBm/15 KHz		·		-98	·	
$\hat{E}_s/N_{oc}$	dB	4	-Infinity	-Infinity	- Infinity	- Infinity	7
RSRP Note 3	dBm/15 KHz	-94	-Infinity	-Infinity	- Infinity	-Infinity	-91
Propagation Condition		AWGN					
Note 1: OCNG shall be u density is achieve	ed for all OFDM s	ymbols.	-				-

#### Table A.6.1.4.1-2: Cell specific test parameters for E-UTRAN TDD inter-frequency RRC Reestablishment test case

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for  $N_{oc}$  to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

#### A.6.1.4.2 **Test Requirements**

The RRC re-establishment delay is defined as the time from the start of time period T3, to the moment when the UE starts to send PRACH preambles to cell 2 for sending the RRCConnectionReestablishmentRequest message to cell 2.

The RRC re-establishment delay to an unknown E-UTRA TDD inter frequency cell shall be less than 3 s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in the test is derived from the following expression:

 $T_{re-establish\_delay} = T_{UL\_grant} + T_{UE\_re-establish\_delay}$ .

Where:

 $T_{UL_{grant}} = It$  is the time required to acquire and process uplink grant from the target cell. The PRACH reception at the system simulator is used as a trigger for the completion of the test; hence T<sub>UL grant</sub> is not used.

 $T_{UE\_re-establish\_delay} = 50 \text{ ms} + N_{freq} * T_{search} + T_{SI} + T_{PRACH}$ 

$$N_{\text{freq}} = 2$$

 $T_{search} = 800 \text{ ms}$ 

 $T_{SI}$  = 1280 ms; it is the time required for receiving all the relevant system information as defined in 3GPP TS 36.331 for the target E-UTRAN TDD cell.

 $T_{PRACH} = 15$  ms; it is the additional delay caused by the random access procedure. This gives a total of 2945 ms, allow 3 s in the test case.

## A.6.2 Random Access

## A.6.2.1 E-UTRAN FDD – Contention Based Random Access Test

### A.6.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the behavior of the random access procedure is according to the requirements and that the PRACH power settings and timing are within specified limits. This test will verify the requirements in Section 6.2.2 and Section 7.1.2 in an AWGN model.

For this test a single cell is used. The test parameters are given in tables A.6.2.1.1-1 and A.6.2.1.1-2.

Parameter	Unit	Value	Comments
E-UTRA RF Channel Number		1	
BW <sub>channel</sub>	MHz		As defined in A 2.2.1.1
OCNG Pattern		OP.1 FDD	As defined in A.3.2.1.1. As defined in A.3.1.1.1.
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As defined in A.3.1.2.1.
parameters		Channel R.6 FDD	
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB	_	
PHICH_RB	dB	0	
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB OCNG_RA Note 1	dB		
OCNG_RA OCNG_RB Note 1	dB dB		
	dВ	3	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	uВ	3	
$N_{oc}$	dBm/15 KHz	-98	
$\hat{E}_{s}/N_{oc}$	dB	3	
lo <sup>Note 2</sup>	dBm/9 MHz	-65.5	
RSRP <sup>Note 3</sup>	dBm/15 KHz	-95	
referenceSignalPower	dBm/15 KHz	-5	As defined in clause 6.3.2 in 3GPP TS 36.331.
Configured UE transmitted	dBm	23	As defined in clause 6.2.5
power ( $P_{\rm CMAX}$ )			in 3GPP TS 36.101.
PRACH Configuration Index	-	4	As defined in table 5.7.1-2 in 3GPP TS 36.211.
Backoff Parameter Index	-	2	As defined in table 7.2-1 in 3GPP TS 36.321.
Propagation Condition	-	AWGN	

Propagation Condition

AWGN

Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: lo level has been derived from other parameters for information purpose. It is not a settable parameter.

Note 3: RSRP level has been derived from other parameters for information purposes. It is not a settable parameter.

Table A.6.2.1.1-2: RACH-Configuration parameters for FDD contention based random access test

Field	Value	Comment		
powerRampingStep	dB2			
preambleInitialReceivedTargetPower	dBm-120			
preambleTransMax	n6			
ra-ResponseWindowSize	sf10	10 sub-frames		
mac-ContentionResolutionTimer	sf48	48 sub-frames		
maxHARQ-Msg3Tx	4			
Note: For further information see Section 6.3.2 in 3GPP TS 36.331.				

### A.6.2.1.2 Test Requirements

Contention based random access is triggered by *not* explicitly assigning a random access preamble via dedicated signalling in the downlink.

### A.6.2.1.2.1 Random Access Response Reception

To test the UE behavior specified in Subclause 6.2.2.1.1 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. In response to the first 4 preambles, the System Simulator shall transmit a Random Access Preamble.

The UE may stop monitoring for Random Access Response(s) and shall transmit the msg3 if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if all received Random Access Responses contain Random Access Preamble identifiers that do not match the transmitted Random Access Preamble.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -30 dBm. The power of the first preamble shall be -30 dBm with an accuracy specified in section 6.3.5.1.1 of 3GPP TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in section 6.3.5.2.1 of 3GPP TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

#### A.6.2.1.2.2 No Random Access Response Reception

To test the UE behavior specified in subclause 6.2.2.1.2 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. The System Simulator shall *not* respond to the first 4 preambles.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if no Random Access Response is received within the RA Response window.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -30 dBm with an accuracy specified in section 6.3.5.1.1 of 3GPP TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in section 6.3.5.2.1 of 3GPP TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

### A.6.2.1.2.3 Receiving a NACK on msg3

To test the UE behavior specified in subclause 6.2.2.1.3 the System Simulator shall NACK *all* UE msg3 following a successful Random Access Response.

The UE shall re-transmit the msg3 upon the reception of a NACK on msg3 until the maximum number of HARQ re-transmissions is reached.

#### A.6.2.1.2.4 Reception of an Incorrect Message over Temporary C-RNTI

To test the UE behavior specified in Subclause 6.2.2.1.5 the System Simulator shall send a message addressed to the temporary C-RNTI with a UE Contention Resolution Identity included in the MAC control element *not* matching the CCCH SDU transmitted in msg3 uplink message.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires unless the received message includes a UE Contention Resolution Identity MAC control element and the UE Contention Resolution Identity included in the MAC control element matches the CCCH SDU transmitted in the uplink message.

#### A.6.2.1.2.5 Reception of a Correct Message over Temporary C-RNTI

To test the UE behavior specified in Subclause 6.2.2.1.5 the System Simulator shall send a message addressed to the temporary C-RNTI with a UE Contention Resolution Identity included in the MAC control element matching the CCCH SDU transmitted in the msg3 uplink message.

The UE shall send ACK if the Contention Resolution is successful.

### A.6.2.1.2.6 Contention Resolution Timer expiry

To test the UE behavior specified in Subclause 6.2.2.1.6 the System Simulator shall not send a response to a msg3.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if the Contention Resolution Timer expires.

## A.6.2.2 E-UTRAN FDD – Non-Contention Based Random Access Test

### A.6.2.2.1 Test Purpose and Environment

The purpose of this test is to verify that the behavior of the random access procedure is according to the requirements and that the PRACH power settings and timing are within specified limits. This test will verify the requirements in Section 6.2.2 and Section 7.1.2 in an AWGN model.

For this test a single cell is used. The test parameters are given in tables A.6.2.2.1-1 and A.6.2.2.1-2.

Parameter	Unit	Value	Comments
E-UTRA RF Channel Number		1	
BW <sub>channel</sub> OCNG Pattern	MHz	10 OP.1 FDD	As defined in A.3.2.1.1.
		DL Reference Measurement	As defined in A.3.2.1.1. As defined in A.3.1.1.1.
PDSCH parameters		Channel R.0 FDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As defined in A.3.1.2.1.
parameters		Channel R.6 FDD	
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		
PHICH_RB	dB	0	
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA Note 1	dB		
OCNG_RB Note 1	dB	0	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	3	
$N_{oc}$	dBm/15 KHz	-98	
$\hat{E}_{s}/N_{oc}$	dB	3	
lo Note 2	dBm/9 MHz	-65.5	
RSRP Note 3	dBm/15 KHz	-95	
	dBm/15 KHz	-5	As defined in clause 6.3.2
referenceSignalPower			in 3GPP TS 36.331.
Configured UE transmitted	dBm	23	As defined in clause 6.2.5
power ( $P_{ m CMAX}$ )			in 3GPP TS 36.101.
PRACH Configuration Index	-	4	As defined in table 5.7.1-2
			in 3GPP TS 36.211.
Backoff Parameter Index	-	2	As defined in table 7.2-1
			in 3GPP TS 36.321.
Propagation Condition	-	AWGN	

#### Table A.6.2.2.1-1: General test parameters for FDD non-contention based random access test

Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: lo level has been derived from other parameters for information purpose. It is not a settable parameter.

Note 3: RSRP level has been derived from other parameters for information purposes. It is not a settable parameter.

Table A.6.2.2.1-2: RACH-Configuration parameters for FDD non-contention based random access test

Field	Value	Comment		
powerRampingStep	dB2			
preambleInitialReceivedTargetPower	dBm-120			
preambleTransMax	n6			
ra-ResponseWindowSize	sf10	10 sub-frames		
Note: For further information see Section 6.3.2 in 3GPP TS 36.331.				

#### A.6.2.2.2 **Test Requirements**

Non-Contention based random access is triggered by explicitly assigning a random access preamble via dedicated signalling in the downlink.

### A.6.2.2.2.1 Random Access Response Reception

To test the UE behavior specified in Subclause 6.2.2.2.1 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. In response to the first 4 preambles, the System Simulator shall transmit a Random Access Preamble.

The UE may stop monitoring for Random Access Response(s) if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble.

The UE shall re-transmit the preamble with the calculated PRACH transmission power if all received Random Access Responses contain Random Access Preamble identifiers that do not match the transmitted Random Access Preamble.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -30 dBm with an accuracy specified in section 6.3.5.1.1 of 3GPP TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in section 6.3.5.2.1 of 3GPP TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

### A.6.2.2.2.2 No Random Access Response Reception

To test the UE behavior specified in subclause 6.2.2.2.2 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. The System Simulator shall *not* respond to the first 4 preambles.

The UE shall re-transmit the preamble with the calculated PRACH transmission power.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -30 dBm with an accuracy specified in section 6.3.5.1.1 of 3GPP TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in section 6.3.5.2.1 of 3GPP TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

### A.6.2.3 E-UTRAN TDD – Contention Based Random Access Test

#### A.6.2.3.1 Test Purpose and Environment

The purpose of this test is to verify that the behavior of the random access procedure is according to the requirements and that the PRACH power settings and timing are within specified limits. This test will verify the requirements in Section 6.2.2 and Section 7.1.2 in an AWGN model.

For this test a single cell is used. The test parameters are given in tables A.6.2.3.1-1 and A.6.2.3.1-2.

Parameter	Unit	Value	Comments
E-UTRA RF Channel Number	-	1	
BW <sub>channel</sub>	MHz	10	
OCNG Pattern	-	OP.1 TDD	As defined in A.3.2.2.1.
PDSCH parameters	-	DL Reference Measurement Channel R.0 TDD	As defined in A.3.1.1.2.
PCFICH/PDCCH/PHICH parameters	-	DL Reference Measurement Channel R.6 TDD	As defined in A.3.1.2.2.
Special subframe configuration	-	6	As specified in table 4.2-1 in 3GPP TS 36.211.
Uplink-downlink configuration	-	1	As specified in table 4.2-2 in 3GPP TS 36.211.
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		
PHICH_RB	dB	0	
PDCCH_RA	dB		
PDCCH_RB PDSCH_RA	dB dB		
PDSCH_RB	dB		
OCNG_RA Note 1	dB		
OCNG_RB Note 1	dB		
$\hat{E}_{s}/I_{ot}$	dB	3	
$\mathbf{E}_{s}/\mathbf{I}_{ot}$			
$N_{oc}$	dBm/15 KHz	-98	
$\hat{E}_{_s}/N_{_{oc}}$	dB	3	
lo Note 2	dBm/9 MHz	-65.5	
RSRP <sup>Note 3</sup>	dBm/15 KHz	-95	
referenceSignalPower	dBm/15 KHz	-5	As defined in clause 6.3.2 in 3GPP TS 36.331.
Configured UE transmitted	dBm	23	As defined in clause 6.2.5
power ( $P_{ m CMAX}$ )			in 3GPP TS 36.101.
PRACH Configuration Index	-	53	As defined in table 5.7.1-3 in 3GPP TS 36.211.
Backoff Parameter Index	-	2	As defined in table 7.2-1 in 3GPP TS 36.321.
Propagation Condition	-	AWGN	

#### Table A.6.2.3.1-1: General test parameters for TDD contention based random access test

Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: lo level has been derived from other parameters for information purpose. It is not a settable parameter.

Note 3: RSRP level has been derived from other parameters for information purposes. It is not a settable parameter.

Field	Value	Comment			
numberOfRA-Preambles	n52				
sizeOfRA-PreamblesGroupA	n52	No group B.			
powerRampingStep	dB2				
preambleInitialReceivedTargetPower	dBm-120				
preambleTransMax	n6				
ra-ResponseWindowSize	sf10	10 sub-frames			
mac-ContentionResolutionTimer	sf48	48 sub-frames			
maxHARQ-Msg3Tx	4				
Note: For further information see Section 6.3.2 in 3GPP TS 36.331.					

### Table A.6.2.3.1-2: RACH-Configuration parameters for TDD contention based random access test

### A.6.2.3.2 Test Requirements

Contention based random access is triggered by *not* explicitly assigning a random access preamble via dedicated signalling in the downlink.

### A.6.2.3.2.1 Random Access Response Reception

To test the UE behavior specified in Subclause 6.2.2.1.1 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. In response to the first 4 preambles, the System Simulator shall transmit a Random Access Preamble.

The UE may stop monitoring for Random Access Response(s) and shall transmit the msg3 if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if all received Random Access Responses contain Random Access Preamble identifiers that do not match the transmitted Random Access Preamble.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -30 dBm. The power of the first preamble shall be -30 dBm with an accuracy specified in section 6.3.5.1.1 of 3GPP TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in section 6.3.5.2.1 of 3GPP TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

### A.6.2.3.2.2 No Random Access Response reception

To test the UE behavior specified in Subclause 6.2.2.1.2 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. The System Simulator shall *not* respond to the first 4 preambles.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if no Random Access Response is received within the RA Response window.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -30 dBm with an accuracy specified in section 6.3.5.1.1 of 3GPP TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in section 6.3.5.2.1 of 3GPP TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

### A.6.2.3.2.3 Receiving a NACK on msg3

To test the UE behavior specified in Subclause 6.2.2.1.3 the System Simulator shall NACK *all* UE msg3 following a successful Random Access Response.

The UE shall re-transmit the msg3 upon the reception of a NACK on msg3 until the maximum number of HARQ re-transmissions is reached.

### A.6.2.3.2.4 Reception of an Incorrect Message over Temporary C-RNTI

To test the UE behavior specified in Subclause 6.2.2.1.5 the System Simulator shall send a message addressed to the temporary C-RNTI with a UE Contention Resolution Identity included in the MAC control element *not* matching the CCCH SDU transmitted in msg3 uplink message.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires unless the received message includes a UE Contention Resolution Identity MAC control element and the UE Contention Resolution Identity included in the MAC control element matches the CCCH SDU transmitted in the uplink message.

### A.6.2.3.2.5 Reception of a Correct Message over Temporary C-RNTI

To test the UE behavior specified in Subclause 6.2.2.1.5 the System Simulator shall send a message addressed to the temporary C-RNTI with a UE Contention Resolution Identity included in the MAC control element matching the CCCH SDU transmitted in the msg3 uplink message.

The UE shall send ACK if the Contention Resolution is successful.

### A.6.2.3.2.6 Contention Resolution Timer expiry

To test the UE behavior specified in Subclause 6.2.2.1.6 the System Simulator shall not send a response to a msg3.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if the Contention Resolution Timer expires.

## A.6.2.4 E-UTRAN TDD – Non-Contention Based Random Access Test

### A.6.2.4.1 Test Purpose and Environment

The purpose of this test is to verify that the behavior of the random access procedure is according to the requirements and that the PRACH power settings and timing are within specified limits. This test will verify the requirements in Section 6.2.2 and Section 7.1.2 in an AWGN model.

For this test a single cell is used. The test parameters are given in tables A.6.2.4.1-1 and A.6.2.4.1-2.

Parameter	Unit	Value	Comments
E-UTRA RF Channel Number	-	1	
BW <sub>channel</sub> OCNG Pattern	MHz	10 OP.1 TDD	As defined in A.3.2.2.1.
PDSCH parameters	-	DL Reference Measurement	As defined in A.3.2.2.1. As defined in A.3.1.1.2.
FDSCH parameters	-	Channel R.0 TDD	As defined in A.S.T.T.Z.
PCFICH/PDCCH/PHICH parameters	-	DL Reference Measurement Channel R.6 TDD	As defined in A.3.1.2.2.
Special subframe	-	6	As specified in table 4.2-1
configuration			in 3GPP TS 36.211.
Uplink-downlink configuration	-	1	As specified in table 4.2-2 in 3GPP TS 36.211.
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB PHICH_RA	dB dB		
PHICH RB	dB	0	
PDCCH_RA	dB	Ũ	
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA Note 1	dB		
OCNG_RB Note 1	dB	_	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	3	
$N_{oc}$	dBm/15 KHz	-98	
$\hat{E}_{_s}/N_{_{oc}}$	dB	3	
lo Note 2	dBm/9 MHz	-65.5	
RSRP <sup>Note 3</sup>	dBm/15 KHz	-95	
referenceSignalPower	dBm/15 KHz	-5	As defined in clause 6.3.2 in 3GPP TS 36.331.
Configured UE transmitted	dBm	23	As defined in clause 6.2.5
power ( $P_{ m CMAX}$ )			in 3GPP TS 36.101.
PRACH Configuration Index	-	53	As defined in table 5.7.1-3 in 3GPP TS 36.211.
Backoff Parameter Index	-	2	As defined in table 7.2-1
Propagation Condition	-	AWGN	in 3GPP TS 36.321.

#### Table A.6.2.4.1-1: General test parameters for TDD non-contention based random access test

Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: lo level has been derived from other parameters for information purpose. It is not a settable parameter.

Note 3: RSRP level has been derived from other parameters for information purposes. It is not a settable parameter.

Table A.6.2.4.1-2: RACH-Configuration parameters for TDD non-contention based random access test

Field	Value	Comment		
powerRampingStep	dB2			
preambleInitialReceivedTargetPower	dBm-120			
preambleTransMax	n6			
ra-ResponseWindowSize	sf10	10 sub-frames		
Note: For further information see Section 6.3.2 in 3GPP TS 36.331.				

### A.6.2.4.2 Test Requirements

Non-Contention based random access is triggered by explicitly assigning a random access preamble via dedicated signalling in the downlink.

### A.6.2.4.2.1 Random Access Response Reception

To test the UE behavior specified in Subclause 6.2.2.2.1 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. In response to the first 4 preambles, the System Simulator shall transmit a Random Access Preamble.

The UE may stop monitoring for Random Access Response(s) if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble.

The UE shall re-transmit the preamble with the calculated PRACH transmission power if all received Random Access Responses contain Random Access Preamble identifiers that do not match the transmitted Random Access Preamble.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -30 dBm with an accuracy specified in section 6.3.5.1.1 of 3GPP TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in section 6.3.5.2.1 of 3GPP TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

### A.6.2.4.2.2 No Random Access Response Reception

To test the UE behavior specified in Subclause 6.2.2.2 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. The System Simulator shall *not* respond to the first 4 preambles.

The UE shall re-transmit the preamble with the calculated PRACH transmission power.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -30 dBm with an accuracy specified in section 6.3.5.1.1 of 3GPP TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in section 6.3.5.2.1 of 3GPP TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

## A.7 Timing and Signalling Characteristics

## A.7.1 UE Transmit Timing

## A.7.1.1 E-UTRAN FDD – UE Transmit Timing Accuracy Tests

#### A.7.1.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE is capable of following the frame timing change of the connected eNode B and that the UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are within the specified limits. This test will verify the requirements in section 7.1.2.

For this test a single cell is used. Table A.7.1.1.1-1 defines the strength of the transmitted signals and the propagation condition. The transmit timing is verified by the UE transmitting sounding reference symbols using the configuration defined in Table A.7.1.1.1-2.

<b>B</b>		Value			
Parameter	Unit	Test 1	Test 2	Test 3	
E-UTRA RF Channel Number		1	1	1	
Channel Bandwidth (BW <sub>channel</sub> )	MHz	10	10	1.4	
DRX cycle	ms	OFF	80 <sup>Note5</sup>	OFF	
PDCCH/PCFICH/PHICH					
Reference measurement		R.6 FDD	R.6 FDD	R.8 FDD	
channel <sup>Note1</sup>					
OCNG Pattern <sup>Note2</sup>		OP.2 FDD	OP.2 FDD	OP.4 FDD	
PBCH_RA					
PBCH_RB					
PSS_RA					
SSS_RA					
PCFICH_RB					
PHICH_RA	dB	0	0	0	
PHICH_RB		C C	Ū	Ū	
PDCCH_RA					
PDCCH_RB					
OCNG_RA <sup>Note3</sup>					
OCNG_RB <sup>Note3</sup>	-				
N <sub>oc</sub>	dBm/15 kHz	-98	-98	-98	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	3	3	3	
$\hat{E}_s/N_{oc}$	dB	3	3	3	
lo <sup>Note4</sup>	dBm/9 MHz	-65.5	-65.5	N/A	
	dBm/1.08 MHz	N/A	N/A	-74.7	
Propagation condition	-	AWGN	AWGN	AWGN	
Note 1: For the reference measurement channels, see section A.3.1. Note 2: For the OCNG pattern, see section A.3.2. Note 3: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.					

### Table A.7.1.1.1-1: Test Parameters for UE Transmit Timing Accuracy Tests for E-UTRAN FDD

Note 4: lo level has been derived from other parameters for information purpose. It is not a settable parameter.

Note 5: DRX related parameters are defined in Table A.7.1.1.1-3.

# Table A.7.1.1.1-2: Sounding Reference Symbol Configuration to be used in UE Transmit Timing Accuracy Tests for E-UTRAN FDD

Field	Test 1	Test 2	Test 3	Comment
Field		Value		
srsBandwidthConfiguration	bw5	bw5	bw7	
srsSubframeConfiguration	sc1	sc3	sc1	
ackNackSrsSimultaneousTransmission	FALSE	FALSE	FALSE	
srsMaxUpPTS	N/A	N/A	N/A	Not applicable for FDD
srsBandwidth	0	0	0	No hopping
srsHoppingBandwidth	hbw0	hbw0	hbw0	
frequencyDomainPosition	0	0	0	
duration	TRUE	TRUE	TRUE	Indefinite duration
Srs-ConfigurationIndex	0	77	0	SRS periodicity of 2ms and 80 ms for Test 1 and 2, respectively.
transmissionComb	0	0	0	
cyclicShift	cs0	cs0	cs0	No cyclic shift
Note: For further information see section	6.3.2 in 3GF	P TS 36.33	1.	

# Table A.7.1.1.1-3: drx-Configuration to be used in UE Transmit Timing Accuracy Test 2 for E-UTRANFDD

Field	Test2	Comment
	Value	
onDurationTimer	psf1	
drx-InactivityTimer	psf1	
drx-RetransmissionTimer	sf1	
longDRX-CycleStartOffset	sf80	
shortDRX	disable	
Note: For further information see se	ection 6.3.2 in 3GPP T	S 36.331.

### A.7.1.1.2 Test Requirements

For parameters specified in Tables A.7.1.1.1-1 and A.7.1.1.1-2, the initial transmit timing accuracy, the maximum amount of timing change in one adjustment, the minimum and the maximum adjustment rate shall be within the limits defined in section 7.1.2.

The following sequence of events shall be used to verify that the requirements are met.

For the 10MHz channel bandwith, the test sequence shall be carried out in RRC\_CONNECTED for both non-DRX and DRX with a cycle length of 80 ms (Tests 1 and 2, respectively):

- a) After a connection is set up with the cell, the test system shall verify that the UE transmit timing offset is within  $N_{TA} \times T_S \pm 12 \times T_S$  with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- b) The test system adjusts the downlink transmit timing for the cell by  $+64 \times T_s$  (approximately  $+2\mu s$ ) compared to that in (a).
- c) The test system shall verify that for Test 1 the adjustment step size and the adjustment rate shall be according to the requirements in section 7.1.2 until the UE transmit timing offset is within  $N_{TA} \times T_S \pm 12 \times T_S$  with respect to the first detected path (in time) of the corresponding downlink frame of cell 1. Skip this step for Test 2.
- d) The test system shall verify that the UE transmit timing offset stays within  $N_{TA} \times T_S \pm 12 \times T_S$  with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.

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For the 1.4MHz channel bandwith, the test sequence shall be carried out in RRC\_CONNECTED for non-DRX (Tests 3):

- a) After a connection is set up with the cell, the test system shall verify that the UE transmit timing offset is within  $N_{TA} \times T_S \pm 24 \times T_S$  with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- b) The test system adjusts the downlink transmit timing for the cell by  $+128 \times T_s$  (approximately  $+4\mu s$ ) compared to that in (a).
- c) The test system shall verify that the adjustment step size and the adjustment rate shall be according to the requirements in section 7.1.2 until the UE transmit timing offset is within  $N_{TA} \times T_S \pm 24 \times T_S$  with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- d) The test system shall verify that the UE transmit timing offset stays within  $N_{TA} \times T_S \pm 24 \times T_S$  with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.

### A.7.1.2 E-UTRAN TDD - UE Transmit Timing Accuracy Tests

### A.7.1.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE is capable of following the frame timing change of the connected eNode B and that the UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are within the specified limits. This test will verify the requirements in section 7.1.2.

For this test a single cell is used. Table A.7.1.2.1-1 defines the strength of the transmitted signals and the propagation condition. The transmit timing is verified by the UE transmitting sounding reference symbols using the configuration defined in Table A.7.1.2.1-2.

Parameter	Unit	Value			
		Test 1	Test 2	Test 3	
E-UTRA RF Channel Number		1	1	1	
Channel Bandwidth (BW <sub>channel</sub> )	MHz	10	10	1.4	
Special subframe configuration <sup>Note1</sup>		6	6	6	
Uplink-downlink configuration <sup>Note2</sup>		1	1	1	
DRX cycle	ms	OFF	80 <sup>Note7</sup>	OFF	
PDCCH/PCFICH/PHICH					
Reference measurement channel <sup>Note3</sup>		R.6 TDD	R.6 TDD	R.8 TDD	
OCNG Pattern <sup>Note4</sup>		OP.2 TDD	OP.2 TDD	OP.4 TDD	
PBCH_RA	dB	0	0	0	
PBCH_RB					
PSS_RA					
SSS_RA					
PCFICH_RB			0	0	
PHICH_RA		0			
PHICH_RB					
PDCCH_RA					
PDCCH RB					
OCNG_RA <sup>Note5</sup>					
OCNG_RB <sup>Note5</sup>					
N <sub>oc</sub>	dBm/1 5 kHz	-98	-98	-98	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	3	3	3	
$\hat{E}_{s}/N_{oc}$	dB	3	3	3	
	dBm/9 MHz	-65.5	-65.5	N/A	
lo <sup>Note6</sup>	dBm/1 .08 MHz	N/A	N/A	-74.7	
Propagation condition	-	AWGN	AWGN	AWGN	
Note 1: For the special subframe configuration see table 4.2-1 in 3GPP TS 36.211. Note 2: For the uplink-downlink configuration see table 4.2-2 in 3GPP TS 36.211. Note 3: For the reference measurement channels, see section A.3.1. Note 4: For the OCNG pattern, see section A.3.2. Note 5: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. Note 6: lo level has been derived from other parameters for information purpose. It is not a					

### Table A.7.1.2.1-1: Test Parameters for UE Transmit Timing Accuracy Tests for E-UTRAN TDD

settable parameter. Note 7: DRX related parameters are defined in Table A.7.1.2.1-3.

## Table A.7.1.2.1-2: Sounding Reference Symbol Configuration to be used in UE Transmit Timing Accuracy Tests for E-UTRAN TDD

Field	Test 1	Test 2	Tset3	Comment
rieid	Value			Comment
srsBandwidthConfiguration	bw5	bw5	bw7	
srsSubframeConfiguration	sc3	sc3	sc3	Once every 5 subframes
ackNackSrsSimultaneousTra nsmission	FALSE	FALSE	FALSE	
srsMaxUpPTS	FALSE	FALSE	FALSE	
srsBandwidth	0	0	0	No hopping
srsHoppingBandwidth	hbw0	hbw0	hbw0	
frequencyDomainPosition	0	0	0	
duration	TRUE	TRUE	TRUE	Indefinite duration
Srs-ConfigurationIndex	15	85	15	SRS periodicity of 10 and 80 ms for Test 1 and 2, respectively.
transmissionComb	0	0	0	
cyclicShift	cs0	cs0	cs0	No cyclic shift

# Table A.7.1.2.1-3: DRX Configuration to be used in UE Transmit Timing Accuracy Test 2 for E-UTRAN TDD

Field	Test2	Comment
	Value	
onDurationTimer	psf1	
drx-InactivityTimer	psf1	
drx-RetransmissionTimer	sf1	
longDRX-CycleStartOffset	sf80	
shortDRX	disable	
Note: For further information see section	6.3.2 in 3GF	PP TS 36.331.

### A.7.1.2.2 Test Requirements

For parameters specified in Tables A.7.1.2.1-1 and A.7.1.2.1-2, the initial transmit timing accuracy, the maximum amount of timing change in one adjustment, the minimum and the maximum adjustment rate shall be within the limits defined in section 7.1.2.

The following sequence of events shall be used to verify that the requirements are met.

For the 10MHz channel bandwith, the test sequence shall be carried out in RRC\_CONNECTED for both non-DRX and DRX with a cycle length of 80 ms (Tests 1 and 2, respectively):

- a) After a connection is set up with the cell, the test system shall verify that the UE transmit timing offset is within  $(N_{TA} + 624) \times T_S \pm 12 \times T_S$  with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- b) The test system adjusts the downlink transmit timing for the cell by  $+64 \times T_s$  (approximately  $+2\mu s$ ) compared to that in (a).
- c) The test system shall verify that for test 1 the adjustment step size and the adjustment rate shall be according to the requirements in section 7.1.2 until the UE transmit timing offset is within  $(N_{TA} + 624) \times T_S \pm 12 \times T_S$  with respect to the first detected path (in time) of the corresponding downlink frame of cell 1. Skip this step for test 2.
- d) The test system shall verify that the UE transmit timing offset stays within  $(N_{TA} + 624) \times T_S \pm 12 \times T_S$  with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.

For the 1.4MHz channel bandwith, the test sequence shall be carried out in RRC\_CONNECTED for non-DRX (Tests 3):

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- a) After a connection is set up with the cell, the test system shall verify that the UE transmit timing offset is within  $(N_{TA} + 624) \times T_S \pm 24 \times T_S$  with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- b) The test system adjusts the downlink transmit timing for the cell by  $+128 \times T_s$  (approximately  $+4\mu s$ ) compared to that in (a).
- c) The test system shall verify that the adjustment step size and the adjustment rate shall be according to the requirements in section 7.1.2 until the UE transmit timing offset is within  $(N_{TA}+624)\times T_S \pm 24\times T_S$  with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- d) The test system shall verify that the UE transmit timing offset stays within  $(N_{TA} + 624) \times T_S \pm 24 \times T_S$  with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.

## A.7.2 UE Timing Advance

## A.7.2.1 E-UTRAN FDD – UE Timing Advance Adjustment Accuracy Test

### A.7.2.1.1 Test Purpose and Environment

The purpose of the test is to verify E-UTRAN FDD Timing Advance adjustment accuracy requirements, defined in section 7.3.2.2, in an AWGN model.

The test parameters are given in tables A.7.2.1.1-1, A.7.2.1.1-2, and A.7.2.1.1-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. In each time period, timing advance commands are sent to the UE and Sounding Reference Signals (SRS), as specified in table A.7.2.1.1-3, are sent from the UE and received by the test equipment. By measuring the reception of the SRS, the transmit timing, and hence the timing advance adjustment accuracy, can be measured.

During time period T1, the test equipment shall send one message with a Timing Advance Command MAC Control Element, as specified in Section 6.1.3.5 in TS 36.321. The Timing Advance Command value shall be set to 31, which according to Section 4.2.3 in TS 36.213 results in zero adjustment of the Timing Advance. In this way, a reference value for the timing advance used by the UE is established.

During time period T2, the test equipment shall send a sequence of messages with Timing Advance Command MAC Control Elements, with Timing Advance Command value specified in table A.7.2.1.1-2. This value shall result in changes of the timing advance used by the UE, and the accuracy of the change shall then be measured, using the SRS sent from the UE.

As specified in Section 7.3.2.1, the UE adjusts its uplink timing at sub-frame n+6 for a timing advance command received in sub-frame n. This delay must be taken into account when measuring the timing advance adjustment accuracy, via the SRS sent from the UE.

The UE Time Alignment Timer, described in Section 5.2 in TS 36.321, shall be configured so that it does not expire in the duration of the test.

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Timing Advance Command ( <i>T<sub>A</sub></i> ) value during T1		31	$N_{TA}$ = 0 for the purpose of establishing a reference value from which the timing advance adjustment accuracy can be measured during T2
Timing Advance Command $(T_A)$ value during T2		[39]	N <sub>TA</sub> = [128]
DRX		OFF	
T1	S	5	
T2	S	5	

#### Table A.7.2.1.1-1: General Test Parameters for E-UTRAN FDD Timing Advance Accuracy Test

Parameter	Unit	Value
		T1 T2
E-UTRA RF Channel Number		1
BW <sub>channel</sub>	MHz	10
OCNG Patterns defined in A.3.2.1.1		OP.1 FDD
(OP.1 FDD)		
PBCH_RA	dB	
PBCH_RB	dB	
PSS_RA	dB	
SSS_RA	dB	
PCFICH_RB	dB	
PHICH_RA	dB	
PHICH_RB	dB	0
PDCCH_RA	dB	0
PDCCH_RB	dB	
PDSCH_RA	dB	
PDSCH_RB	dB	
OCNG_RA <sup>Note1</sup>	dB	
OCNG_RB <sup>Note1</sup>	dB	
Timing Advance Command (T <sub>A</sub> )		31 35
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	3
N <sub>oc</sub>	dBm/15 KHz	-98
$\hat{E}_s/N_{oc}$	dB	3
Io <sup>Note2</sup>	dBm/9 MHz	-65.5
Propagation Condition		AWGN
spectral density is achieved for	or all OFDM sym	fully allocated and a constant total transmitted power bols. parameters for information purpose. It is not a settable

#### Table A.7.2.1.1-2: Cell specific Test Parameters for E-UTRAN FDD Timing Advance Accuracy Test

# Table A.7.2.1.1-3: Sounding Reference Symbol Configuration for E-UTRAN FDD Transmit Timing Accuracy Test

Field	Value	Comment
srsBandwidthConfiguration	bw5	
srsSubframeConfiguration	sc3	Once every 5 subframes
ackNackSrsSimultaneousTransmission	FALSE	
srsMaxUpPTS	N/A	Not applicable for E-UTRAN FDD
srsBandwidth	0	No hopping
srsHoppingBandwidth	hbw0	
frequencyDomainPosition	0	
Duration	TRUE	Indefinite duration
Srs-ConfigurationIndex	7	SRS periodicity of 10.
transmissionComb	0	
cyclicShift	cs0	No cyclic shift
Note: For further information see section	6.3.2 in 3GPP T	S 36.331.

### A.7.2.1.2 Test Requirements

The UE shall apply the signalled Timing Advance value to the transmission timing at the designated activation time i.e. 6 sub frames after the reception of the timing advance command.

The Timing Advance adjustment accuracy shall be within the limits specified in section 7.3.2.2.

The rate of correct Timing Advance adjustments observed during repeated tests shall be at least 90%.

## A.7.2.2 E-UTRAN TDD – UE Timing Advance Adjustment Accuracy Test

### A.7.2.2.1 Test Purpose and Environment

The purpose of the test is to verify E-UTRAN TDD Timing Advance adjustment accuracy requirements, defined in section 7.3.2.2, in an AWGN model.

The test parameters are given in tables A.7.2.2.1-1, A.7.2.2.1-2, and A.7.2.2.1-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. In each time period, timing advance commands are sent to the UE and Sounding Reference Signals (SRS), as specified in table A.7.2.2.1-3, are sent from the UE and received by the test equipment. By measuring the reception of the SRS, the transmit timing, and hence the timing advance adjustment accuracy, can be measured.

During time period T1, the test equipment shall send one message with a Timing Advance Command MAC Control Element, as specified in Section 6.1.3.5 in TS 36.321. The Timing Advance Command value shall be set to 31, which according to Section 4.2.3 in TS 36.213 results in zero adjustment of the Timing Advance. In this way, a reference value for the timing advance used by the UE is established.

During time period T2, the test equipment shall send a sequence of messages with Timing Advance Command MAC Control Elements, with Timing Advance Command value specified in table A.7.2.1.1-2. This value shall result in changes of the timing advance used by the UE, and the accuracy of the change shall then be measured, using the SRS sent from the UE.

As specified in Section 7.3.2.1, the UE adjusts its uplink timing at sub-frame n+6 for a timing advance command received in sub-frame n. This delay must be taken into account when measuring the timing advance adjustment accuracy, via the SRS sent from the UE.

The UE Time Alignment Timer, described in Section 5.2 in TS 36.321, shall be configured so that it does not expire in the duration of the test.

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Timing Advance Command ( <i>T<sub>A</sub></i> ) value during T1		31	$N_{TA} = 0$ for the purpose of establishing a reference value from which the timing advance adjustment accuracy can be measured during T2
Timing Advance Command $(T_A)$ value during T2		39	N <sub>TA</sub> = 128
DRX		OFF	
T1	S	5	
T2	S	5	

#### Table A.7.2.2.1-1: General Test Parameters for E-UTRAN TDD Timing Advance Accuracy Test

Parameter	Unit		Value				
		T1	T2				
E-UTRA RF Channel Number		1					
BW <sub>channel</sub>	MHz	10					
Special subframe configuration <sup>Note1</sup>			6				
Uplink-downlink configuration <sup>Note2</sup>			1				
OCNG Patterns defined in A.3.2.2.1			OP.1 TDD				
(OP.1 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB						
PDCCH_RA	dB		0				
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA <sup>Note3</sup>	dB						
OCNG RB <sup>Note3</sup>	dB						
Timing Advance Command (T <sub>A</sub> )		31	35				
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB		3				
N <sub>oc</sub>	dBm/15 KHz		-98				
$\hat{E}_s/N_{oc}$	dB		3				
Io <sup>Note4</sup>	dBm/9 MHz		-65.5				
Propagation Condition			AWGN				
Note 1: For the special subframe con	figuration see table	4.2-1 in 3GPP TS 36	5.211.				
Note 2: For the uplink-downlink config	juration see table 4	.2-2 in 3GPP TS 36.2	211.				
Note 3: OCNG shall be used such that	at both cells are fully	/ allocated and a cor					
spectral density is achieved for							
	ved from other para	meters for information	on purpose. It is not a settable				
parameter.							

### Table A.7.2.2.1-2: Cell specific Test Parameters for E-UTRAN TDD Timing Advance Accuracy Test

 Table A.7.2.2.1-3: Sounding Reference Symbol Configuration for E-UTRAN TDD Transmit Timing

 Accuracy Test

Field	Value	Comment
srsBandwidthConfiguration	bw5	
srsSubframeConfiguration	sc3	Once every 5 subframes
ackNackSrsSimultaneousTransmission	FALSE	
srsMaxUpPTS	N/A	
srsBandwidth	bw0	No hopping
srsHoppingBandwidth	hbw0	
frequencyDomainPosition	0	
Duration	TRUE	Indefinite duration
Srs-ConfigurationIndex	15	SRS periodicity of 10ms.
transmissionComb	0	
cyclicShift	cs0	No cyclic shift
Note: For further information see section	6.3.2 in 3GPP T	S 36.331.

### A.7.2.2.2 Test Requirements

The UE shall apply the signalled Timing Advance value to the transmission timing at the designated activation time i.e. 6 sub frames after the reception of the timing advance command.

The Timing Advance adjustment accuracy shall be within the limits specified in section 7.3.2.2.

## A.7.3 Radio Link Monitoring

### A.7.3.1 E-UTRAN FDD Radio Link Monitoring Test for Out-of-sync

### A.7.3.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.1.1-1, A.7.3.1.1-2 and A.7.3.1.1-3 below. There is one cell (cell 1), which is the active cell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.1.1-4 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

Parameter		Unit		Va	alue		Comment		
			Test 1	Test 2	Test 3	Test 4			
PDSCH parameters			R.0 FDD	R.1 FDD	R.0 FDD	R.1 FDD	As specified in section A.3.1.1.1.		
PCFICH/PDCCH/PHICH parameters			R.6 FDD	R.7 FDD	R.6 FDD	R.7 FDD	As specified in section A.3.1.2.1.		
Active cell			Cell 1	Cell 1	Cell 1	Cell 1	Cell 1 is on E-UTRA RI channel number 1		
CP length			Normal	Normal	Normal	Normal			
	hannel Number		1	1	1	1	One E-UTRA FDD carrier frequency is used.		
E-UTRA Chan (BW <sub>channel</sub> )	nel Bandwidth	MHz	10	10	10	10			
Transmit anter	nas		1	2	1	2			
	DCI format		1C	1C	1C	1C	As defined in section 5.3.3.1.4 in TS 36.212		
In sync transmission	Number of Control OFDM symbols		2	2	2	2	In sync threshold Q <sub>in</sub> and the corresponding		
parameters	Aggregation level	CCE	4	4	4	4	hypothetical		
(Note 1)	ρ <sub>A</sub> , ρ <sub>B</sub>		0	-3	0	-3	PDCCH/PCFICH		
	Ratio of PDCCH to RS EPRE		0	-3	0	-3	transmission parameter are as specified in		
	Ratio of PCFICH to RS EPRE		4	1	4	1	section and Table 7.6.1 2 respectively.		
	DCI format		1A	1A	1A	1A	As defined in section 5.3.3.1.3 in TS 36.212		
Out of sync transmission	Number of Control OFDM symbols		2	2	2	2	Out of sync threshold Q <sub>out</sub> and the		
parameters	Aggregation level	CCE	8	8	8	8	corresponding		
(Note 1)	ρ <sub>A</sub> , ρ <sub>B</sub>		0	-3	0	-3	hypothetical		
	Ratio of PDCCH to RS EPRE	dB	4	1	4	1	PDCCH/PCFICH transmission parameter		
	Ratio of PCFICH to RS EPRE	dB	4	1	4	1	are as specified in section 7.6.1 and Table 7.6.1-1 respectively.		
DRX			OFF	OFF	OFF	OFF			
Layer 3 filtering	g		Enabled	Enabled	Enabled	Enabled	Counters: N310 = 1; N311 = 1		
T310 timer		ms	0	0	0	0	T310 is disabled		
T311 timer		ms	1000	1000	1000	1000	T311 is enabled		
Periodic CQI reporting mode			PUCCH 1-0	PUCCH 1-0	PUCCH 1-0	PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.		
CQI reporting periodicity		ms	2	2	2	2	Minimum CQI reporting periodicity		
Propagation ch	nannel		AWGN	AWGN	ETU 70 Hz	ETU 70 Hz			
T1		S	1	1	1	1			
T2		S	0.4	0.4	0.4	0.4			
T3		S	0.5	0.5	0.5	0.5			

### Table A.7.3.1.1-1: General test parameters for E-UTRAN FDD out-of-sync testing

Parameter	Unit	Test 1			Test 2				
		T1 T2 T3			T1	T2	T3		
E-UTRA RF Channel		1				1	•		
Number									
BW <sub>channel</sub>	MHz		10			10			
Transmit antennas			1			2			
OCNG Pattern									
defined in A.3.2.1			OP.1 FDD			OP.1 FDD	)		
(FDD)									
ρ <sub>A</sub> , ρ <sub>B</sub>			0			-3			
PCFICH_RB	dB		4			1			
PDCCH_RA	dB		0			-3			
PDCCH_RB	dB		0			-3			
PBCH_RA	dB								
PBCH_RB	dB								
PSS_RA	dB								
SSS_RA	dB		0			0			
PHICH_RA	dB		0			-3			
PHICH_RB	dB								
PDSCH_RA	dB								
PDSCH_RB	dB								
OCNG_RA <sup>Note 1</sup>	dB								
OCNG_RB <sup>Note 1</sup>	dB					n			
SNR Note 6	dB	-4.7	-9.5	-13.5	-4.7	-9.5	-13.5		
N <sub>oc</sub>	dBm/15 kHz		-98			-98			
Propagation condition			AWGN			AWGN			
Propagation condition       AWGN       AWGN         Note 1:       OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.       Note 2:         Note 2:       The uplink resources for CQI reporting are assigned to the UE prior to the start of time									
period T1. Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.									
	ontains PDCCI correspond to t								
	me periods T1 in figure A.7.3.		3 is denote	d as SNR1	, SNR2 ar	nd SNR3			

# Table A.7.3.1.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for out-of-sync radio link monitoring tests # 1 and # 2

Parameter	Unit		Test 3			Test 4		
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel			1			1		
Number								
BW <sub>channel</sub>	MHz		10			10		
Transmit antennas			1			2		
OCNG Pattern								
defined in A.3.2.1			OP.1 FDD			OP.1 FDD		
(FDD)								
ρ <sub>A</sub> , ρ <sub>B</sub>			0			-3		
PCFICH_RB	dB		4			1		
PDCCH_RA	dB		0			-3		
PDCCH_RB	dB		0			-3		
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB		0			-3		
PHICH_RA	dB		0		-5			
PHICH_RB PDSCH_RA	dB dB							
PDSCH_RB	dB dB							
OCNG_RA <sup>Note 1</sup>	dB							
OCNG_RA	dB							
SNR <sup>Note 6</sup>	dB	-1.4	-5.5	-11.5	-2.3	-6.2	-12.2	
	dBm/15	-1.4	-98	-11.5	-2.5	-0.2	-12.2	
N <sub>oc</sub>	kHz		-30			-30		
Propagation condition	1412		ETU 70 Hz			ETU 70 Hz	2	
	be used such	that the res	sources in a	cell # 1 are	fully alloca	ated and a	constant	
	tted power spe							
	sources for C						f time	
period T1.		•	0 0		•			
Note 3: The timers and layer 3 filtering related parameters are configured prior to the state period T1.						rt of time		
	ontains PDCCI	ins PDCCH for UEs other than the device under test as part of OCNG						
	correspond to t							
REs.								
Note 6: The SNR in t	time periods T <sup>2</sup>	1, T2 and <sup>-</sup>	T3 is denote	ed as SNR	1, SNR2 a	nd SNR3		
	in figure A.7.3.							
<b>**</b>	-							

# Table A.7.3.1.1-3: Cell specific test parameters for E-UTRAN FDD (cell # 1) for out-of-sync radio link monitoring tests # 3 and # 4

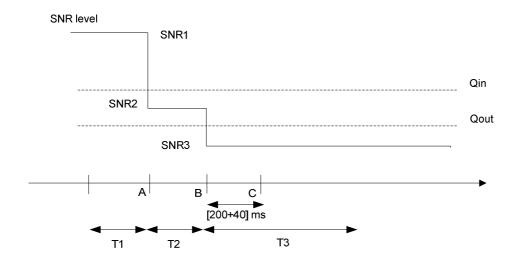


Figure A.7.3.1.1-4 SNR variation for out-of-sync testing

### A.7.3.1.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During time duration T1 and T2 the UE shall continuously report CQI according to the configured CQI mode (PUCCH 1-0) with a periodicity of 2 ms.

The UE shall stop reporting the CQI within 240 ms from the start of the time duration T3.

The rate of correct events observed during repeated tests shall be at least 90%.

## A.7.3.2 E-UTRAN FDD Radio Link Monitoring Test for In-sync

### A.7.3.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.2.1-1 and A.7.3.2.1-2 below. There is one cell (cell 1), which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.2.1-3 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

Parameter		Unit	Va	lue	Comment
			Test 1	Test 2	
PDSCH parameters			R.0 FDD	R.1 FDD	As specified in section A.3.1.1.1.
PCFICH/PDCC parameters	CH/PHICH		R.6 FDD	R.7 FDD	As specified in section A.3.1.2.1.
Active cell			Cell 1	Cell 1	Cell 1 is on E-UTRA RF channel number 1
CP length			Normal	Normal	
	hannel Number		1	1	One E-UTRA FDD carrier frequency is used.
E-UTRA Chan (BW <sub>channel</sub> )	nel Bandwidth	MHz	10	10	
Transmit anter	nas		1	2	
	DCI format		1C	1C	As defined in section 5.3.3.1.4 in TS 36.212
In sync transmission	Number of Control OFDM symbols		2	2	In sync threshold Q <sub>in</sub> and the corresponding
parameters	Aggregation level	CCE	4	4	hypothetical
(Note 1)	ρ <sub>A</sub> , ρ <sub>B</sub>		0	-3	PDCCH/PCFICH
	Ratio of PDCCH to RS EPRE		0	-3	transmission parameters are as specified in section
	Ratio of PCFICH to RS EPRE		4	1	and Table 7.6.1-2 respectively.
	DCI format		1A	1A	As defined in section 5.3.3.1.3 in TS 36.212
Out of sync transmission	Number of Control OFDM symbols		2	2	Out of sync threshold Q <sub>out</sub> and the corresponding
parameters	Aggregation level	CCE	8	8	hypothetical
(Note 1)	ρ <sub>Α</sub> , ρ <sub>Β</sub>		0	-3	PDCCH/PCFICH transmission parameters
	Ratio of PDCCH to RS EPRE	dB	4	1	are as specified in section 7.6.1 and Table 7.6.1-1
	Ratio of PCFICH to RS EPRE	dB	4	1	respectively.
DRX			OFF	OFF	
Layer 3 filtering	g		Enabled	Enabled	Counters: N310 = 1; N311 = 1
T310 timer		ms	2000	2000	T310 is enabled
T311 timer		ms	1000	1000	T311 is enabled
Periodic CQI re	eporting mode		PUCCH 1-0	PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting periodicity		ms	2	2	Minimum CQI reporting periodicity
Propagation ch	nannel		ETU 70 Hz	ETU 70 Hz	
T1		S	0.5	0.5	
T2		S	0.4	0.4	
T3		S	1.46	1.46	
T4		S	0.4	0.4	
	DCCH/PCFICH corr				
ра	rameters need not	be inclu	ded in the Ref	erence Measu	irement Channel.

### Table A.7.3.2.1-1: General test parameters for E-UTRAN FDD in-sync testing

Parameter	Unit			Tes	t 1						Test	2	
		T1 T2 T3 T4 T5				T1 T2 T3 T4 T5							
E-UTRA RF Channel		1								1			
Number													
BW <sub>channel</sub>	MHz			1(	)						10		
Transmit antennas				1							2		
OCNG Pattern										_			
defined in A.3.2.1				OP.1	FDD					0	P.1 F	DD	
(FDD)													
ρ <sub>A</sub> , ρ <sub>B</sub>				0							-3		
PCFICH_RB	dB			4							1		
PDCCH_RA	dB			0							-3		
PDCCH_RB	dB			0							-3		
PBCH_RA	dB			``									
PBCH_RB	dB												
PSS_RA	dB							-3					
SSS_RA	dB												
PHICH_RA	dB			0									
PHICH_RB	dB												
PDSCH_RA	dB												
PDSCH_RB	dB												
OCNG_RA <sup>Note 1</sup>	dB												
OCNG_RB <sup>Note 1</sup>	dB								_				
SNR <sup>Note 6</sup>	dB	-1.4	-5.5	-11	.5	-6.4	-1.4	-2.3	-6.	2	-12.2	2 -7.3	-2.3
$N_{oc}$	dBm/15			-9	8						-98		
	kHz												
Propagation condition			I	ETU 7	0 Hz	<u>.</u>				E٦	TU 70	Hz	
Note 1: OCNG shall	be used such	that the	resourc	es in (	cell #	1 are 1	fully allo	cated a	nd a c	ons	tant to	otal trans	mitted
	al density is a												
Note 2: The uplink re	esources for Co	QI repoi	rting are	assig	ned	to the L	JE prior	to the s	tart of	time	e peri	od T1.	
		ing related parameters are configured pri											
		CCH for UEs other than the device under test as part of OCNG.											
	correspond to t												
	time periods T		3, T4 an	d T5 i	s de	noted a	IS SNR1	, SNR2	, SNR	3, S	NR4	and SNR	5
respectively	in figure A.7.3.	2.1-3.											

# Table A.7.3.2.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for in-sync radio link monitoring tests # 1 and # 2

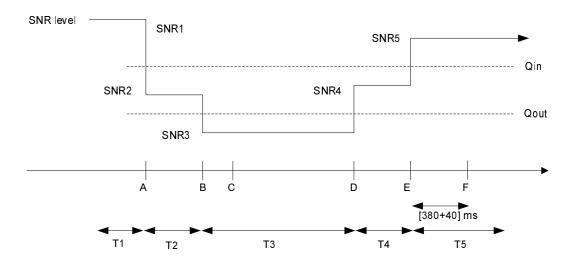


Figure A.7.3.2.1-3 SNR variation for in-sync testing

### A.7.3.2.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During time duration T1, T2, T3, T4 and T5 the UE shall continuously report CQI according to the configured CQI mode (PUCCH 1-0) with a periodicity of 2 ms.

If the UE stops reporting the CQI before Point F (420 ms after the start of the time duration T5), the UE fails the tests.

The rate of correct events observed during repeated tests shall be at least 90%.

## A.7.3.3 E-UTRAN TDD Radio Link Monitoring Test for Out-of-sync

### A.7.3.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.3.1-1, A.7.3.3.1-2 and A.7.3.3.1-3 below. There is one cell (cell 1), which is the active cell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.3.1-4 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms.

Parameter		Unit		Va		Comment		
			Test 1	Test 2	Test 3	Test 4	1	
PDSCH parameters			R.0 TDD	R.1 TDD	R.0 TDD	R.1 TDD	As specified in section A.3.1.1.2.	
PCFICH/PDCCH/PHICH parameters			R.6 TDD	R.7 TDD	R.6 TDD	R.7 TDD	As specified in section A.3.1.2.2.	
Active cell			Cell 1	Cell 1	Cell 1	Cell 1	Cell 1 is on E-UTRA RF channel number 1	
CP length			Normal	Normal	Normal	Normal		
	hannel Number		1	1	1	1	One E-UTRA TDD carrie frequency is used.	
E-UTRA Chan (BW <sub>channel</sub> )	nel Bandwidth	MHz	10	10	10	10		
Transmit anter	nnas		1	2	1	2		
	DCI format		1C	1C	1C	1C	As defined in section 5.3.3.1.4 in TS 36.212	
In sync transmission	Number of Control OFDM symbols		2	2	2	2	In sync threshold Q <sub>in</sub> and the corresponding	
parameters	Aggregation level	CCE	4	4	4	4	hypothetical	
(Note 1)	ρ <sub>A</sub> , ρ <sub>B</sub>		0	-3	0	-3	PDCCH/PCFICH	
	Ratio of PDCCH to RS EPRE		0	-3	0	-3	transmission parameters are as specified in section	
	Ratio of PCFICH to RS EPRE		4	1	4	1	and Table 7.6.1-2 respectively.	
	DCI format		1A	1A	1A	1A	As defined in section 5.3.3.1.3 in TS 36.212	
Out of sync transmission	Number of Control OFDM symbols		2	2	2	2	Out of sync threshold Q <sub>ot</sub> and the corresponding	
parameters	Aggregation level	CCE	8	8	8	8	hypothetical	
(Note 1)	ρ <sub>Α</sub> , ρ <sub>Β</sub>		0	-3	0	-3	PDCCH/PCFICH	
	Ratio of PDCCH to RS EPRE	dB	4	1	4	1	transmission parameters are as specified in sectio	
	Ratio of PCFICH to RS EPRE	dB	4	1	4	1	7.6.1 and Table 7.6.1-1 respectively.	
DRX			OFF	OFF	OFF	OFF		
Layer 3 filterin	9		Enabled	Enabled	Enabled	Enabled	Counters: N310 = 1; N311 = 1	
T310 timer		ms	0	0	0	0	T310 is disabled	
T311 timer		ms	1000	1000	1000	1000	T311 is enabled	
Periodic CQI reporting mode			PUCCH 1-0	PUCCH 1-0	PUCCH 1-0	PUCCH 1-0	As defined in table 7.2.2- in TS 36.213.	
CQI reporting periodicity		ms	1	1	1	1	Minimum CQI reporting periodicity	
Propagation cl	hannel		AWGN	AWGN	ETU 70 Hz	ETU 70 Hz		
T1		S	1	1	1	1		
T2		S	0.4	0.4	0.4	0.4		
T3		s	0.5	0.5	0.5	0.5		

### Table A.7.3.3.1-1: General test parameters for E-UTRAN TDD out-of-sync testing

Parameter	Unit		Test 1			Test 2			
		T1	T2	Т3	T1	T2	T3		
E-UTRA RF Channel			1			1			
Number									
BW <sub>channel</sub>	MHz		10		10				
Transmit antennas			1			2			
Special subframe configuration Note1			6			6			
Uplink-downlink			1			1			
configuration <sup>Note2</sup>									
OCNG Pattern									
defined in A.3.2.2			OP.1 TDD			OP.1 TDD			
(TDD)									
ρ <sub>A</sub> , ρ <sub>B</sub>			0			-3			
PCFICH_RB	dB		4			1			
PDCCH_RA	dB		0			-3			
PDCCH_RB	dB		0			-3			
PBCH_RA	dB								
PBCH_RB	dB								
PSS_RA	dB								
SSS_RA	dB		_			_			
PHICH_RA	dB		0		-3				
PHICH_RB	dB								
PDSCH_RA	dB								
PDSCH_RB	dB								
OCNG_RA <sup>Note 3</sup>	dB								
OCNG_RB <sup>Note 3</sup>	dB								
SNR Note 8	dB	-5.1	-9.1	-13.1	-5.2	-9.2	-13.2		
$N_{oc}$	dBm/15 kHz		-98			-98			
Propagation condition			AWGN			AWGN			
	ial subframe c	onfiguratio		4 2-1 in 30	GPP TS 36				
	k-downlink cor								
							constant		
	OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.								
period T1.									
Note 5: The timers and layer 3 filtering related parameters are configured prior to the start of time									
period T1. Note 6: The signal c	ontains PDCCI	H for LIEs	other than t	he device	under test	as nart of (			
Note 7: SNR levels of	correspond to t								
REs. Note 8: The SNR in tir A.7.3.3.1-4.	ne periods T1, T	2 and T3 is	denoted as \$	SNR1, SNR	2 and SNR3	respectivel	y in figure		

# Table A.7.3.3.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for out-of-sync radio link monitoring tests # 1 and # 2

Parameter	Unit		Test 3			Test 4			
		T1	T1 T2 T3		T1	T2	T3		
E-UTRA RF Channel			1			1			
Number									
BW <sub>channel</sub>	MHz		10		10				
Transmit antennas			1			2			
Special subframe configuration Note1			6			6			
Uplink-downlink			1			1			
configuration <sup>Note2</sup>									
OCNG Pattern									
defined in A.3.2.2			OP.1 TDD			OP.1 TDD			
(TDD)									
ρ <sub>A</sub> , ρ <sub>B</sub>			0			-3			
PCFICH_RB	dB		4			1			
PDCCH_RA	dB		0			-3			
PDCCH_RB	dB		0			-3			
PBCH_RA	dB								
PBCH_RB	dB								
PSS_RA	dB				-3				
SSS_RA	dB								
PHICH_RA	dB		0						
PHICH_RB	dB								
PDSCH_RA	dB								
PDSCH_RB	dB								
OCNG_RA <sup>Note 3</sup>	dB								
OCNG_RB <sup>Note 3</sup>	dB								
SNR Note 8	dB	-1.4	-5.3	-11.3	-2.3	-5.9	-11.9		
N <sub>oc</sub>	dBm/15		-98			-98			
	kHz								
Propagation condition			ETU 70 Hz			ETU 70 Hz	2		
	ial subframe co								
	k-downlink cor								
	be used such						constant		
	total transmitted power spectral density is achieved for all OFDM symbols.								
Note 4: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.									
Note 5: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.									
Note 7: SNR levels of	correspond to t								
REs. Note 8: The SNR in tir A.7.3.3.1-4.	ne periods T1, T	2 and T3 is	denoted as	SNR1, SNR	2 and SNR3	respectivel	y in figure		

# Table A.7.3.3.1-3: Cell specific test parameters for E-UTRAN TDD (cell # 1) for out-of-sync radio link monitoring tests # 3 and # 4

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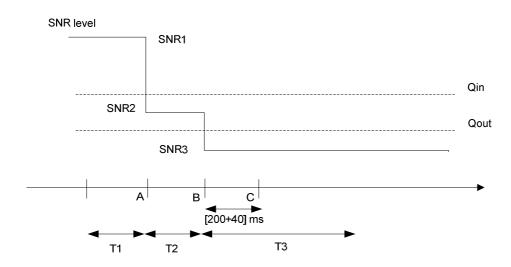


Figure A.7.3.3.1-4. SNR variation for out-of-sync testing

### A.7.3.3.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During time duration T1 and T2 the UE shall continuously report CQI according to the configured CQI mode (PUCCH 1-0) with a periodicity of 1 ms.

The UE shall stop reporting the CQI within 240 ms from the start of the time duration T3.

The rate of correct events observed during repeated tests shall be at least 90%.

## A.7.3.4 E-UTRAN TDD Radio Link Monitoring Test for In-sync

### A.7.3.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.4.1-1 and A.7.3.4.1-2 below. There is one cell (cell 1), which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.4.1-3 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms.

Parameter		Unit	Va	lue	Comment
			Test 1	Test 2	
PDSCH parameters			R.0 TDD	R.1 TDD	As specified in section A.3.1.1.2.
PCFICH/PDCCH/PHICH			R.6 TDD	R.7 TDD	As specified in section A.3.1.2.2.
Active cell			Cell 1	Cell 1	Cell 1 is on E-UTRA RF channel number 1
CP length			Normal	Normal	
	hannel Number		1	1	One E-UTRA FDD carrier
					frequency is used.
E-UTRA Chan (BW <sub>channel</sub> )	nel Bandwidth	MHz	10	10	
Transmit anter			1	2	
	DCI format		1C	1C	As defined in section 5.3.3.1.4 in TS 36.212
In sync transmission	Number of Control OFDM symbols		2	2	In sync threshold Q <sub>in</sub> and the corresponding
parameters	Aggregation level	CCE	4	4	hypothetical
(Note 1)	ρ <sub>A</sub> , ρ <sub>B</sub>		0	-3	PDCCH/PCFICH
	Ratio of PDCCH to RS EPRE		0	-3	transmission parameters are as specified in section
	Ratio of PCFICH to RS EPRE		4	1	and Table 7.6.1-2 respectively.
	DCI format		1A	1A	As defined in section 5.3.3.1.3 in TS 36.212
Out of sync transmission	Number of Control OFDM symbols		2	2	Out of sync threshold Q <sub>out</sub> and the corresponding
parameters	Aggregation level	CCE	8	8	hypothetical
(Note 1)	ρα, ρβ		0	-3	PDCCH/PCFICH transmission parameters
	Ratio of PDCCH to RS EPRE	dB	4	1	are as specified in section 7.6.1 and Table 7.6.1-1
	Ratio of PCFICH to RS EPRE	dB	4	1	respectively.
DRX			OFF	OFF	
Layer 3 filtering	g		Enabled	Enabled	Counters: N310 = 1; N311 = 1
T310 timer		ms	2000	2000	T310 is enabled
T311 timer		ms	1000	1000	T311 is enabled
Periodic CQI reporting mode			PUCCH 1-0	PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting periodicity		ms	1	1	Minimum CQI reporting periodicity
Propagation channel			ETU 70 Hz	ETU 70 Hz	
T1		S	0.5	0.5	
T2		S	0.4	0.4	
T3		S	1.46	1.46	
<u>T4</u>		S	0.4	0.4	
T5	0011/005:0::	s	1	1	
	DCCH/PCFICH corr rameters need not l				

### Table A.7.3.4.1-1: General test parameters for E-UTRAN TDD in-sync testing

Parameter	Unit			Т	est 1					Т	est 2		
		T1	T1 T2 T3 T4 T5				T1	T2	T3	T	4	T5	
E-UTRA RF Channel					1						1		
Number													
BW <sub>channel</sub>	MHz				10			10					
Transmit antennas					1						2		
Special subframe					6						6		
configuration <sup>Note1</sup>													
Uplink-downlink					1						1		
configuration <sup>Note2</sup>													
OCNG Pattern													
defined in A.3.2.2				OP	.1 TDI	)				OP	.1 TD	D	
(TDD)													
ρ <sub>A</sub> , ρ <sub>B</sub>					0						-3		
PCFICH_RB	dB				4						1		
PDCCH_RA	dB				0						-3		
PDCCH_RB	dB				0						-3		
PBCH_RA	dB				`								
PBCH_RB	dB												
PSS_RA	dB												
SSS_RA	dB												
PHICH_RA	dB				0			-3					
PHICH_RB	dB												
PDSCH_RA	dB												
PDSCH_RB	dB												
OCNG_RA <sup>Note 3</sup>	dB												
OCNG_RB <sup>Note 3</sup>	dB												
SNR Note 8	dB	-1.4	-5.3	3 -	11.3	-6.4	-1.4	-2.3	-5.	9 -	11.9	-7.3	-2.3
N <sub>oc</sub>	dBm/15				-98						-98		
1 V oc	kHz												
Propagation condition		ETU 70 Hz ETU 70 Hz											
Note 1: For the spec													
										nitted			
power spectral density is achieved for all OFDM symbols.													
Note 5: The timers a	nd layer 3 filte	ring rela	ated pa	arame	eters a	re config	gured pr	ior to th	ne star	t of tin	ne pe		
	ontains PDCC												
	correspond to t												
	time periods T		<sup>-</sup> 3, T4 a	and T	5 is de	enoted a	s SNR1	, SNR2	2, SNR	3, SN	R4 ai	nd SNR5	5
respectively	in figure A.7.3	.4.1-3.											

# Table A.7.3.4.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for in-sync radio link monitoring tests # 1 and # 2

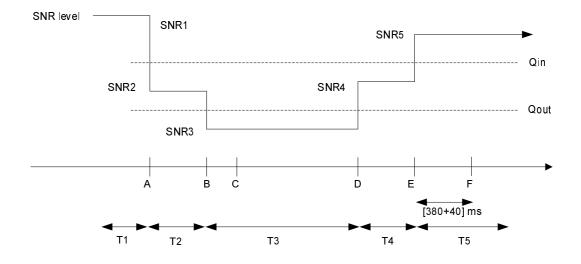


Figure A.7.3.4.1-3. SNR variation for in-sync testing

### A.7.3.4.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During time duration T1, T2, T3, T4 and T5 the UE shall continuously report CQI according to the configured CQI mode (PUCCH 1-0) with a periodicity of 1 ms.

If the UE stops reporting the CQI before Point F (520 ms after the start of the time duration T5), the UE fails the tests.

The rate of correct events observed during repeated tests shall be at least 90%.

## A.7.3.5 E-UTRAN FDD Radio Link Monitoring Test for Out-of-sync in DRX

### A.7.3.5.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell when DRX is used. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.5.1-1, A.7.3.5.1-2, A.7.3.5.1-3 and A.7.3.5.1-4. There is one cell (cell 1), which is the active cell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.5.1-5 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

### Table A.7.3.5.1-1: General test parameters for E-UTRAN FDD out-of-sync tests in DRX

Parameter		Unit	Va	lue	Comment
			Test 1	Test 2	
PDSCH param	PDSCH parameters		R.1 FDD	R.0 FDD	As specified in section A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters			R.7 FDD	R.6 FDD	As specified in section A.3.1.2.1.
Active cell			Cell 1	Cell 1	Cell 1 is on E-UTRA RF channel number 1
CP length			Normal	Normal	
E-UTRA RF C	hannel Number		1	1	One E-UTRA FDD carrier frequency is used.
E-UTRA Chan (BW <sub>channel</sub> )	nel Bandwidth	MHz	10	10	
Transmit anter	nnas		2	1	
	DCI format		1C	1C	As defined in section 5.3.3.1.4 in TS 36.212
In sync transmission parameters	Number of Control OFDM symbols		2	2	In sync threshold Q <sub>in</sub> and the corresponding hypothetical PDCCH/PCFICH transmission
(Note 1)	Aggregation level	CCE	4	4	parameters are as specified in section and Table 7.6.1-2
	ρ <sub>A</sub> , ρ <sub>B</sub>		-3	0	respectively.
	Ratio of PDCCH to RS EPRE		-3	0	
	Ratio of PCFICH to RS EPRE		1	4	
	DCI format		1A	1A	As defined in section 5.3.3.1.3 in TS 36.212
Out of sync transmission parameters	Number of Control OFDM symbols		2	2	Out of sync threshold Q <sub>out</sub> and the corresponding hypothetical PDCCH/PCFICH transmission
(Note 1)	Aggregation	CCE	8	8	parameters are as specified in section 7.6.1 and Table 7.6.1-
	ρ <sub>A</sub> , ρ <sub>B</sub>		-3	0	1 respectively.
	Ratio of PDCCH to RS EPRE		1	4	
	Ratio of PCFICH to RS EPRE	dB	1	4	
DRX cycle		ms	40	1280	See Table A.7.3.5.1-3
Layer 3 filterin	g		Enabled	Enabled	Counters: N310 = 1; N311 = 1
T310 timer		ms	0	0	T310 is disabled
T311 timer	T311 timer		1000	1000	T311 is enabled
Periodic CQI reporting mode			PUCCH 1-0	PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting periodicity		ms	2	2	Minimum CQI reporting periodicity
Propagation channel			ETU 70 Hz	AWGN	
T1		s	4	32	
T2	T2		1.6	12.8	
Т3		S	1.8	13	
					sync transmission surement Channel.

Parameter	Unit		Test 1			Test 2			
		T1	T2	T3	T1	T2	T3		
E-UTRA RF Channel			1			1			
Number									
BW <sub>channel</sub>	MHz		10			10			
Transmit antennas			2			1			
OCNG Pattern									
defined in A.3.2.1			OP.1 FDD			OP.1 FDD			
(FDD)									
ρ <sub>A</sub> , ρ <sub>B</sub>			-3			0			
PCFICH_RB	dB		1			4			
PDCCH_RA	dB		-3			0			
PDCCH_RB	dB		-3			0			
PBCH_RA	dB								
PBCH_RB	dB								
PSS_RA	dB								
SSS_RA	dB		-3		0				
PHICH_RA	dB								
PHICH_RB	dB								
PDSCH_RA	dB								
PDSCH_RB	dB								
OCNG_RA <sup>Note1</sup>	dB								
OCNG_RB <sup>Note1</sup>	dB					1	I		
SNR Note 6	dB	-2.3	-6.2	-12.2	-4.7	-9.5	-13.5		
N <sub>oc</sub>	dBm/15 kHz		-98			-98			
Propagation condition			ETU 70 Hz			AWGN			
Note 1: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.									
Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.									
Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.									
Note 5: SNR levels of REs.	Note 5: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal								
Note 6: The SNR in	time periods T <sup>,</sup> in figure A.7.3.		T3 is denote	ed as SNR	1, SNR2 a	nd SNR3			

# Table A.7.3.5.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for out-of-sync radio link monitoring tests # 1 and # 2 in DRX

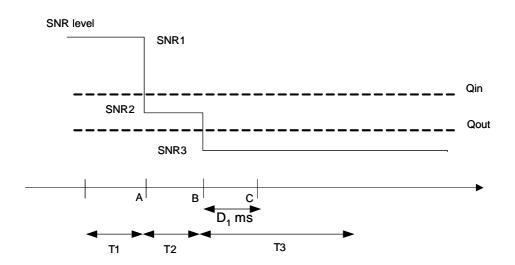
Table A.7.3.5.1-3: DRX-Configuration for E-UTRAN FDD out-of-sync tests

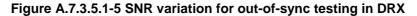
Field	Test1 Value	Test2 Value	Comment
onDurationTimer	psf2	psf2	As specified in section 6.3.2 in 3GPP
drx-InactivityTimer	psf1	psf1	TS 36.331
drx-RetransmissionTimer	sf1	sf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

### Table A.7.3.5.1-4: TimeAlignmentTimer -Configuration for E-UTRAN FDD out-of-sync testing

Field	Test1 Value	Test2 Value	Comment
TimeAlignmentTimer	infinity	infinity	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

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#### A.7.3.5.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

In test 1 and test 2 during time duration T1 and T2 the UE shall report CQI according to the configured CQI mode (PUCCH 1-0) once every DRX cycle.

In test 1 the UE shall stop reporting the CQI within duration  $D_1 = 900$  ms from the start of the time duration T3.

In test 2 the UE shall stop reporting the CQI within duration  $D_1 = 6500$  ms from the start of the time duration T3.

The rate of correct events observed during repeated tests shall be at least 90%.

#### A.7.3.6 E-UTRAN FDD Radio Link Monitoring Test for In-sync in DRX

#### A.7.3.6.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell when DRX is used. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.6.1-1, A.7.3.6.1-2, A.7.3.6.1-3 and A.7.3.6.1-4. There is one cell (cell 1), which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.6.1-5 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Parameter		Unit	Value	Comment
PDSCH parameters			R.0 FDD	As specified in section A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters			R.6 FDD	As specified in section A.3.1.2.1.
Active cell	·		Cell 1	Cell 1 is on E-UTRA RF channel number 1
CP length			Normal	
E-UTRA RF Channel N	Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Ban	dwidth (BW <sub>channel</sub> )	MHz	10	
Transmit antennas			1	
	DCI format		1C	As defined in section 5.3.3.1.4 in TS 36.212
In sync transmission	Number of Control		2	In sync threshold Q <sub>in</sub> and the
parameters	OFDM symbols	0.05		corresponding hypothetical
(Note 1)	Aggregation level	CCE	4	PDCCH/PCFICH transmission
	$\rho_A, \rho_B$		0	parameters are as specified in section and Table 7.6.1-2
	Ratio of PDCCH to RS EPRE		0	respectively.
	Ratio of PCFICH to RS EPRE		4	
	DCI format		1A	As defined in section 5.3.3.1.3 in TS 36.212
Out of sync transmission	Number of Control OFDM symbols		2	Out of sync threshold Q <sub>out</sub> and the corresponding hypothetical
parameters	Aggregation level	CCE	8	PDCCH/PCFICH transmission
(Note 1)	ρ <sub>A</sub> , ρ <sub>B</sub>		0	parameters are as specified in section 7.6.1 and Table 7.6.1-1
	Ratio of PDCCH to RS EPRE	dB	4	respectively.
	Ratio of PCFICH to RS EPRE	dB	4	
DRX cycle		ms	40	See Table A.7.3.6.1-3
Layer 3 filtering			Enabled	Counters: N310 = 1; N311 = 1
T310 timer		ms	2000	T310 is enabled
T311 timer		ms	1000	T311 is enabled
Periodic CQI reporting mode			PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting periodicity		ms	2	Minimum CQI reporting periodicity
Propagation channel			AWGN	
<u>T1</u>		S	4	
T2		S	1.6	
T3		S	1.46	
T4		S	0.4	
T5		S	4	
Note 1: PDCCH/P paramete	CFICH correspondi	ng to th uded in	e in-sync and the Reference	out of sync transmission Measurement Channel.

Table A.7.3.6.1-1: General test	parameters for E-UTRAN FDD in-sync test in DRX

Parameter	Unit			Test 1		
		T1	T2	Т3	T4	T5
E-UTRA RF Channel Number		1				
BW <sub>channel</sub>	MHz			10		
Transmit antennas				1		
OCNG Pattern defined in						
A.3.2.1 (FDD)				OP.1 FDD		
ρ <sub>A</sub> , ρ <sub>B</sub>				0		
PCFICH_RB	dB			4		
PDCCH_RA	dB			0		
PDCCH_RB	dB			0		
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB			0		
PHICH_RA	dB			0		
PHICH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA <sup>Note1</sup>	dB					
OCNG_RB <sup>Note1</sup>	dB				I	I
SNR Note 8	dB	-4.7	-9.5	-13.5	-8.7	-4.7
N <sub>oc</sub>	dBm/15 kHz			-98		
Propagation condition		AWGN				
Note 1: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.						
Note 2: The uplink resources						
Note 3: The timers and layer T1.	er 3 filtering related parameters are configured prior to the start of time period					
Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.						
Note 5: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.						
Note 6: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and				IR4 and		
SNR5 respectively in	n figure A.7.3.6	5.1 <b>-</b> 5.				

## Table A.7.3.6.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for in-sync radio link monitoring test # 1 in DRX

Table A.7.3.6.1-3: DRX-Configuration for E-UTRAN FDD out-of-sync tests

Field	Value	Comment
onDurationTimer	psf2	As specified in section 6.3.2 in 3GPP
drx-InactivityTimer	psf1	TS 36.331
drx-RetransmissionTimer	sf1]	
longDRX-CycleStartOffset	sf40	
shortDRX	disable	

Table A.7.3.6.1-4: TimeAlignmentTimer -Conf	iguration for E-UTRAN FDD out-of-sync testing

Field	Value	Comment
TimeAlignmentTimer	infinity	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

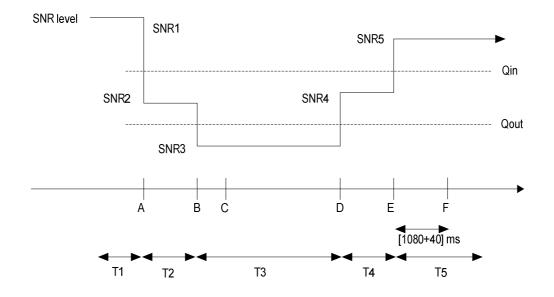


Figure A.7.3.6.1-5 SNR variation for in-sync testing in DRX

#### A.7.3.6.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the entire test from time period T1 to T5 the UE shall report CQI according to the configured CQI mode (PUCCH 1-0) once every DRX cycle.

The rate of correct events observed during repeated tests shall be at least 90%.

#### A.7.3.7 E-UTRAN TDD Radio Link Monitoring Test for Out-of-sync in DRX

#### A.7.3.7.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell when DRX is used. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.7.1-1, A.7.3.7.1-2, A.7.3.7.1-3 and A.7.3.7.1-4. There is one cell (cell 1), which is the active cell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.7.1-5 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

#### Table A.7.3.7.1-1: General test parameters for E-UTRAN TDD out-of-sync tests in DRX

Parameter		Unit	Value		Comment
			Test 1	Test 2	
PDSCH parameters			R.1 TDD	R.0 TDD	As specified in section A.3.1.1.2.
PCFICH/PDC0 parameters	CH/PHICH		R.7 TDD	R.6 TDD	As specified in section A.3.1.2.2.
Active cell			Cell 1	Cell 1	Cell 1 is on E-UTRA RF channel number 1
CP length			Normal	Normal	
E-UTRA RF C	hannel Number		1	1	One E-UTRA TDD carrier frequency is used.
E-UTRA Chan (BW <sub>channel</sub> )	nel Bandwidth	MHz	10	10	
Transmit anter	nnas		2	1	
	DCI format		1C	1C	As defined in section 5.3.3.1.4 in TS 36.212
In sync transmission parameters	Number of Control OFDM symbols		2	2	In sync threshold Q <sub>in</sub> and the corresponding hypothetical PDCCH/PCFICH transmission
(Note 1)	Aggregation level	CCE	4	4	parameters are as specified in section and Table 7.6.1-2
	ρ <sub>A</sub> , ρ <sub>B</sub>		-3	0	respectively.
	Ratio of PDCCH to RS EPRE		-3	0	
	Ratio of PCFICH to RS EPRE		1	4	
	DCI format		1A	1A	As defined in section 5.3.3.1.3 in TS 36.212
Out of sync transmission parameters	Number of Control OFDM symbols		2	2	Out of sync threshold Q <sub>out</sub> and the corresponding hypothetical PDCCH/PCFICH transmission
(Note 1)	Aggregation	CCE	8	8	parameters are as specified in section 7.6.1 and Table 7.6.1-
	ρ <sub>A</sub> , ρ <sub>B</sub>		-3	0	1 respectively.
	Ratio of PDCCH to RS EPRE	dB	1	4	
	Ratio of PCFICH to RS EPRE	dB	1	4	
DRX cycle		ms	40	1280	See Table A.7.3.7.1-3
Layer 3 filterin	g		Enabled	Enabled	Counters: N310 = 1; N311 = 1
T310 timer		ms	0	0	T310 is disabled
T311 timer		ms	1000	1000	T311 is enabled
Periodic CQI reporting mode			PUCCH 1-0	PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting periodicity		ms	1	1	Minimum CQI reporting periodicity
Propagation channel		1	ETU 70 Hz	AWGN	
T1		s	4	32	
T2		S	1.6	12.8	
Т3		S	1.8	13	
					sync transmission surement Channel.

Parameter	Unit		Test 1			Test 2		
		T1	T2	Т3	T1	T2	T3	
E-UTRA RF Channel			1			1		
Number								
BW <sub>channel</sub>	MHz		10			10		
Transmit antennas			2			1		
Special subframe			6			6		
configuration <sup>Note1</sup>								
Uplink-downlink			1			1		
configuration <sup>Note2</sup>								
OCNG Pattern								
defined in A.3.2.2			OP.1 TDD			OP.1 TDD		
(TDD)								
ρ <sub>A</sub> , ρ <sub>B</sub>			-3			0		
PCFICH_RB	dB		1			4		
PDCCH_RA	dB		-3			0		
PDCCH_RB	dB		-3			0		
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB		-			0		
PHICH_RA	dB		-3					
PHICH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA <sup>Note3</sup>	dB							
OCNG_RB <sup>Note3</sup>	dB							
SNR Note 8	dB	-2.3	-5.9	-11.9	-5.1	-9.1	-13.1	
N <sub>oc</sub>	dBm/15 kHz		-98			-98		
Propagation condition		ETU 70 Hz AWGN						
Note 1: For the spec	For the special subframe configuration see table 4.2-1 in 3GPP TS 36.211.							
Note 2: For the uplink-downlink configuration see table 4.2-2 in 3GPP TS 36.211.								
Note 3: OCNG shall								
	total transmitted power spectral density is achieved for all OFDM symbols.							
	resources for CQI reporting are assigned to the UE prior to the start of time							
period T1.								
Note 5: The timers a period T1.	and layer 3 filtering related parameters are configured prior to the start of time							
Note 6: The signal co	The signal contains PDCCH for UEs other than the device under test as part of OCNG.							
Note 7: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.								
Note 8: The SNR in t	in time periods T1, T2 and T3 is denoted as SNR1, SNR2 and SNR3 ely in figure A.7.3.7.1-5.							

## Table A.7.3.7.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for out-of-sync radio linkmonitoring tests # 1 and # 2 in DRX

#### Table A.7.3.7.1-3: DRX-Configuration for E-UTRAN TDD out-of-sync tests

Field	Test1 Value	Test2 Value	Comment
onDurationTimer	psf2	psf2	As specified in section 6.3.2 in 3GPP
drx-InactivityTimer	psf1	psf1	TS 36.331
drx-RetransmissionTimer	sf1	sf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

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Field	Test1	Test2	Comment
Fleid	Value	Value	
TimeAlignmentTimer	infinity	infinity	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

Table A.7.3.7.1-4: TimeAlignmentTimer -Configuration for E-UTRAN TDD out-of-sync testing

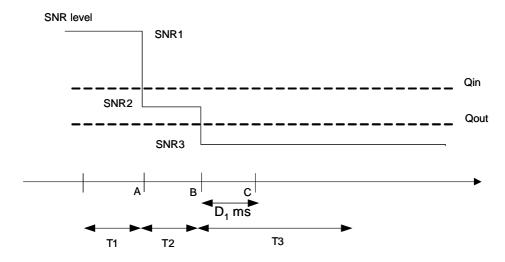


Figure A.7.3.7.1-5 SNR variation for out-of-sync testing in DRX

#### A.7.3.7.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

In test 1 and test 2 during time duration T1 and T2 the UE shall report CQI according to the configured CQI mode (PUCCH 1-0) once every DRX cycle.

In test 1 the UE shall stop reporting the CQI within duration  $D_1 = 900$  ms from the start of the time duration T3.

In test 2 the UE shall stop reporting the CQI within duration  $D_1 = 6500$  ms from the start of the time duration T3.

The rate of correct events observed during repeated tests shall be at least 90%.

#### A.7.3.8 E-UTRAN TDD Radio Link Monitoring Test for In-sync in DRX

#### A.7.3.8.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell when DRX is used. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.8.1-1, A.7.3.8.1-2, A.7.3.8.1-3 and A.7.3.8.1-4. There is one cell (cell 1), which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.8.1-5 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Parameter		Unit	Value	Comment
PDSCH parameters			R.0 TDD	As specified in section A.3.1.1.2.
PCFICH/PDCCH/PHICH parameters			R.6 TDD	As specified in section A.3.1.2.2.
Active cell	·		Cell 1	Cell 1 is on E-UTRA RF channel number 1
CP length			Normal	
E-UTRA RF Channel N	Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Ban	dwidth (BW <sub>channel</sub> )	MHz	10	
Transmit antennas			1	
	DCI format		1C	As defined in section 5.3.3.1.4 in TS 36.212
In sync transmission parameters	Number of Control OFDM symbols		2	In sync threshold Q <sub>in</sub> and the corresponding hypothetical
(Note 1)	Aggregation level	CCE	4	PDCCH/PCFICH transmission
	ρ <sub>A</sub> , ρ <sub>B</sub>		0	parameters are as specified in
	Ratio of PDCCH to RS EPRE		0	section and Table 7.6.1-2 respectively.
	Ratio of PCFICH to RS EPRE		4	
	DCI format		1A	As defined in section 5.3.3.1.3 in TS 36.212
Out of sync transmission	Number of Control OFDM symbols		2	Out of sync threshold Q <sub>out</sub> and the corresponding hypothetical
parameters	Aggregation level	CCE	8	PDCCH/PCFICH transmission
(Note 1)	ρ <sub>A</sub> , ρ <sub>B</sub>		0	parameters are as specified in section 7.6.1 and Table 7.6.1-1
	Ratio of PDCCH to RS EPRE	dB	4	respectively.
	Ratio of PCFICH to RS EPRE	dB	4	
DRX cycle		ms	40	See Table A.7.3.8.1-3
Layer 3 filtering			Enabled	Counters: N310 = 1; N311 = 1
T310 timer		ms	2000	T310 is enabled
T311 timer		ms	1000	T311 is enabled
Periodic CQI reporting mode			PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting periodicity		ms	1	Minimum CQI reporting periodicity
Propagation channel		s	AWGN	
T1			4	
T2		S	1.6	
T3		S	1.46	
T4		S	0.4	
T5		S	4	
Note 1: PDCCH/P paramete	CFICH correspondi ers need not be inclu	ng to th uded in	e in-sync and the Reference	out of sync transmission Measurement Channel.

Table A.7.3.8.1-1: General test	parameters for E-UTRAN TDD in-sync test in DRX

Parameter	Unit			Test 1			
		T1	T2	T3	T4	T5	
E-UTRA RF Channel Number		1					
BW <sub>channel</sub>	MHz	10					
Transmit antennas				1			
Special subframe				6			
configuration <sup>Note1</sup>							
I Uplink-downlink				1			
configuration <sup>Note2</sup>							
OCNG Pattern defined in							
A.3.2.2 (TDD)				OP.1 TDD			
ρ <sub>A</sub> , ρ <sub>B</sub>				0			
PCFICH_RB	dB			4			
PDCCH_RA	dB			0			
PDCCH_RB	dB			0			
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PHICH_RA	dB	0					
PHICH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA <sup>Note3</sup>	dB						
	dB			1		1	
SNR Note 8	dB	-5.1	-9.1	-13.1	-9.1	-5.1	
N <sub>oc</sub>	dBm/15			-98			
	kHz						
Propagation condition				AWGN			
Note 1: For the special subfr	1: For the special subframe configuration see table 4.2-1 in 3GPP TS 36.211.						
Note 2: For the uplink-downlink configuration see table 4.2-2 in 3GPP TS 36.211.							
Note 3: OCNG shall be used	I such that the	uch that the resources in cell # 1 are fully allocated and a constant total					
transmitted power spectral density is achieved for all OFDM symbols.							
		I reporting are assigned to the UE prior to the start of time period T1.					
	3 filtering rela	related parameters are configured prior to the start of time period					
Note 6: The signal contains PDCCH for UEs other than the device under test as part of OCNG.							
Note 7: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs. Note 8: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and							
			is denoted as	S SNR1, SNR	Z, SNR3, SN	ik4 and	
SNR5 respectively in figure A.7.3.8.1-5.							

## Table A.7.3.8.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for in-sync radio link monitoring test # 1 in DRX

Table A.7.3.8.1-3: DRX-Configuration for E-UTRAN TDD out-of-sync tests

Field	Value	Comment
onDurationTimer	psf2	As specified in section 6.3.2 in 3GPP
drx-InactivityTimer	psf1	TS 36.331
drx-RetransmissionTimer	sf1	
longDRX-CycleStartOffset	sf40	
shortDRX	disable	

Table A.7.3.8.1-4: TimeAlignmentTimer -Configuration for E-UTRAN TDD out-of-sync testing

Field	Value	Comment
TimeAlignmentTimer	infinity	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

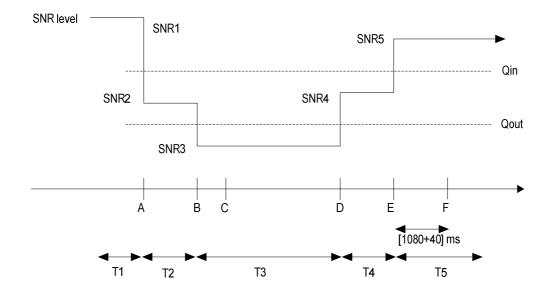


Figure A.7.3.8.1-5 SNR variation for in-sync testing in DRX

#### A.7.3.8.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the entire test from time period T1 to T5 the UE shall report CQI according to the configured CQI mode (PUCCH 1-0) once every DRX cycle.

The rate of correct events observed during repeated tests shall be at least 90%.

### A.8 UE Measurements Procedures

#### A.8.1 E-UTRAN FDD Intra-frequency Measurements

# A.8.1.1 E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells

#### A.8.1.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the FDD intra-frequency cell search requirements in section 8.1.2.2.1.1.

The test parameters are given in Table A.8.1.1.1-1 and A.8.1.1.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

## Table A.8.1.1.1-1: General test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1
parameters		Channel R.6 FDD	
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel		1	One FDD carrier frequency is used.
Number			
Channel Bandwidth	MHz	10	
(BW <sub>channel</sub> )			
A3-Offset	dB	-3	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX			OFF
Time offset between cells		3 ms	Asynchronous cells
T1	S	5	
T2	S	5	

Parameter	Unit	Ce	ll 1	(	Cell 2
		T1	T2	T1	T2
E-UTRA RF Channel			1		1
Number					
BW <sub>channel</sub>	MHz	1	0		10
OCNG Patterns					
defined in A.3.2.1.1		OP.1	FDD	OP	.2 FDD
(OP.1 FDD) and in					
A.3.2.1.2 (OP.2 FDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB	(	)		0
PHICH_PB	dB				
PDCCH_RA	dB				
PDCCH_PB	dB	1			
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA <sup>Note 1</sup>	dB				
OCNG_RB <sup>Note 1</sup>	dB				
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	-3.79	-Infinity	1.54
$N_{_{oc}}$ Note 3	dBm/15 KHz			-98	
$\hat{E}_s/N_{oc}$	dB	4	4	-Infinity	7
RSRP Note 4	dBm/15 KHz	-94	-94	-Infinity	-91
SCH_RP Note 4	dBm/15 KHz	-94	-94	-Infinity	-91
Propagation Condition				TU70	
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.           Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.           Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over					
subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{oc}$ to be fulfilled.					
Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.					

### Table A.8.1.1.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells

#### A.8.1.1.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 800 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to  $2xTTI_{DCCH}$  higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

# A.8.1.2 E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

#### A.8.1.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the FDD intra-frequency cell search requirements in section 8.1.2.2.1.1

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The test parameters are given in Table A.8.1.2.1-1 and A.8.1.2.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. PDCCHs indicating new transmissions should be sent continuously to ensure that the UE would not enter the DRX state. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

#### Table A.8.1.2.1-1: General test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1
parameters		Channel R.6 FDD	
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel		1	One FDD carrier frequency is used.
Number			
Channel Bandwidth	MHz	10	
(BW <sub>channel</sub> )			
A3-Offset	dB	-3	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	dB	0	
Filter coefficient		0	L3 filtering is not used
DRX		DRX_L	As specified in section A.3.3
Time offset between cells		3 μs	Synchronous cells
T1	S	5	
T2	S	5	

Parameter	Unit	Ce	ell 1	C	Cell 2	
		T1 T2		T1	T2	
E-UTRA RF Channel		1		1		
Number						
BW <sub>channel</sub>	MHz		10		10	
OCNG Patterns						
defined in A.3.2.1.1		OP.	FDD	OP	.2 FDD	
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB		-	0		
PHICH_RA	dB		0			
PHICH_RB	dB					
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA <sup>Note 1</sup>	dB					
OCNG_RB <sup>Note 1</sup>	dB				-	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	-3.79	-Infinity	1.54	
$N_{_{oc}}$ Note 3	dBm/15 KHz			-98		
$\hat{E}_s/N_{oc}$	dB	4	4	-Infinity	7	
RSRP Note 4	dBm/15 KHz	-94	-94	-Infinity	-91	
SCH_RP Note 4	dBm/15 KHz	-94	-94	-Infinity	-91	
Propagation Condition			·	ETU70	•	
Propagation Condition Note 1: OCNG shall be user achieved for all OF Note 2: The resources for u Note 3: Interference from ot	d such that both cells a DM symbols. plink transmission are	are fully allocated	and a constant to	ETU70 tal transmitted power t of time period T2.	er spectral dens	

### Table A.8.1.2.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period 12. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers

and time and shall be modelled as AWGN of appropriate power for  $N_{ac}$  to be fulfilled.

Note 4: RSRP and SCH\_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

#### A.8.1.2.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 800 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to  $2xTTI_{DCCH}$  higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

# A.8.1.3 E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells with DRX

#### A.8.1.3.1 Test Purpose and Environment

The purpose of the two tests is to verify that the UE makes correct reporting of an event in DRX. The tests will partly verify the FDD-FDD intra-frequency cell search in DRX requirements in section 8.1.2.2.1.2.

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The test parameters are given in Tables A.8.1.3.1-1, A.8.1.3.1-2, A.8.1.3.1-3 and A.8.1.3.1-4. In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

In Test 2 the uplink time alignent is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

Parameter	Unit	Va	lue	Comment
		Test 1	Test 2	
PDSCH parameters		DL Reference Me		As specified in section A.3.1.1.1
	_	Channel R.0 FDE		
PCFICH/PDCCH/PHICH		DL Reference Me		As specified in section A.3.1.2.1
parameters		Channel R.6 FDE	)	
Active cell		Cell 1		
Neighbour cell		Cell 2		Cell to be identified.
E-UTRA RF Channel		1		One FDD carrier frequency is used.
Number				
Channel Bandwidth	MHz	10		
(BW <sub>channel</sub> )				
A3-Offset	dB	-3		
CP length		Normal		
Hysteresis	dB	0		
Time To Trigger	dB	0		
Filter coefficient		0		L3 filtering is not used
DRX		ON		DRX related parameters are defined in Table A.8.1.3.1-3
Time offset between cells		3 μs		Synchronous cells
T1	S	5		
T2	S	5	30	

### Table A.8.1.3.1-1: General test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

## Table A.8.1.3.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

Parameter	Unit	Ce	II 1	(	Cell 2
		T1	T2	T1	T2
E-UTRA RF Channel			1		1
Number					
BW <sub>channel</sub>	MHz	1	0		10
OCNG Patterns					
defined in A.3.2.1.1		OP.1	FDD	OF	.2 FDD
(OP.1 FDD) and in					
Á.3.2.1.2 (OP.2 FDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB	(	)		0
PHICH_RB	dB				
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA <sup>Note 1</sup>	dB				
OCNG_RB <sup>Note 1</sup>	dB				
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	-3.79	-Infinity	1.54
$N_{_{oc}}$ Note 2	dBm/15 KHz			-98	
$\hat{E}_{s}/N_{oc}$	dB	4	4	-Infinity	7
RSRP <sup>Note 3</sup>	dBm/15 KHz	-94	-94	-Infinity	-91
SCH_RP <sup>Note 3</sup>	dBm/15 KHz	-94	-94	-Infinity	-91
Propagation Condition	ETU70				
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is					
achieved for all OFDM symbols.					
Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers					
and time and shall be modelled as AWGN of appropriate power for $N_{_{\it OC}}$ to be fulfilled.					
					They are not settable
Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.					

#### Table A.8.1.3.1-3: DRX-Configuration for E-UTRAN FDD-FDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Test1	Test2	Comment
i leid	Value	Value	
onDurationTimer	psf1	psf1	As specified in section 6.3.2 in
drx-InactivityTimer	psf1	psf1	3GPP TS 36.331
drx-RetransmissionTimer	sf1	sf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

 
 Table A.8.1.3.1-4: TimeAlignmentTimer -Configuration for E-UTRAN FDD-FDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Test1 Value	Test2 Value	Comment
TimeAlignmentTimer	sf500	sf500	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

#### A.8.1.3.2 Test Requirements

In Test 1, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 800 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE send the measurement report on PUSCH.

In Test 2, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 25600 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.
- A.8.1.4 Void
- A.8.2 E-UTRAN TDD Intra-frequency Measurements

# A.8.2.1 E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

#### A.8.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the TDD intra-frequency cell search requirements in section 8.1.2.2.2.1.

The test parameters are given in Table A.8.2.1.1-1 and A.8.2.1.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. PDCCHs indicating new transmissions should be sent continuously to ensure that the UE would not enter the DRX state. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

## Table A.8.2.1.1-1: General test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	One TDD carrier frequency is used.
Channel Bandwidth (BWchannel)	MHz	10	
A3-Offset	dB	-3	
CP length		Normal	
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211. The same configuration in both cells
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		DRX_L	As specified in section A.3.3
Time offset between cells		3 μs	Synchronous cells
T1	S	5	
T2	S	5	

## Table A.8.2.1.1-2: Cell specific test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Cell 1		C	cell 2
		T1	T2	T1	T2
E-UTRA RF Channel		1 1		1	
Number					
BW <sub>channel</sub>	MHz	1(	)		10
OCNG Pattern defined					
in A.3.2.2.1 (OP.1		OP.1	TDD	OP	.2 TDD
TDD) and in A.3.2.2.2					
(OP.2)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				•
PHICH_RB	dB	0			0
PDCCH_RA	dB				
PDCCH_RB	dB	]			
PDSCH_RA	dB	]			
PDSCH_RB	dB	]			
OCNG_RA <sup>Note 1</sup>	dB	]			
OCNG_RB <sup>Note 1</sup>	dB				

$N_{_{oc}}$ Note 3	dBm/15 kHz			-98		
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4 -3.79 -Infinity 1.54				
SCH_RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	
$\hat{E}_s/N_{oc}$	dB	4	4	-Infinity	7	
Propagation Condition			Ē	TU70		
Note 1: OCNG shall be used achieved for all OF Note 2: The resources for up Note 3: Interference from oth	DM symbols. blink transmission are a	assigned to the U	E prior to the star	t of time period T2.	, ,	
and time and shall I	be modelled as AWGN	of appropriate p	ower for $N_{_{oc}}$ to I	be fulfilled.		
Note 4: RSRP and SCH_RP parameters themse		ved from other pa	arameters for infor	mation purposes. Th	ney are not settable	

#### A.8.2.1.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 800 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to  $2xTTI_{DCCH}$  higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

# A.8.2.2 E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells with DRX

#### A.8.2.2.1 Test Purpose and Environment

The purpose of the two tests is to verify that the UE makes correct reporting of an event in DRX. The tests will partly verify the TDD-TDD intra-frequency cell search in DRX requirements in section 8.1.2.2.1.2.

The test parameters are given in Tables A.8.1.3.1-1, A.8.1.3.1-2, A.8.1.3.1-3 and A.8.1.3.1-4. In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

In Test 2 the uplink time alignent is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

## Table A.8.2.2.1-1: General test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

Parameter	Unit	Val	ue	Comment
		Test 1	Test 2	
		DL Reference	Measurement	
PDSCH parameters		Channel R.0 T	DD	As specified in section A.3.1.1.2
		DL Reference	Measurement	
PCFICH/PDCCH/PHICH		Channel R.6 T	DD	As specified in section A.3.1.2.2
parameters				
Active cell		Cell 1		
Neighbour cell		Cell 2		Cell to be identified.
E-UTRA RF Channel Number		1		One TDD carrier frequency is used.
Channel Bandwidth (BW <sub>channel</sub> )	MHz	10		
A3-Offset	dB	-3		
CP length		Normal		
Special subframe configuration		6		As specified in table 4.2-1 in TS 36.211.
				The same configuration in both cells
Uplink-downlink configuration		1		As specified in table 4.2-2 in TS 36.211.
				The same configuration in both cells
Hysteresis	dB	0		
Time To Trigger	S	0		
Filter coefficient		0		L3 filtering is not used
DRX		ON		DRX related parameters are defined in
				Table A.8.2.2.1-3
Time offset between cells		3 μs		Synchronous cells
T1	S	5		
T2	S	5	30	

## Table A.8.2.2.1-2: Cell specific test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

Parameter	Unit	Ce	ll 1	C	ell 2
		T1	T2	T1	T2
E-UTRA RF Channel			1		1
Number					
BW <sub>channel</sub>	MHz	1	0		10
OCNG Pattern defined					
in A.3.2.2.1 (OP.1		OP.1 TDD		OP.	2 TDD
TDD) and in A.3.2.2.2					
(OP.2)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB		-		
PHICH_RB	dB		0		0
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA <sup>Note 1</sup>	dB				
OCNG_RB <sup>Note 1</sup>	dB				
$N_{_{oc}}$ Note 2	dBm/15 kHz			-98	
RSRP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	-3.79	-Infinity	1.54
SCH_RP <sup>Note 3</sup>	dBm/15 kHz	-94	-94	-Infinity	-91
$\hat{E}_{s}/N_{oc}$	dB	4	4	-Infinity	7
Propagation Condition				ETU70	
Note 1: OCNG shall be used achieved for all OF Note 2: Interference from ot	DM symbols.		and a constant to	tal transmitted powe	
and time and shall	be modelled as AWG	N of appropriate p	ower for $N$ to	be fulfilled.	
Note 3: RSRP and SCH_RF parameters themse	Plevels have been der		00		hey are not settable

 
 Table A.8.2.2.1-3: DRX-Configuration for E-UTRAN TDD-TDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Test1 Value	Test2 Value	Comment
onDurationTimer	psf1	psf1	As specified in section 6.3.2 in
drx-InactivityTimer	psf1	psf1	3GPP TS 36.331
drx-RetransmissionTimer	sf1	sf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	]

Field	Test1 Value	Test2 Value	Comment
TimeAlignmentTimer	sf500	sf500	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section 10.1 in 3GPP TS 36.213.

#### Table A.8.2.2.1-4: TimeAlignmentTimer -Configuration for E-UTRAN TDD-TDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

#### A.8.2.2.2 Test Requirements

In Test 1, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 800 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE send the measurement report on PUSCH.

In Test 2, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 25600 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.

NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.

#### A.8.3 E-UTRAN FDD - FDD Inter-frequency Measurements

# A.8.3.1 E-UTRAN FDD-FDD Inter-frequency event triggered reporting under fading propagation conditions in asynchronous cells

#### A.8.3.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the FDD-FDD inter-frequency cell search requirements in section 8.1.2.3.

The test parameters are given in Tables A.8.3.1.1-1 and A.8.3.1.1-2. In this test, there are two cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

## Table A.8.3.1.1-1: General test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
E-UTRA RF Channel Number		1, 2	Two TDD carrier frequencies are used.
Channel Bandwidth (BW <sub>channel</sub> )	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2	Cell 2 is on RF channel number 2
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Time offset between cells		3 ms	Asynchronous cells
T1	S	5	
T2	S	5	

Table A.8.3.1.1-2: Cell specific test parameters for E-UTRAN FDD-FDD inter-frequency event triggered
reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Ce	Cell 1		ell 2
		T1	T2	T1	T2
E-UTRA RF Channel			1		2
Number					
BW <sub>channel</sub>	MHz	10			10
OCNG Patterns					
defined in A.3.2.1.1		OP.1	FDD	OP.	2 FDD
(OP.1 FDD) and in					
A.3.2.1.2 (OP.2 FDD)					
PBCH_RA	dB	-			
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB	-			
PCFICH_RB	dB	-			
PHICH_RA	dB		_		0
PHICH_RB	dB	(	)		0
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA <sup>Note 1</sup>	dB				
OCNG_RB <sup>Note 1</sup>	dB				
$N_{_{oc}}$ Note 3	dBm/15 kHz			-98	
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4	-Infinity	7
SCH_RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91
$\hat{E}_{s}/N_{oc}$	dB	4	4	-Infinity	7
Propagation Condition				ETU70	
Note 1: OCNG shall be used achieved for all OF		are fully allocated a	and a constant to	otal transmitted powe	er spectral density is
Note 2: The resources for up Note 3: Interference from ot	plink transmission are				nt over subcarriers
		•			
and time and shall	be modelled as AWG	v or appropriate po	ower for $IV_{oc}$ to	de fulfilled.	

Note 4: RSRP and SCH\_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

#### A.8.3.1.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 3840 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to  $2xTTI_{DCCH}$  higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

# A.8.3.2 E-UTRAN FDD-FDD Inter-frequency event triggered reporting when DRX is used under fading propagation conditions in asynchronous cells

#### A.8.3.2.1 Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event in DRX. These test will partly verify the FDD-FDD inter-frequency cell search requirements when DRX is used in section 8.1.2.3.

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The common test parameters are given in Tables A.8.3.2.1-1 and A.8.3.2.1-2. DRX configuration for Test1 and Test2 are given in Table A.8.3.2.1-3 and time alignment timer and scheduling request related parameters in Table A.8.3.2.1-4. In this tests, there are two cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle. In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The tests consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Parameter	Unit	Test 1	Test 2	Comment
		Va	lue	
PDSCH parameters		DL Reference Me	easurement	As specified in section A.3.1.1.1 Note that
		Channel R.0 FDD	)	UE may only be allocated at On Duration
PCFICH/PDCCH/PHICH		DL Reference Me	easurement	As specified in section A.3.1.2.1.
parameters		Channel R.6 FDD	)	
E-UTRA RF Channel		1,	2	Two FDD carrier frequencies are used.
Number				
Channel Bandwidth	MHz	10		
(BW <sub>channel</sub> )				
Active cell		Ce	1	Cell 1 is on RF channel number 1
Neighbour cell		Ce	2	Cell 2 is on RF channel number 2
Gap Pattern Id		(	)	As specified in 3GPP TS 36.133 section 8.1.2.1.
A3-Offset	dB	-	6	
Hysteresis	dB	(	)	
CP length		Nor	mal	
TimeToTrigger	S	(	)	
Filter coefficient		(	)	L3 filtering is not used
PRACH configuration		4	1	As specified in table 5.7.1-2 in TS 36.211
Access Barring Information	-	Not	Sent	No additional delays in random access
, i i i i i i i i i i i i i i i i i i i				procedure.
DRX		0	N	DRX related parameters are defined in
				Table A.8.3.2.1-3
Time offset between cells		3 ו	ns	Asynchronous cells
T1	S	Ļ	5	
T2	S	5	30	

### Table A.8.3.2.1-1: General test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

## Table A.8.3.2.1-2: Cell specific test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Ce	ll 1	C	Cell 2
		T1	T2	T1	T2
E-UTRA RF Channel			1		2
Number					
BW <sub>channel</sub>	MHz	1	0		10
OCNG Patterns					
defined in A.3.2.1.1		OP.1	OP.1 FDD		.2 FDD
(OP.1 FDD) and in					
A.3.2.1.2 (OP.2 FDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB		_		-
PHICH_RB	dB		)		0
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA <sup>Note 1</sup>	dB				
OCNG_RB <sup>Note 1</sup>	dB				
$N_{_{oc}}$ Note 2	dBm/15 kHz			-98	
RSRP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	-Infinity	7
SCH_RP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91
$\hat{E}_{s}/N_{oc}$	dB	4	4	-Infinity	7
Propagation Condition			E	TU70	
Note 1: OCNG shall be used achieved for all OF Note 2: Interference from ot	DM symbols.		and a constant to	tal transmitted pow	
and time and shall	be modelled as AWGI	N of appropriate po	ower for $N_{\rm eff}$ to	be fulfilled.	
Note 3: RSRP and SCH_RF parameters themse	Plevels have been de		00		They are not settable

## Table A.8.3.2.1-3: drx-Configuration to be used in E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Field	Test1	Test2	Comment	
Fleid	Value	Value		
onDurationTimer	psf1	psf1		
drx-InactivityTimer	psf1	psf1		
drx-RetransmissionTimer	sf1	sf1		
longDRX-CycleStartOffset	sf40	sf1280		
shortDRX	disable	disable		

# Table A.8.3.2.1-4: *TimeAlignmentTimer* and *sr-ConfigIndex* -Configuration to be used in E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Field	Test1	Test2	Comment
Field	Value	Value	
TimeAlignmentTimer	sf500	sf500	For further information see section 6.3.2 in 3GPP TS 36.331.
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213

#### A.8.3.2.2 Test Requirements

In Test1 the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 3840 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE send the measurement report on PUSCH.

In Test2 the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 20\*1280ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report

#### A.8.3.3 E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions in asynchronous cells with DRX when L3 filtering is used

#### A.8.3.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event in DRX when L3 filtering is used. This test will partly verify the FDD-FDD inter-frequency cell search in DRX requirements in section 8.1.2.3.1.2 and the UE behaviour with the *filterCoefficent* defined in [2].

The test parameters are given in Tables A.8.3.3.1-1, A.8.3.3.1-2, A.8.3.3.1-3 and A.8.3.3.1-4. In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 and the filter coefficient is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. In this test, there are two cells on different carrier frequencies and gap pattern configuration # 1 as defined in Table 8.1.2.1-1 is provided.

The uplink time aligment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

# Table A.8.3.3.1-1: General test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions in asynchronous cells with DRX when L3 filtering is used

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1
parameters		Channel R.6 FDD	
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel		1, 2	Two FDD carrier frequencies are used.
Number			
Channel Bandwidth	MHz	10	
(BW <sub>channel</sub> )			
Gap Pattern Id		1	As specified in 3GPP TS 36.133 section 8.1.2.1.
Neighbour A3-Offset Ofn	dB	-14	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	dB	0	
Filter coefficient		9	L3 filtering is used
DRX		ON	DRX related parameters are defined in Table A.8.3.3.1-3
Time offset between cells		3 ms	Asynchronous cells
T1	S	30	
T2	S	7	

# Table A.8.3.3.1-2: Cell specific test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions in asynchronous cells with DRX when L3 filtering is used

Parameter	Unit	Ce	ll 1		Cell 2		
		T1	T2	T1	T2		
E-UTRA RF Channel		1			2		
Number							
BW <sub>channel</sub>	MHz	1	0		10		
OCNG Patterns							
defined in A.3.2.1.1		OP.1	EDD	0	P.2 FDD		
(OP.1 FDD) and in		UF.1	FDD	Ur Ur	.2 FDD		
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB	(	)	0			
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA <sup>Note 1</sup>	dB						
OCNG_RB <sup>Note 1</sup>	dB						
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4	4	24		
$N_{oc}$ Note 2	dBm/15 KHz			-98			
$\hat{E}_{s}/N_{oc}$	dB	4	4	4	24		
RSRP <sup>Note 3</sup>	dBm/15 KHz	-94	-94	-94	-74		
SCH_RP <sup>Note 3</sup>	dBm/15 KHz	-94	-94	-94	-74		
Propagation Condition				AWGN			
Note 1: OCNG shall be used achieved for all OF Note 2: Interference from ot	DM symbols.						
and time and shall	be modelled as AWG	N of appropriate po	ower for $N_{\rm c}$ to	be fulfilled.			
Note 3: RSRP and SCH_RF parameters themse	P levels have been der		00		They are not settable		

# Table A.8.3.3.1-3: DRX-Configuration for E-UTRAN FDD-FDD inter-frequency event triggered reporting in DRX under AWGN propagation conditions in asynchronous cells with DRX when L3 filtering is used

Field	Value	Comment
onDurationTimer	psf1	As specified in section 6.3.2 in
drx-InactivityTimer	psf1	3GPP TS 36.331
drx-RetransmissionTimer	sf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

# Table A.8.3.3.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN FDD-FDD inter-frequency event triggered reporting in DRX under AWGN propagation conditions in asynchronous cells with DRX when L3 filtering is used

Field	Value	Comment
TimeAlignmentTimer	sf500	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

#### A.8.3.3.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 6400 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.

#### A.8.4 E-UTRAN TDD - TDD Inter-frequency Measurements

# A.8.4.1 E-UTRAN TDD-TDD Inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

#### A.8.4.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the TDD-TDD inter-frequency cell search requirements in section 8.1.2.3.4.

The test parameters are given in Table A.8.4.1.1-1 and A.8.4.1.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

## Table A.8.4.1.1-1: General test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
		DL Reference Measurement	
PDSCH parameters		Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Gap Pattern Id		1	As specified in 3GPP TS 36.133 section 8.1.2.1.
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in 3GPP TS 36.211 section 4.2 Table 4.2-2
CP length		Normal	
E-UTRA RF Channel Number		1, 2	Two TDD carrier frequencies are used.
Channel Bandwidth (BW <sub>channel</sub> )	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2	Cell 2 is on RF channel number 2
A3-Offset	dB	-6	
Hysteresis	dB	0	
TimeToTrigger	dB	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
Time offset between cells		3 μs	Synchronous cells
T1	S	5	
T2	S	10	

#### Table A.8.4.1.1-2: Cell specific test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Ce	1	Ce	2
		T1	T1 T2		T2
E-UTRA RF Channel				2	2
Number					
BW <sub>channel</sub>	MHz	1	0	1	0
OCNG Pattern defined					
in A.3.2.2.1 (OP.1		OP.1	TDD	OP.2	TDD
TDD) and in A.3.2.2.2					
(OP.2)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB		<b>`</b>		
PHICH_RB	dB	(	)	C	)
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA <sup>Note 1</sup>	dB				
OCNG_RB <sup>Note 1</sup>	dB				-
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	-Infinity	7
$N_{oc}^{ m Note 3}$	dBm/15 kHz			-98	
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91
SCH_RP Note 4	dBm/15 kHz	-94	-94	-infinity	-91
$\hat{E}_{s}/N_{oc}$	dB	4	4	-Infinity	7
Propagation Condition				TU70	
Note 1: OCNG shall be used achieved for all OF Note 2: The resources for u Note 3: Interference from ot	DM symbols. plink transmission are	assigned to the U	E priori to the star	t of time period T2.	
	be modelled as AWG				
Note 4: RSRP and SCH_RF			00		ey are not settable

#### A.8.4.1.2 Test Requirements

parameters themselves

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 7680 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to  $2xTTI_{DCCH}$  higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

#### A.8.4.2 E-UTRAN TDD-TDD Inter-frequency event triggered reporting when DRX is used under fading propagation conditions in synchronous cells

#### A.8.4.2.1 Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event in DRX. These test will partly verify the TDD-TDD inter-frequency cell search requirements when DRX is used in section 8.1.2.3.

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The common test parameters are given in Tables A.8.4.2.1-1 and A.8.4.2.1-2. DRX configuration for Test1 and Test2 are given in Table A.8.4.2.1-3 and time alignment timer and scheduling request related parameters in Table A.8.4.2.1-4. In these tests, there are two cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignent timer to keep UE uplink time alignend. Furthermore UE is allocated with PUSCH resource at every DRX cycle. In Test 2 the uplink time alignent is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The tests consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Parameter	Unit	Test 1	Test 2	Comment
		Value		
PDSCH parameters		DL Reference Me	asurement	As specified in section A.3.1.1.2. Note that
		Channel R.0 TDD	)	UE may only be allocated at On Duration
PCFICH/PDCCH/PHICH		DL Reference Me	asurement	As specified in section A.3.1.2.2.
parameters		Channel R.6 TDD		
E-UTRA RF Channel		1,	2	Two TDD carrier frequencies are used.
Number				
Channel Bandwidth	MHz	1	0	
(BW <sub>channel</sub> )				
Active cell		Ce	∥1	Cell 1 is on RF channel number 1
Neighbour cell		Ce	2	Cell 2 is on RF channel number 2
Gap Pattern Id		(	)	As specified in 3GPP TS 36.133 section
-				8.1.2.1.
Uplink-downlink		1		As specified in 3GPP TS 36.211 section
configuration				4.2 Table 4.2-2
Special subframe		6		As specified in table 4.2-1 in TS 36.211.
configuration				The same configuration in both cells
A3-Offset	dB	-6		
Hysteresis	dB	(	)	
CP length		Normal		
TimeToTrigger	S	(	)	
Filter coefficient		(	)	L3 filtering is not used
PRACH configuration		4	1	As specified in table 5.7.1-3 in TS 36.211
Access Barring Information	-	Not Sent		No additional delays in random access
				procedure.
DRX		ON		DRX related parameters are defined in
				Table A.8.4.2.1-3
Time offset between cells		3 μs		Synchronous cells
T1	S	5	5	
T2	S	5	30	

### Table A.8.4.2.1-1: General test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

	• •	arameters for E-UTRAN TDE ng propagation conditions	D-TDD inter-frequency event triggered in synchronous cells
Devenueter	11	Call 4	

Parameter	Unit	Ce	Cell 1		Cell 2	
		T1	T2	T1	T2	
E-UTRA RF Channel					2	
Number						
BW <sub>channel</sub>	MHz	1	0		10	
OCNG Patterns						
defined in A.3.2.1.1		OP.1	TDD	OP	.2 TDD	
(OP.1 TDD) and in						
A.3.2.1.2 (OP.2 TDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB				_	
PHICH_RB	dB	(	)	0		
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA <sup>Note 1</sup>	dB					
OCNG_RB <sup>Note 1</sup>	dB					
$N_{_{oc}}$ Note 2	dBm/15 kHz			-98		
RSRP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	-Infinity	7	
SCH_RP <sup>Note 3</sup>	dBm/15 kHz	-94	-94	-Infinity	-91	
$\hat{E}_s/N_{oc}$	dB	4	4	-Infinity	7	
Propagation Condition	gation Condition ETU70					
Note 1: OCNG shall be used achieved for all OF Note 2: Interference from ot	DM symbols.	-				
and time and shall	and time and shall be modelled as AWGN of appropriate power for $N_{_{OC}}$ to be fulfilled.					
Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.						

## Table A.8.4.2.1-3: drx-Configuration to be used in E-UTRAN TDD-TDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Field	Test1 Value	Test2 Value	Comment
onDurationTimer	psf1	psf1	
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	sf1	sf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

Table A.8.4.2.1-4: *TimeAlignmentTimer* and *sr-ConfigIndex* -Configuration to be used in E-UTRAN TDD-TDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Field	Test1 Value	Test2 Value	Comment
	value	value	
TimeAlignmentTimer	sf500	sf500	For further information see section 6.3.2 in 3GPP TS 36.331.
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and 10.1 in 3GPP TS 36.213.

#### A.8.4.2.2 Test Requirements

In Test1 the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 3840 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE send the measurement report on PUSCH.

In Test2 the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 20\*1280ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report

#### A.8.5 E-UTRAN FDD - UTRAN FDD Measurements

# A.8.5.1 E-UTRAN FDD - UTRAN FDD event triggered reporting under fading propagation conditions

#### A.8.5.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the E-UTRAN FDD- UTRAN FDD cell search requirements in section 8.1.2.4.1.

The test parameters are given in Tables A.8.5.1.1-1, A.8.5.1.1-2 and A.8.5.1.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

## Table A.8.5.1.1-1: General test parameters for E-UTRAN FDD-UTRAN FDD event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement	As specified in section A.3.1.1.1.
		Channel R.0 FDD	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in section A.3.1.2.1.
(E-UTRAN FDD)		Channel R.6 FDD	
Gap Pattern Id		1	As specified in 3GPP TS 36.133 section
			8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth	MHz	10	
(BW <sub>channel</sub> )			
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD)		CPICH Ec/lo	
measurement quantity			
b1-Threshold-UTRA	dB	-18	CPICH Ec/lo threshold for event B1.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA FDD cell list size		12	UTRA cells on UTRA RF channel 1 provided
			in the cell list.
T1	S	5	
T2	S	6	

Parameter	Unit	Cell 1				
		T1	T2			
E-UTRA RF Channel Number		1				
BW <sub>channel</sub>	MHz	10				
OCNG Pattern defined in						
A.3.2.1.1 (OP.1 FDD)		OP.1 FDD				
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA <sup>Note 1</sup>	dB					
OCNG_RB <sup>NOTE 1</sup>	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4			
$\hat{E}_s/N_{oc}$	dB	4	4			
N <sub>oc</sub>	dBm/15 kHz	-98				
RSRP	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
Propagation Condition		ETU70				
Note 1:OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.Note 2:The resources for uplink transmission are assigned to the UE prior to the start of time period T2.						

## Table A.8.5.1.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for event triggered reporting of UTRAN FDD cell under fading propagation conditions

## Table A.8.5.1.1-3: Cell specific test parameters for UTRAN FDD (cell # 2) for event triggered reporting of UTRAN FDD cell under fading propagation conditions

Parameter	Unit	Cell 2				
		T1	T2			
UTRA RF Channel Number		1				
CPICH_Ec/lor	dB	-10				
PCCPCH_Ec/lor	dB	-12				
SCH_Ec/lor	dB	-12				
PICH_Ec/lor	dB	-15				
DPCH_Ec/lor	dB	N/A				
OCNS		-0.941				
$\hat{I}_{or}/I_{oc}$	dB	-Infinity	-1.8			
I <sub>oc</sub>	dBm/3.84 MHz	-70				
CPICH_Ec/lo	dB	-Infinity	-14			
Propagation Condition		Case 5 (Note 3)				
Note 1: The DPCH level is co	1: The DPCH level is controlled by the power control loop.					
Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal						
to I <sub>or</sub> .						
Note 3: Case 5 propagation conditions are defined in Annex A of 3GPP TS 25.101.						

### A.8.5.1.2 Test Requirements

The UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 4800 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to  $2xTTI_{DCCH}$  higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

### A.8.5.2 E-UTRAN FDD - UTRAN FDD SON ANR cell search reporting under AWGN propagation conditions

#### A.8.5.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of the strongest UTRAN cell for SON automatic neighbour relations. This test will partly verify the E-UTRAN FDD - UTRAN FDD cell search requirements for identification of a new UTRA FDD cell for SON given in section 8.1.2.4.7.1.

The test parameters are given in Tables A.8.5.2.1-1, A.8.5.2.1-2 and A.8.5.2.1-3 below. In the measurement control information it is indicated to the UE that periodical reporting with the purpose 'reportStrongestCellsForSON' is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. Prior to the start of time period T1, an interRATperiodic measurement reporting configuration with purpose reportStrongestCellsForSON is configured, and linked to a UTRA measurement object corresponding to channel UARFCN 1. During time duration T1, the UE shall not have any timing information of cell 2.

### Table A.8.5.2.1-1: General test parameters for E-UTRAN FDD-UTRAN FDD cell search reporting for SON ANR in AWGN propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement	As specified in section A.3.1.1.1.
		Channel R.0 FDD	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in section A.3.1.2.1.
(E-UTRAN FDD)		Channel R.6 FDD	
Gap Pattern Id		1	As specified in 3GPP TS 36.133 section
			8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth	MHz	10	
(BW <sub>channel</sub> )			
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD)		CPICH Ec/lo	
measurement quantity			
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA FDD cell list size		None	No explicit neighbour list is provided to the UE
T1	S	5	During T1, cell 2 shall be powered off, and
			during the off time the primary scrambling
			code shall be changed, The intention is to
			ensure that cell 2 has not been detected by
			the UE prior to the start of period T2.
T2	S	6	

Parameter	Unit	Cell	1			
		T1	T2			
E-UTRA RF Channel Number		1				
BW <sub>channel</sub>	W <sub>channel</sub> MHz					
OCNG Pattern defined in						
A.3.2.1.1 (OP.1 FDD)		OP.1 F	DD			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA <sup>Note 1</sup>	dB					
OCNG_RB <sup>Note 1</sup>	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4			
$N_{oc}^{}$ Note 3	dBm/15 kHz	-98				
$\hat{E}_{s}/N_{oc}$	dB	4	4			
RSRP <sup>Note 4</sup>	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
Propagation Condition		AWG	N			
Note 1:         OCNG shall be used spectral density is acl           Note 2:         The resources for upl	Note 1:         OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.           Note 2:         The resources for uplink transmission are assigned to the UE prior to the start of time period T2.					
		•				
over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{oc}$ to be fulfilled. Note 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.						

### Table A.8.5.2.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for UTRAN FDD cell search for SON ANR under AWGN propagation conditions

### Table A.8.5.2.1-3: Cell specific test parameters for UTRAN FDD (cell # 2) for UTRAN FDD cell search for SON ANR under AWGN propagation conditions

Parameter	Unit	Cell 2		
		T1	T2	
UTRA RF Channel Number		1		
CPICH_Ec/lor	dB	-10		
PCCPCH_Ec/lor	dB	-12		
SCH_Ec/lor	dB	-12		
PICH_Ec/lor	dB	-15		
DPCH_Ec/lor	dB	N/A		
OCNS		-0.941		
$\hat{I}_{or}/I_{oc}$	dB	-Infinity	-3.35	
I <sub>oc</sub>	dBm/3.84 MHz	-70		
CPICH_Ec/lo	dB	-Infinity	-15	
Propagation Condition		AWGN		
Note 1: The DPCH level is controlled by the power control loop.				
Note 2: The power of the OC	e 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal			
to I <sub>or</sub> .				

#### A.8.5.2.2 Test Requirements

The UE shall send the first measurement report containing the primary scrambling code of cell 2, with a measurement reporting delay less than 4800 ms from the beginning of time period T2.

The rate of correct measurement reports observed with this delay during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to  $2xTTI_{DCCH}$  higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

# A.8.5.3 E-UTRAN FDD-UTRAN FDD event triggered reporting when DRX is used under fading propagation conditions

#### A.8.5.3.1 Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event in DRX. These tests will partly verify the E-UTRAN FDD-UTRAN FDD cell search requirements when DRX is used in section 8.1.2.4.1.2.

In these tests, there are two cells, one E-UTRAN cell and one UTRAN cell, and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

The common test parameters are given in Table A.8.5.3.1-1. Cell specific test parameters are given in Table A.8.5.3.1-2 for E-UTRAN and in Table A.8.5.3.1-5 for UTRAN. DRX configuration for Test1 and Test2 are given in Table A.8.5.2.1-3 and time alignment timer and scheduling request related parameters in Table A.8.5.2.1-4.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle. In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B1 is used. The tests consist of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

## Table A.8.5.3.1-1: General test parameters for E-UTRAN FDD-UTRAN FDD event triggered reporting when DRX is used in fading propagation conditions

Parameter	Unit	Test 1	Test 2	Comment
		Value		
PDSCH parameters (E-		DL Reference Measurement		As specified in section A.3.1.1.1 Note that
UTRAN FDD)		Channel R.0 FDD	1	UE may only be allocated at On Duration
PCFICH/PDCCH/PHICH		DL Reference Me	asurement	As specified in section A.3.1.2.1.
parameters (E-UTRAN FDD)		Channel R.6 FDD		
Gap Pattern Id		0	)	As specified in 3GPP TS 36.133 section 8.1.2.1.
Active cell		Ce	1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Ce	2	Cell 2 is on UTRA RF channel number 1.
CP length		Nor	mal	Applicable to cell 1
E-UTRA RF Channel		1		One E-UTRA FDD carrier frequency is
Number				used.
E-UTRA Channel Bandwidth	MHz	1	0	
(BW <sub>channel</sub> )				
UTRA RF Channel Number		1		One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD)		CPICH Ec/lo		
measurement quantity				
b1-Threshold-UTRA	dB	-18		CPICH Ec/lo threshold for event B1.
Hysteresis	dB	0	)	
TimeToTrigger	S	0	)	
Filter coefficient		0	)	L3 filtering is not used
PRACH configuration		4	ļ.	As specified in table 5.7.1-2 in TS 36.211
Access Barring Information	-	Not Sent		No additional delays in random access
				procedure.
DRX		ON		DRX related parameters are defined in
				Table A.8.5.3.1-3
Monitored UTRA FDD cell		12		UTRA cells on UTRA RF channel 1
list size				provided in the cell list.
T1	S	5	5	
T2	S	6	30	

#### Table A.8.5.3.1-2: Cell specific test parameters for E-UTRAN FDD (cell #1) event triggered reporting of UTRAN FDD cell when DRX is used under fading propagation conditions

E-UTRA RF Channel NumberT1T2E-UTRA RF Channel NumberMHz10OCNG Pattern defined in A.3.2.1.1 (OP.1 FDD)OP.1 FDDPBCH, RAdBPBCH, RBdBPSS, RAdBPSS, RAdBPCFICH, RBdBPDCH, RAdBPDCH, RAdBPDCCH, RBdBPDCCH, RAdBPDCCH, RAdBPDSCH, RAdBPDSCH, RAdBPDSCH, RAdBPDSCH, RAdBPDSCH, RAdBPDSCH, RAdBOCNG_RB^NOIS 1dBOCNG_RBNOIS 2dBm/15 kHz-98SRPRSRP NOIS 3dBm/15 kHzSCR_RPdBm/15 kHzPropagation ConditionETU70Note 1:OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OPDM symbols.Note 2:Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{oc}$ to be fulfilled.Note 3:RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.	Parameter	Unit	Cell	1		
BW <sub>channel</sub> MHz       10         QCNG Pattern defined in       A.3.2.1.1 (OP.1 FDD)       OP.1 FDD         PBCH_RA       dB       OP.1 FDD         PBCH_RA       dB       OP.1 FDD         PBCH_RB       dB       OP.1 FDD         PSS_RA       dB       OP.1 FDD         PSS_RA       dB       OP.1 FDD         PCFICH_RB       dB       OP.1 FDD         PDCCH_RA       dB       OP.1 FDD         OCNG_RA <sup>NOIDE 1</sup> dB       OP.1 FDD         OCNG_RA <sup>NOIDE 1</sup> dB       OP.1 FDD         OCNG_RA <sup>NOIDE 1</sup> dB       4 $\hat{L}_s / I_{at}$ dBm/15 KHz       -98         RSRP NOIE 3       dBm/15 KHz       -94         SCH_RP       dBm/15 KHz       -94 $Propagation Condition       ETU70         Note 1:       OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.         Note 2:       Interference from other cells $			T1	T2		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	E-UTRA RF Channel Number		1			
A.3.2.1.1 (OP.1 FDD)       OP.1 FDD         PBCH_RA       dB         PBCH_RB       dB         PSS_RA       dB         SSS_RA       dB         PCFICH_RB       dB         PHICH_RA       dB         PHICH_RB       dB         PDCCH_RA       dB         PDCCH_RB       dB         PDSCH_RA       dB         PDSCH_RB       dB         OCNG_RA <sup>NOIE 1</sup> dB         OCNG_RA <sup>NOIE 1</sup> dB         OCNG_RA <sup>NOIE 1</sup> dB         OCNG_RA <sup>NOIE 2</sup> dBM/15 kHz         SCH_RP       dBm/15 kHz       -98         RSRP NOTE 3       dB       4         Propagation Condition       ETU70         Note 1:       OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.         Note 2:       Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{\alpha c}$ to be fulfilled.         Note 3:       RSRP levels have been derived from other parameters for information purposes.		MHz	10	)		
PBCH_RAdBPBCH_RBdBPSS_RAdBPSS_RAdBPCFICH_RBdBPCFICH_RBdBPDCCH_RAdBPDCCH_RBdBPDCCH_RBdBPDSCH_RAdBOCNG_RA^Note1dBOCNG_RB^Note7dBCCNG_RB^Note7dBCCNG_RB^Note2dBm/15 kHz-94-94SCH_RPdBm/15 kHz-94-94SCH_RPdBAdBA4A4A4Noce 2dBm/15 kHz-94-94SCH_RPdBm/15 kHz-94-94SCH_RPdBm/15 kHzPropagation ConditionETU70Note 1:OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.Note 2:Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{oc}$ to be fulfilled.Note 3:RSRP and SCH_RP levels have been derived from other parameters for information purposes.	OCNG Pattern defined in					
PBCH_RBdBPSS_RAdBSS_RAdBPCFICH_RBdBPHICH_RAdBPHICH_RAdBPDCCH_RAdBPDCCH_RBdBPDSCH_RAdBOCNG_RA^Note 1dBOCNG_RB^Note 1dBOCNG_RB^Note 1dBOCNG_RB^Note 2dBm/15 kHzSCH_RPdBm/15 kHzSCH_RPdBm/15 kHzOCNG_SCH_RDdBOCNG_RB^Note 2dBm/15 kHzOCNG_RB_Note 3dBm/15 kHzOCNG_RB-94SCH_RPdBm/15 kHzOCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.Note 2:Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{oc}$ to be fulfilled.Note 3:RSRP and SCH_RP levels have been derived from other parameters for information purposes.	A.3.2.1.1 (OP.1 FDD)		OP.1	FDD		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	PBCH_RA	dB				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		-				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		dB				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		dB				
PHICH_RBdBPDCCH_RAdBPDCCH_RBdBPDSCH_RAdBPDSCH_RAdBOCNG_RANOTE 1dBOCNG_RBdBAdBQCNG_RB^NOTE 1dBAdBPDSCH_RBdBQCNG_RB^NOTE 1dBOCNG_RBdBA4 $N_{oc}$ dBm/15 kHz-98SCH_RPRSRP Note 2dBm/15 kHz-94-94SCH_RPdBm/15 kHz-94-94 $\hat{E}_s/N_{oc}$ dBPropagation ConditionETU70Note 1:OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.Note 2:Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{oc}$ to be fulfilled.Note 3:RSRP and SCH_RP levels have been derived from other parameters for information purposes.		dB				
PIDCH_RAdBPDCCH_RBdBPDSCH_RAdBPDSCH_RAdBOCNG_RANOTE 1dBOCNG_RBdBOCNG_RBdBAdBQCNG_RBdBAdBAdBAdBAdBAdBA-98RSRP Note 2dBm/15 kHzABm/15 kHz-94SCH_RPdBm/15 kHzABm/15 kHz-94A-94CH_RPdBm/15 kHzAB4A4AACH_RPABABAABAABAABACH_RPABABAABAABAABACH_RPABABAAB <td></td> <td>-</td> <td></td> <td></td>		-				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	PHICH_RB	dB	0			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		-				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		dB				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $						
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		dB				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	OCNG_RA <sup>Note 1</sup>	-				
$L_s/I_{ot}$ dBm/15 kHz-98 $N_{oc}^{Note 2}$ dBm/15 kHz-94RSRPdBm/15 kHz-94SCH_RPdBm/15 kHz-94 $\hat{E}_s/N_{oc}$ dB4Propagation ConditionETU70Note 1:OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.Note 2:Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{oc}$ to be fulfilled.Note 3:RSRP and SCH_RP levels have been derived from other parameters for information purposes.						
$N_{oc}$ dBm/15 kHz-94-94SCH_RPdBm/15 kHz-94-94 $\hat{E}_s/N_{oc}$ dB44Propagation ConditionETU70Note 1:OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.Note 2:Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{oc}$ to be fulfilled.Note 3:RSRP and SCH_RP levels have been derived from other parameters for information purposes.	$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	IV <sub>oc</sub>	dBm/15 kHz	-98	8		
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	RSRP <sup>Note 3</sup>	dBm/15 kHz	-94	-94		
Est / Noc       ET         Propagation Condition       ETU70         Note 1:       OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.         Note 2:       Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{oc}$ to be fulfilled.         Note 3:       RSRP and SCH_RP levels have been derived from other parameters for information purposes.	SCH_RP	dBm/15 kHz	-94	-94		
<ul> <li>Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.</li> <li>Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for <sup>N</sup><sub>oc</sub> to be fulfilled.</li> <li>Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes.</li> </ul>	$\hat{E}_s/N_{oc}$	dB	4	4		
<ul> <li>spectral density is achieved for all OFDM symbols.</li> <li>Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for <sup>N</sup><sub>oc</sub> to be fulfilled.</li> <li>Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes.</li> </ul>	Propagation Condition		ETU	70		
<ul> <li>spectral density is achieved for all OFDM symbols.</li> <li>Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for <sup>N</sup><sub>oc</sub> to be fulfilled.</li> <li>Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes.</li> </ul>		such that both c	ells are fully allocated and a cons	stant total transmitted power		
over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{oc}$ to be fulfilled. Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes.						
Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes.						
	over subcarriers and fulfilled.	over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{\scriptscriptstyle oc}$ to be fulfilled.				
They are not settable parameters themselves.	Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes.					

#### Table A.8.5.3.1-3: drx-Configuration to be used in E-UTRAN FDD-UTRAN FDD event triggered reporting when DRX is used in fading propagation conditions

Test1	Test2	Comment
Value	Value	
psf1	psf1	
psf1	psf1	
sf1	sf1	
sf40	sf1280	
Disable	Disable	
	Value           psf1           psf1           sf1           sf40	Value         Value           psf1         psf1           psf1         psf1           sf1         sf1           sf40         sf1280

INTSEE SECTOR 0.3.2 IN SUPPLIES 30.331.

#### Table A.8.5.3.1-4: TimeAlignmentTimer and sr-ConfigIndex -Configuration to be used in E-UTRAN FDD-UTRAN FDD event triggered reporting when DRX is used in fading propagation conditions

Field	Test1 Value	Test2 Value	Comment
TimeAlignmentTimer	sf500	sf500	For further information see section 6.3.2 in 3GPP TS 36.331.
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

### Table A.8.5.3.1-5: Cell specific test parameters for UTRAN FDD (cell # 2) for event triggered reporting of UTRAN FDD cell when DRX is used under fading propagation conditions

Parameter	Unit	Cell	2		
		T1	T2		
UTRA RF Channel Number		1			
CPICH_Ec/lor	dB	-10			
PCCPCH_Ec/lor	dB	-12			
SCH_Ec/lor	dB	-12			
PICH_Ec/lor	dB	-15			
DPCH_Ec/lor	dB	N/A			
OCNS		-0.94	1		
$\hat{I}_{or}/I_{oc}$	dB	-Infinity	-1.8		
I <sub>oc</sub>	dBm/3.84 MHz	-70			
CPICH_Ec/lo	dB	-Infinity	-14		
Propagation Condition	Case 5 (Note 3)				
	Note 1: The DPCH level is controlled by the power control loop.				
Note 2: The power of the OC	ote 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal				
to I <sub>or</sub> .					
Note 3: Case 5 propagation conditions are defined in Annex A of 3GPP TS 25.101.					

### A.8.5.3.2 Test Requirements

In Test1 the UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 2400 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE sends the measurement report on PUSCH.

In Test2 the UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 20\*1280ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event B1 measurement report

### A.8.6 E-UTRAN TDD - UTRAN FDD Measurements

# A.8.6.1 E-UTRAN TDD - UTRAN FDD event triggered reporting under fading propagation conditions

### A.8.6.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the E-UTRAN TDD- UTRAN FDD cell search requirements in section 8.1.2.4.2.

The test parameters are given in Tables A.8.6.1.1-1, A.8.6.1.1-2 and A.8.6.1.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two

successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

### Table A.8.6.1.1-1: General test parameters for E-UTRAN TDD-UTRAN FDD event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2.
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2.
Gap Pattern Id		1	As specified in 3GPP TS 36.133 section 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
Special subframe configuration		6	As specified in table 4.2-1 in 3GPP TS 36.211. Applicable to cell 1.
Uplink-downlink configuration		1	As specified in table 4.2-2 in 3GPP TS 36.211. Applicable to cell 1.
CP length		Normal	Applicable to cell 1.
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW <sub>channel</sub> )	MHz	10	
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD) measurement quantity		CPICH Ec/lo	
b1-Threshold-UTRA	dB	-18	CPICH Ec/lo threshold for event B1.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell list.
T1	S	5	
T2	S	6	

Parameter	Unit	Cell 1			
		T1	T2		
E-UTRA RF Channel Number		1			
BW <sub>channel</sub>	MHz	10			
OCNG Pattern defined in					
A.3.2.2.1 (OP.1 TDD)		OP.1 T	DD		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0			
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA <sup>Note 1</sup>	dB				
OCNG_RB <sup>Note 1</sup>	dB				
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4		
$\hat{E}_s/N_{oc}$	dB	4 4			
N <sub>oc</sub>	dBm/15 kHz	-98			
RSRP	dBm/15 kHz	-94	-94		
SCH_RP	dBm/15 kHz	-94	-94		
Propagation Condition		ETU70			
Note 1:       OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.         Note 2:       The resources for uplink transmission are assigned to the UE prior to the start of time period T2.					

### Table A.8.6.1.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for event triggered reporting of UTRAN FDD cell under fading propagation conditions

### Table A.8.6.1.1-3: Cell specific test parameters for UTRAN FDD (cell # 2) for event triggered reporting of UTRAN FDD cell under fading propagation conditions

Parameter	Unit	Cell	2		
		T1	T2		
UTRA RF Channel Number		1			
CPICH_Ec/lor	dB	-10			
PCCPCH_Ec/lor	dB	-12			
SCH_Ec/lor	dB	-12			
PICH_Ec/lor	dB	-15			
DPCH_Ec/lor	dB	N/A			
OCNS		-0.94	1		
$\hat{I}_{or}/I_{oc}$	dB	-Infinity	-1.8		
I <sub>oc</sub>	dBm/3.84 MHz	-70			
CPICH_Ec/lo	dB	-Infinity -14			
Propagation Condition		Case 5 (Note 3)			
Note 1: The DPCH level is co	1: The DPCH level is controlled by the power control loop.				
Note 2: The power of the OC	e OCNS channel that is added shall make the total power from the cell to be equal				
to I <sub>or</sub> .					
Note 3: Case 5 propagation conditions are defined in Annex A of 3GPP TS 25.101.					

#### A.8.6.1.2 Test Requirements

The UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 4800 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to  $2xTTI_{DCCH}$  higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

### A.8.7 E-UTRAN TDD – UTRAN TDD Measurements

# A.8.7.1 E-UTRAN TDD to UTRAN TDD cell search under fading propagation conditions

- A.8.7.1.1 Test Purpose and Environment
- A.8.7.1.1.1 3.84 Mcps TDD option

#### A.8.7.1.1.2 1.28 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the E-UTRA TDD to UTRA TDD cell search requirements in section 8.1.2.4.3 under fading propagation conditions.

This test scenario comprised of 1 E-UTRA TDD serving cell, and 1 UTRA TDD cell to be searched. Test parameters are given in Table A.8.7.1.1.2-1, A.8.7.1.1.2-2, and A.8.7.1.1.2-3. Gap pattern configuration #0 as defined in table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement	As specified in section A.3.1.1.2
		Channel R.0 TDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.2
parameters		Channel R.6 TDD	
Active cell		Cell 1	E-UTRA TDD cell
Neighbour cell		Cell 2	UTRA 1.28Mcps TDD Cell
Gap Pattern Id		0	As specified in 3GPP TS 36.133
			section 8.1.2.1.
Uplink-downlink configuration of		1	As specified in table 4.2.2 in TS
cell 1			36.211
Special subframe configuration		6	As specified in table 4.2.1 in TS
of cell 1			36.211
CP length of cell 1		normal	
Hysteresis	dB	0	
TimeToTrigger	dB	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
Time offset between cells		3 ms	Asynchronous cells
Ofn	dB	0	
Hys	dB	0	
Thresh	dBm	-87	
T1	S	5	
T2	S	10	

### Table A.8.7.1.1.2-1: General test parameters for E-UTRA TDD to UTRA(1.28 Mcps TDD OPTION) cell search in fading propagation conditions

### Table A.8.7.1.1.2-2: Cell specific test parameters for cell search E-UTRA TDD to UTRA TDD test case (cell 1)

Parameter	Unit Cell 1			
		T1	T2	
E-UTRA RF Channel			1	
Number				
BW <sub>channel</sub>	MHz	1	0	
OCNG Pattern defined in			TDD	
A.3.2.2.1 (OP.1 TDD)		01.1		
PBCH_RA	dB	_		
PBCH_RB	dB	_		
PSS_RB	dB	_		
SSS_RB	dB	_		
PCFICH_PA	dB	_		
PHICH_PA	dB	_		
PHICH_PB	dB	0	0	
PDCCH_PA	dB	_		
PDCCH_PB	dB	_		
PDSCH_PA	dB	_		
PDSCH_PB	dB	_		
OCNG_RA <sup>Note1</sup>	dB	_		
OCNG_RB <sup>Note1</sup>	dB			
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	9	9	
$N_{oc}$	dBm/15kHz	-9	98	
RSRP	dBm/15kHz	-89	-89	
SCH_RP	dBm/15kHz	-89	-89	
Propagation Condition		ET	U70	
Note 1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.				
Note 2: The resources for u prior to the start of		n are assigned	to the UE	

Parameter	Unit	Cell 2 (UTRA)			
Timeslot Number		0 DwPTS			PTS
		T1	T2	T1	T2
UTRA RF Channel Number <sup>NOTE1</sup>			Char	nel 2	
PCCPCH_Ec/lor	dB	-3	-3		
DwPCH_Ec/lor	dB			0	0
OCNS_Ec/lor <sup>NOTE2</sup>	dB	-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	-inf	5	-inf	5
I <sub>oc</sub>	dBm/1.28 MHz	-80			
PCCPCH RSCP	dBm	-inf -78 n.a. n			
Propagation Condition			Case	3 <sup>NOTE3</sup>	
<ul> <li>Note 1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.</li> <li>Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to l<sub>or</sub>.</li> <li>Note 3: Case 3 propagation conditions are defined in Annex B of 3GPP TS 25.102</li> </ul>					

### Table A.8.7.1.1.2-3: Cell specific test parameters for cell search E-UTRA TDD to UTRA TDD test case (cell 2)

- A.8.7.1.1.3 7.68 Mcps TDD option
- A.8.7.1.2 Test Requirements
- A.8.7.1.2.1 3.84 Mcps TDD option
- A.8.7.1.2.2 1.28 Mcps TDD option

The UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 6400 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to  $2xTTI_{DCCH}$  higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

#### A.8.7.1.2.3 7.68 Mcps TDD option

# A.8.7.2 E-UTRAN TDD-UTRAN TDD cell search when DRX is used under fading propagation conditions

#### A.8.7.2.1 Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event in DRX. These tests will partly verify the E-UTRAN TDD to UTRAN TDD inter-RAT cell search requirements when DRX is used in section 8.1.2.4.3.2 under fading propagation conditions.

The common test parameters are given in Tables A.8.7.2.1-1, A.8.7.2.1-2 and A.8.7.2.1-3. DRX configuration for Test1 and Test2 are given in Table A.8.7.2.1-4 and time alignment timer and scheduling request related parameters in Table

A.8.7.2.1-5. In these tests, there are two cells, 1 E-UTRAN TDD serving cell and 1 UTRAN TDD cell to be searched, Gap pattern configuration # 0 as defined in table 8.1.2.1-1 is provided.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignent timer to keep UE uplink time alignend. Furthermore UE is allocated with PUSCH resource at every DRX cycle. In Test 2 the uplink time alignent is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B1 is used. The tests consist of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

### Table A.8.7.2.1-1: General test parameters for E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation conditions

Parameter	Unit	Test 1	Test 2	Comment
		Va	lue	
PDSCH parameters		DL Reference Measurement		As specified in section A.3.1.1.2. Note that
		Channel R.0 TDD	)	UE may only be allocated at On Duration
PCFICH/PDCCH/PHICH		DL Reference Me	easurement	As specified in section A.3.1.2.2.
parameters		Channel R.6 TDD	)	
Active cell		Cell 1		E-UTRAN TDD cell
Neighbour cell		Cell 2		UTRAN 1.28Mcps TDD cell
Gap Pattern Id		0		As specified in 3GPP TS 36.133 section
				8.1.2.1.
Uplink-downlink		1		As specified in 3GPP TS 36.211 section
configuration				4.2 Table 4.2-2
Special subframe		6		As specified in table 4.2-1 in TS 36.211.
configuration				The same configuration in both cells
PRACH configuration		53		As specified in table 5.7.1-3 in 3GPP TS 36.211
CP length of cell 1		Normal		00.211
Ofn	dB	0		
Hys	dB	0		
Thresh	dBm	-83		Absolute P-CCPCH RSCP threshold for
				event B1
Hysteresis	dB	0		
TimeToTrigger	S	0		
Filter coefficient		0		L3 filtering is not used
Access Barring Information	-	Not Sent		No additional delays in random access
6				procedure.
DRX		ON		DRX related parameters are defined in
				Table A.8.4.2.1-3
Time offset between cells		3 ms		Asynchronous cells
T1	S	5		
T2	S	8	30	

Pa	arameter	Unit	Ce	ell 1
			T1	T2
E-UTRA	RF Channel			1
Number				
BWchan	nel	MHz		10
	atterns defined		OP.	1 TDD
	.1 (OP.1 TDD)			
PBCH_R		dB		
PBCH_R		dB		
PSS_RB		dB		
SSS_RB		dB		
PCFICH_		dB		
PHICH_F		dB		
PHICH_F		dB	0	0
PDCCH_		dB		
PDCCH_		dB		
PDSCH_		dB		
PDSCH_		dB		
OCNG_R		dB		
OCNG_R	BNote1	dB		
$\hat{E}_{s}/I_{ot}$		dB	4	4
Ν		dBm/15kHz	-	98
N <sub>oc</sub> Note	2			
RSRP		dBm/15kHz	-94	-94
SCH_RP		dBm/15kHz	-94	-94
	ion Condition			Ū70
Note 1: Note 2:	for all OFDM syr Interference from	ansmitted power s mbols. n other cells and r	pectral density	y is achieved not specified
Note 3:	in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{oc}$ to be fulfilled. RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.			

## Table A.8.7.2.1-2: Cell specific test parameters for E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation conditions(cell 1)

### Table A.8.7.2.1-3: Cell specific test parameters for E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation conditions(cell 2)

Pa	arameter	Unit Cell 2 (UTRA)			JTRA)	
Timeslot	Number		0 DwPTS			PTS
			T1	T2	T1	T2
UTRA RF Number N	Channel NOTE1		Channel 2			
PCCPCH	_Ec/lor	dB	-3	-3		
DwPCH_		dB			0	0
OCNS_E	c/lor <sup>NOTE2</sup>	dB	-3	-3		
$\hat{I}_{or}/I_{oc}$		dB	-inf	9	-inf	9
I <sub>oc</sub>		dBm/1.28 MHz	-80			
PCCPCH	RSCP	dBm	-inf	-74	n.a.	n.a.
Propagati Condition			Case 3 <sup>NOTE3</sup>			
Note 1:		of multi-frequency cell, the UTRA RF Channel he primary frequency's channel number.				
Note 2:	The power of	of the OCNS channel that is added shall make the from the cell to be equal to lor.				
Note 3:	Case 3 propa TS 25.102	agation condition	ns are de	fined in An	nex B of	3GPP

### Table A.8.7.2.1-4: drx-Configuration to be used in E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation conditions

Field	Test1	Test2	Comment
Field	Value	Value	
onDurationTimer	psf1	psf1	
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	sf1	pf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

### Table A.8.7.2.1-5: TimeAlignmentTimer and sr-ConfigIndex -Configuration to be used in E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation conditions

Field	Test1	Test2	Comment
Field	Value	Value	
TimeAlignmentTimer	sf500	sf500	For further information see section 6.3.2 in 3GPP TS 36.331.
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and 10.1 in 3GPP TS 36.213.

### A.8.7.2.2 Test Requirements

In Test1 the UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 6400ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE send the measurement report on PUSCH.

In Test2 the UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 25.6s from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event B1 measurement report

### A.8.7.3 E-UTRAN TDD - UTRAN TDD SON ANR cell search reporting in AWGN propagation conditions

#### A.8.7.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of the strongest UTRAN TDD cell for SON automatic neighbour relations. This test will partly verify the E-UTRAN TDD - UTRAN TDD cell search requirements for identification of a new UTRA TDD cell for SON given in section 8.1.2.4.13.

In the measurement control information it is indicated to the UE that periodical reporting with the purpose 'reportStrongestCellsForSON' is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. Prior to the start of time period T1, an interRATperiodic measurement reporting configuration with purpose reportStrongestCellsForSON is configured, and linked to a UTRA measurement object corresponding to channel UARFCN 1. During time duration T1, the UE shall not have any timing information of cell 2.

### A.8.7.3.2 Test Parameters

The test parameters are given in Tables A.8.7.3.1-1, A.8.7.3.1-2 and A.8.7.3.1-3.

### Table A.8.7.3.1-1: General test parameters for E-UTRAN TDD-UTRAN TDD cell search reporting for SON ANR in AWGN propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Gap Pattern Id		1	As specified in 3GPP TS 36.133 section 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
UTRA RF Channel Number		1	One UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW <sub>channel</sub> )	MHz	10	
Uplink-downlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
Inter-RAT (UTRA TDD) measurement quantity		P-CCPCH RSCP	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA TDD cell list size		None	No explicit neighbour list is provided to the UE
T1	S	5	During T1, cell 2 shall be powered off, and during the off time the physical cell identity shall be changed, The intention is to ensure that cell 2 has not been detected by the UE prior to the start of period T2.
T2	S	6	

Parameter	Unit	Cel	1	
		T1	T2	
E-UTRA RF Channel Number		1		
BW <sub>channel</sub>	MHz	10		
OCNG Patterns defined in		OP.1	חחד	
A.3.2.2.1 (OP.1 TDD)		01.1		
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	C	)	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA <sup>Note 1</sup>	dB			
OCNG_RB <sup>Note 1</sup>	dB			
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4	
$N_{oc}^{}$ Note 3	dBm/15 kHz	-9	8	
$\hat{E}_s/N_{oc}$	dB	4	4	
RSRP Note 4	dBm/15 kHz	-94	-94	
SCH_RP	dBm/15 kHz	-94	-94	
Propagation Condition		AW	GN	
<ul> <li>Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.</li> <li>Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.</li> <li>Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as</li> </ul>				
AWGN of appropriate	AWGN of appropriate power for $N_{oc}$ to be fulfilled.			
Note 4: RSRP levels have be purposes. They are n			nformation	

## Table A.8.7.3.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for UTRAN TDD cell search for SON ANR under AWGN propagation conditions

## Table A.8.7.3.1-3: Cell specific test parameters for UTRAN TDD (cell # 2) for UTRAN TDD cell search for SON ANR under AWGN propagation conditions

Parameter	Unit	Cell 2			
		T1		T	2
UTRA RF Channel number Note2			Chan	nel 2	
DL timeslot number		0	DwPTS	0	DwPTS
PCCPCH_Ec/lor	dB	-3		-3	
DwPCH_Ec/lor	dB	0			0
OCNS_Ec/lor	dB	-3		-3	
Îor/loc	dB	-Infinity 5			5
PCCPCH RSCP Note1	dBm	-Infinity	n.a.	-73	n.a.
Io Note1	dBm/1.28MHz	-Inf	inity	-70	).88
loc	dBm/1.28MHz		-7	<b>'</b> 5	
Propagation condition			AW	'GN	
Note 1: PCCPCH RSCP and lo le	Note 1: PCCPCH RSCP and lo levels have been calculated from other parameters for				
	information purposes. They are not settable parameters themselves.				
Note 2: In the case of multi-frequency network of 1.28 Mcps TDD, the UTRA RF Channel					annel
Number can be set for the	e primary frequenc	cy in this te	st.		

#### A.8.7.3.3 Test Requirements

The UE shall send the first measurement report containing the physical cell identity of cell 2, with a measurement reporting delay less than 4800 ms from the beginning of time period T2.

The rate of correct measurement reports observed with this delay during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTI<sub>DCCH</sub> higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

### A.8.8 E-UTRAN FDD – GSM Measurements

### A.8.8.1 E-UTRAN FDD – GSM event triggered reporting in AWGN

#### A.8.8.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter-RAT (GSM) measurements. This test will partly verify the E-UTRAN FDD - GSM cell search requirements in section 8.1.2.4.5.

The test parameters are given in Tables A.8.8.1.1-1, A.8.8.1.1-2 and A.8.8.1.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement	As specified in section A.3.1.1.1.
		Channel R.0 FDD	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in section A.3.1.2.1.
(E-UTRAN FDD)		Channel R.6 FDD	
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section
			8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on Absolute RF Channel Number 1
			(GSM cell)
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth	MHz	10	
(BW <sub>channel</sub> )			
Inter-RAT (GSM) measurement		GSM Carrier RSSI	
quantity			
b1-Threshold-GERAN	dBm	-80	GSM Carrier RSSI threshold for event B1.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored GSM cell list size		6 GSM neighbours including	List of GSM cells provided before T2 starts.
		ARFCN 1	
T1	S	5	
T2	S	5	

#### Table A.8.8.1.1-1: General test parameters for E-UTRAN FDD-GSM event triggered reporting in AWGN

Parameter	Unit	Cell 1				
		T1	T2			
E-UTRA RF Channel Number		1				
BW <sub>channel</sub>	MHz	10				
OCNG Pattern defined in						
A.3.2.1.1 (OP.1 FDD)		OP.1 F	FDD			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA <sup>Note 1</sup>	dB					
OCNG_RB <sup>Note 1</sup>	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4			
$\hat{E}_s/N_{oc}$	dB	4	4			
N <sub>oc</sub>	dBm/15 kHz	-98				
RSRP	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
Propagation Condition		AWGN				
Note 1: OCNG shall be used	such that both co	ells are fully allocated and a cons	stant total transmitted power			
spectral density is ac	spectral density is achieved for all OFDM symbols.					
Note 2: The resources for upl	ink transmission	are assigned to the UE prior to t	he start of time period T2.			

### Table A.8.8.1.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for event triggered reporting of GSM cell in AWGN

### Table A.8.8.1.1-3: Cell specific test parameters for GSM (cell # 2) for event triggered reporting of GSM cell in AWGN

Parameter	Unit	Cell 2		
		T1	T2	
Absolute RF Channel Number		ARFNC 1		
RXLEV	dBm	-Infinity	-75	
GSM BSIC		N/A	Valid	

### A.8.8.1.2 Test Requirements

The UE shall send one Event B1 triggered measurement report including BSIC of cell # 2, with a measurement reporting delay less than 3120 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE 1: The actual overall delays measured in the test may be up to  $2xTTI_{DCCH}$  higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

NOTE 2: The delay for GSM cell identification with BSIC verified is equal to 3120 ms, which is the sum of the event triggered measurement reporting delay and the initial BSIC identification delay.

The event triggered measurement reporting delay =  $2*T_{\text{Measurement Period, GSM}} = 2*480\text{ms} = 960\text{ms}$ .

Initial BSIC identification delay = 2160 ms.

# A.8.8.2 E-UTRAN FDD-GSM event triggered reporting when DRX is used in AWGN

### A.8.8.2.1 Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event in DRX. These tests will partly verify the E-UTRAN FDD-GSM cell search requirements when DRX is used in section 8.1.2.4.5.2.

In these tests, there are two cells, one E-UTRAN cell and one GSM cell, and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

The common test parameters are given in Table A.8.8.2.1-1. Cell specific test parameters are given in Table A.8.8.2.1-2 for E-UTRAN and in Table A.8.8.2.1-5 for GSM. DRX configuration for Test1 and Test2 are given in Table A.8.8.2.1-3 and time alignment timer and scheduling request related parameters in Table A.8.8.2.1-4.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle. In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B1 is used. The tests consist of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Parameter	Unit	Test 1	Test 2	Comment
		Value		
PDSCH parameters (E-		DL Reference Me		As specified in section A.3.1.1.1.
UTRAN FDD)		Channel R.0 FDD		
PCFICH/PDCCH/PHICH		DL Reference Me		As specified in section A.3.1.2.1.
parameters (E-UTRAN FDD)		Channel R.6 FDD	)	
Gap Pattern Id			)	As specified in 3GPP TS 36.133 section 8.1.2.1.
Active cell		Ce	1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Ce	2	Cell 2 is on Absolute RF Channel Number 1 (GSM cell)
CP length		Nor	mal	Applicable to cell 1
E-UTRA RF Channel			1	One E-UTRA FDD carrier frequency is
Number				used.
E-UTRA Channel Bandwidth	MHz	1	0	
(BW <sub>channel</sub> )				
Inter-RAT (GSM)		GSM Carrier RSSI		
measurement quantity				
B1-Threshold-GERAN	dBm	-8	30	GSM Carrier RSSI threshold for event B1.
Hysteresis	dB		)	
TimeToTrigger	S		)	
Filter coefficient		(	)	L3 filtering is not used
PRACH configuration			1	As specified in table 5.7.1-2 in TS 36.211
Access Barring Information	-	Not Sent		No additional delays in random access procedure.
DRX		ON		DRX related parameters are defined in Table A.8.8.2.1-3
Monitored GSM cell list size		6 GSM neighbours including ARFCN 1		List of GSM cells provided before T2 starts.
T1	S		5	
T2	S	5	45	

### Table A.8.8.2.1-1: General test parameters for E-UTRAN FDD-GSM event triggered reporting when DRX is used in AWGN

Parameter	Unit	Cell 1				
		T1 T2				
E-UTRA RF Channel Number		1				
BW <sub>channel</sub>	MHz	10				
OCNG Pattern defined in						
A.3.2.1.1 (OP.1 FDD)		OP.1 FDD				
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB	1				
OCNG_RA <sup>Note 1</sup>	dB					
OCNG_RB <sup>Note 1</sup>	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4			
$N_{oc}$ Note 2	dBm/15 kHz	-98				
RSRP <sup>Note 3</sup>	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
$\hat{E}_s/N_{oc}$	dB	4	4			
Propagation Condition		AWG				
Note 1: OCNG shall be used	such that both co	ells are fully allocated and a cons	stant total transmitted power			
spectral density is act			-			
	Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant					
over subcarriers and time and shall be modelled as AWGN of appropriate power for ${}^{m N_{oc}}$ to be fulfilled.						
Note 3: RSRP and SCH_RP I They are not settable		n derived from other parameters f mselves.	or information purposes.			

#### Table A.8.8.2.1-2: Cell specific test parameters for E-UTRAN FDD (cell #1) event triggered reporting of GSM cell when DRX is used in AWGN

#### Table A.8.8.2.1-3: drx-Configuration to be used in E-UTRAN FDD-GSM event triggered reporting when DRX is used in AWGN

Field	Test1	Test2	Comment
Field	Value	Value	
onDurationTimer	psf1	psf1	
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	sf1	sf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	Disable	Disable	

Note: For further information see section 6.3.2 in 3GPP TS 36.331.

#### Table A.8.8.2.1-4: TimeAlignmentTimer and sr-ConfigIndex -Configuration to be used in E-UTRAN FDD-GSM event triggered reporting when DRX is used in AWGN

Field	Test1 Value	Test2 Value	Comment
TimeAlignmentTimer	sf500	sf500	For further information see section 6.3.2 in 3GPP TS 36.331.
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section 10.1 in 3GPP TS 36.213.

### Table A.8.8.2.1-5: Cell specific test parameters for GSM (cell # 2) for event triggered reporting of GSM cell when DRX is used in AWGN

Parameter	Unit	Cell 2		
		T1	T2	
Absolute RF Channel Number		ARFNC 1		
RXLEV	dBm	-Infinity	-75	
GSM BSIC		N/A	Valid	

#### A.8.8.2.2 Test Requirements

In Test1 the UE shall send one Event B1 triggered measurement report including BSIC of cell # 2, with a measurement reporting delay less than 3120 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE send the measurement report on PUSCH.

In Test2 the UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 42.8 seconds from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event B1 measurement report

### A.8.9 E-UTRAN FDD - UTRAN TDD measurements

# A.8.9.1 E-UTRAN FDD - UTRAN TDD event triggered reporting in fading propagation conditions

#### A.8.9.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. The test will partly verify the E-UTRAN FDD - UTRAN TDD cell search requirements in section 8.1.2.4.4 in fading environment.

The test parameters are given in Table A.8.9.1.1-1, A.8.9.1.1-2 and A.8.9.1.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel TBD	As specified in TS 36.101 section TBD
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1
parameters		Channel R.6 FDD	
Active cell		Cell 1	E-UTRA FDD Cell 1
Neighbour cell		Cell 2	UTRA TDD Cell 2 is to be identified.
Gap Pattern Id		1	As specified in TS 36.133 section8.1.2.1. Measurement Gap Repetition Period = 80ms
Inter-RAT measurement quantity		UTRA TDD PCCPCH RSCP	
Threshold other system	dBm	-71	UTRA TDD PCCPCH RSCP threshold for event B1.
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	dB	0	
Filter coefficient		0	L3 filtering is not used
DRX			OFF
T1	S	5	
T2	S	15	

### Table A.8.9.1.1-1: General test parameters for Event triggered reporting in fading propagation conditions

## Table A.8.9.1.1-2: Cell specific test parameters for Event triggered reporting of UTRA TDD neighbours in fading propagation conditions (cell1)

Parameter	Unit	Cel	1		
		T1	T2		
E-UTRA RF Channel		1			
Number					
BW <sub>channel</sub>	MHz	10	)		
OCNG Patterns defined		OP.1	FDD		
in A.3.2.1.1 (OP.1 FDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB	_			
PHICH_RB	dB	0			
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA <sup>Note 1</sup>	dB				
OCNG_RB <sup>Note 1</sup>	dB				
N <sub>oc</sub>	dBm/15KH	-98	8		
1 v oc	z				
RSRP	dBm	-94	-94		
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4		
P-SCH_RP	dBm	-94	4		
S-SCH_RP	dBm	-94	4		
Propagation Condition		ETU	70		
Note 1: OCNG shall be use	ed such that ce	ell 1 is fully allocated	d and a		
constant total transmitted p	ower spectral	density is achieved	for all OFDM		
symbols.					
Note 2: The resources for		ssion are assigned t	to the UE prior		
to the start of time period T	2.				

Parameter	Unit	Cell 2				
		Т	1		Г2	
Timeslot Number		0	DwPTS	0	DwPTS	
UTRA RF Channel			Cha	nnel1		
Number (NOTE1)						
PCCPCH_Ec/lor	dB	-Infi	nity	-3		
DwPCH_Ec/lor	dB	-Inf	nity		0	
OCNS_Ec/lor		-Infinity		-3		
$\hat{I}_{or}/I_{oc}$	dB	-Infinity		9		
I <sub>oc</sub>	dBm/	-70				
00	1.28					
	MHz					
PCCPCH_RSCP	dB	-Infinity -64				
Propagation		Case 3 (NOTE2)				
Condition						
NOTE1: The DPCH o	f the cell i	s located ir	n a timeslot	other than	0.	
NOTE2: Case 3 propa	agation co	onditions ar	e specified	in TS25.10	2 Annex B	

### Table A.8.9.1.1-3: Cell specific test parameters for Event triggered reporting of UTRA TDD neighbours in fading propagation conditions (cell2)

### A.8.9.1.2 Test Requirements

The UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 12800 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to [2] x  $TTI_{DCCH}$  higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

### A.8.10 E-UTRAN TDD – GSM Measurements

### A.8.10.1 E-UTRAN TDD – GSM event triggered reporting in AWGN

### A.8.10.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter-RAT (GSM) measurements. This test will partly verify the E-UTRAN TDD - GSM cell search requirements in section 8.1.2.4.6.

The test parameters are given in Tables A.8.10.1.1-1, A.8.8.1.1-2 and A.8.10.1.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2.
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2.
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on Absolute RF Channel Number 1 (GSM cell)
Special subframe configuration		6	As specified in table 4.2-1 in 3GPP TS 36.211
Uplink-downlink configuration		1	As specified in table 4.2-2 in 3GPP TS 36.211
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW <sub>channel</sub> )	MHz	10	
Inter-RAT (GSM) measurement quantity		GSM Carrier RSSI	
b1-Threshold-GERAN	dBm	-80	GSM Carrier RSSI threshold for event B1.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored GSM cell list size		6 GSM neighbours including ARFCN 1	List of GSM cells provided before T2 starts.
T1	S	5	
T2	S	5	

## Table A.8.10.1.1-1: General test parameters for E-UTRAN TDD-GSM event triggered reporting in AWGN

Parameter	Unit	Cell 1					
		T1 T2					
E-UTRA RF Channel Number		1					
BW <sub>channel</sub>	MHz	10					
OCNG Pattern defined in							
A.3.2.2.1 (OP.1 TDD)		OP.1 TDD					
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB	0					
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB	7					
OCNG_RA <sup>Note 1</sup>	dB						
OCNG_RB <sup>Note 1</sup>	dB						
$\hat{E}_{s}/I_{ot}$	dB	4	4				
Note 3	dBm/15 kHz	-98					
$\hat{E}_s/N_{oc}$	dB	4	4				
RSRP <sup>Note 4</sup>	dBm/15 kHz	-94	-94				
SCH_RP	dBm/15 kHz	-94	-94				
Propagation Condition		AWG	3N				
Note 1:         OCNG shall be used spectral density is ac           Note 2:         The resources for up	<ol> <li>OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.</li> <li>The resources for uplink transmission are assigned to the UE prior to the start of time period T2.</li> </ol>						
over subcarriers and	time and shall be	e modelled as AWGN of appropri	ate power for $N_{_{oc}}$ to be				
fulfilled. Note 4: RSRP levels have be							

### Table A.8.10.1.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for event triggered reporting of GSM cell in AWGN

### Table A.8.10.1.1-3: Cell specific test parameters for GSM (cell # 2) for event triggered reporting of GSM cell in AWGN

Parameter	Unit	Cell 2		
		T1	T2	
Absolute RF Channel Number		ARFNC 1		
RXLEV	dBm	-Infinity	-75	
GSM BSIC		N/A	Valid	
Propagation Condition		AWGN		

### A.8.10.1.2 Test Requirements

The UE shall send one Event B1 triggered measurement report including the valid BSIC of cell # 2, with a measurement reporting delay less than 3120 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE 1: The actual overall delays measured in the test may be up to  $2xTTI_{DCCH}$  higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

NOTE 2: The delay for GSM cell identification with BSIC verified is equal to 3120 ms, which is the sum of the event triggered measurement reporting delay and the initial BSIC identification delay.

The event triggered measurement reporting delay =  $2*T_{Measurement Period, GSM} = 2*480ms = 960ms$ .

Initial BSIC identification delay = 2160 ms.

# A.8.10.2 E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

#### A.8.10.2.1 Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event in DRX. These tests will partly verify the E-UTRAN TDD-GSM cell search requirements when DRX is used in section 8.1.2.4.6.

In these tests, there are two cells, one E-UTRAN cell and one GSM cell, and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

The common test parameters are given in Table A.8.10.2.1-1. Cell specific test parameters are given in Table A.8.10.2.1-2 for E-UTRAN and in Table A.8.10.2.1-5 for GSM. DRX configuration for Test1 and Test2 are given in Table A.8.10.2.1-3 and time alignment timer and scheduling request related parameters in Table A.8.10.2.1-4.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle. In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B1 is used. The tests consist of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Parameter	Unit	Test 1	Test 2	Comment	
		Va	lue		
PDSCH parameters (E-		DL Reference Me	easurement	As specified in section A.3.1.1.2. Note that	
UTRAN TDD)		Channel R.0 TDD		UE may only be allocated at On Duration	
PCFICH/PDCCH/PHICH		DL Reference Me	easurement	As specified in section A.3.1.2.2.	
parameters (E-UTRAN TDD)		Channel R.6 TDD	)		
Gap Pattern Id		(	)	As specified in 3GPP TS 36.133 section	
				8.1.2.1.	
Active cell		Ce	1	Cell 1 is on E-UTRA RF channel number	
				1.	
Neighbour cell		Ce	2	Cell 2 is on Absolute RF Channel Number	
				1 (GSM cell)	
Special subframe		6	6	As specified in table 4.2-1 in TS 36.211.	
configuration					
Uplink-downlink		1	1	As specified in 3GPP TS 36.211 section	
configuration				4.2 Table 4.2-2	
CP length		Nor	mal	Applicable to cell 1	
E-UTRA RF Channel		1	1	One E-UTRA TDD carrier frequency is	
Number				used.	
E-UTRA Channel Bandwidth	MHz	1	0		
(BW <sub>channel</sub> )					
Inter-RAT (GSM)		GSM Car	rier RSSI		
measurement quantity					
B1-Threshold-GERAN	dBm	-	80	GSM Carrier RSSI threshold for event B1.	
Hysteresis	dB	(	)		
TimeToTrigger	S	(	)		
Filter coefficient		(	)	L3 filtering is not used	
PRACH configuration		4	1	As specified in table 5.7.1-2 in TS 36.211	
Access Barring Information	-	Not	Sent	No additional delays in random access	
_				procedure.	
DRX		ON		DRX related parameters are defined in	
				Table A.8.10.2.1-3	
Monitored GSM cell list size		6 GSM neighbours including		List of GSM cells provided before T2	
		ARF	CN 1	starts.	
T1	S	Ę	5		
T2	S	5	45		

## Table A.8.10.2.1-1: General test parameters for E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

Parameter	Unit	Cell	1			
		T1	T2			
E-UTRA RF Channel Number		1				
BW <sub>channel</sub>	MHz	10				
OCNG Patterns defined in						
A.3.2.2.1 (OP.1 TDD)		OP.1	rdd			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA <sup>Note 1</sup>	dB					
OCNG_RB <sup>Note 1</sup>	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4			
Note 2	dBm/15 kHz	-98	3			
RSRP Note 3	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
$\hat{E}_s/N_{oc}$	dB	4	4			
Propagation Condition		AWO				
	such that both c	ells are fully allocated and a cons	stant total transmitted power			
spectral density is acl			· · · · · ·			
		e sources not specified in the tes				
over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{oc}$ to be fulfilled. Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes.						
Note 3: RSRP and SCH_RP They are not settable			or information purposes.			

### Table A.8.10.2.1-2: Cell specific test parameters for E-UTRAN TDD (cell #1) event triggered reporting of GSM cell when DRX is used in AWGN

Table A.8.10.2.1-3: drx-Configuration to be used in E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

Field	Test1	Test2	Comment
11010	Value	Value	
onDurationTimer	psf1	psf1	
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	sf1	sf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	Disable	Disable	
Note: For further information see sectio	n 6.3.2 in 3GF	P TS 36.331	

 Table A.8.10.2.1-4: TimeAlignmentTimer and sr-ConfigIndex -Configuration to be used in E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

Field	Test1 Value	Test2 Value	Comment
TimeAlignmentTimer	sf500	sf500	For further information see section 6.3.2 in 3GPP TS 36.331.
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section 10.1 in 3GPP TS 36.213.

### Table A.8.10.2.1-5: Cell specific test parameters for GSM (cell # 2) for event triggered reporting of GSM cell when DRX is used in AWGN

Parameter	Unit	Cell 2	
		T1	T2
Absolute RF Channel Number		AF	RFNC 1
RXLEV	dBm	-Infinity	-75
GSM BSIC		N/A	Valid

#### A.8.10.2.2 Test Requirements

In Test1 the UE shall send one Event B1 triggered measurement report including BSIC of cell # 2, with a measurement reporting delay less than 3120 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE send the measurement report on PUSCH.

In Test2 the UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 42.8 seconds from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event B1 measurement report

### A. 8.11 Monitoring of Multiple Layers

# A. 8.11.1 Multiple E-UTRAN FDD-FDD Inter-frequency event triggered reporting under fading propagation conditions

### A. 8.11.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of multiple events. This test will partly verify the FDD-FDD inter-frequency cell search requirements in section 8.1.2.3.

The test parameters are given in Tables A.8.11.1.1.1-1 and A.8.11.1.1.1-2. In this test, there are three cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2 or cell 3.

## Table A. 8.11.1.1-1: General test parameters for Inter-frequency E-UTRA FDD – E-UTRA FDD and E-UTRA FDD cell search under fading

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
E-UTRA RF Channel Number		1, 2, 3	Three FDD carrier frequencies are used.
Channel Bandwidth (BW <sub>channel</sub> )	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2 and cell 3	Cell 2 is on RF channel number 2 and cell 3 is on RF channel number 3
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Time offset between E- UTRAN FDD cells		3 ms	Asynchronous cells
T1	S	5	
T2	S	10	

Parameter	Unit	C	ell 1	Cell	2	Cell 3							
		T1	T2	T1	T2	T1	T2						
E-UTRA RF			1	2		3							
Channel Number													
BW <sub>channel</sub>	MHz		10	10		10							
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD) and in A.3.2.1.2 (OP.2 FDD)		OP.	1 FDD	OP.2 F	DD	OP.2 FDD	1						
PBCH_RA	dB												
PBCH_RB	dB												
PSS_RA	dB												
SSS_RA	dB												
PCFICH_RB	dB												
PHICH_RA	dB		0	0		0							
PHICH_RB	dB		-	_									
PDCCH_RA	dB												
PDCCH_RB	dB												
PDSCH_RA	dB												
PDSCH_RB	dB												
OCNG_RA <sup>Note 1</sup>	dB												
OCNG_RB <sup>Note</sup>	dB												
$N_{_{oc}}$ Note 3	dBm/15 kHz				-98								
RSRP Note 4	dBm/15 kHz	-98	-98	-Infinity	-95	-Infinity	-95						
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	0	0	-Infinity	3	-Infinity	3						
SCH_RP Note 4	dBm/15 kHz	-98	-98	-Infinity	-95	-Infinity	-95						
$\hat{E}_{s}/N_{oc}$	dB	0	0	-Infinity	3	-Infinity	3						
Propagation Condition		A۷	AWGN ETU70			ETU70							
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total													
<ul> <li>transmitted power spectral density is achieved for all OFDM symbols.</li> <li>Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.</li> <li>Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of</li> </ul>													
Note 4: RSRP and	SCH_RP I	evels ha	ave been (	derived from		ameters for inform	appropriate power for $N_{oc}$ to be fulfilled. Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.						

### Table A. 8.11.1.1-2: Cell specific test parameters for Inter-frequency E-UTRA FDD – E-UTRA FDD and E-UTRA FDD cell search under fading

### A. 8.11.1.2 Test Requirements

The UE shall send Event A3 triggered measurement reports for both cell 2 and cell 3, with a measurement reporting delay less than 7680 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to  $2xTTI_{DCCH}$  higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

### A.8.11.2 E-UTRAN TDD – E-UTRAN TDD and E-UTRAN TDD Interfrequency event triggered reporting under fading propagation conditions

#### A.8.11.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of two events. This test will partly verify the TDD-TDD inter-frequency cell search requirements in section 8.1.2.3.

The test parameters are given in Tables A.8.11.2.1-1 and A.8.11.2.1-2. In this test, there are three cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2 and cell 3.

#### Table A.8.11.2.1-1: General test parameters for E-UTRAN TDD - E-UTRAN TDD and E-UTRAN TDD Inter-frequency event triggered reporting under fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in 3GPP TS 36.211 section 4.2 Table 4.2-2
E-UTRA RF Channel Number		1, 2, 3	Three TDD carrier frequencies are used.
Channel Bandwidth (BW <sub>channel</sub> )	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbor cells		Cell 2 and Cell 3	Cell 2 and 3 are on RF channel numbers 2 and 3 respectively
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Time offset between cells		3 μs	Synchronous cells
T1	S	5	
T2	S	10	

### Table A.8.11.2.1-2: Cell specific test parameters for E-UTRAN TDD - E-UTRAN TDD and E-UTRAN TDD Inter-frequency event triggered reporting under fading propagation conditions cells

Parameter	Unit	Cell 1		Cel	2	Cell 3		
		T1	T2	T1	T2	T1	T2	
E-UTRA RF Channel Number		1		2		3	3	
BW <sub>channel</sub>	MHz		10	10	)	10	)	
OCNG Patterns defined in A.3.2.2.1 (OP.1 TDD) and in A.3.2.2.2 (OP.2 TDD)		OP.	1 TDD	OP.2 TDD		OP.2 TDD		
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB					<u> </u>		
PHICH_RB	dB		0	0		0		
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA <sup>Note 1</sup>	dB							
OCNG_RB <sup>Note 1</sup>	dB							
$N_{oc}$ Note 3	dBm/15 kHz			-9	8			
RSRP Note 4	dBm/15 kHz	-98	-98	-inf	-95	-inf	-95	
$\hat{E}_{s}/I_{ot}$	dB	0	0	-inf	3	-inf	3	
SCH_RP Note 4	dBm/15 kHz	-98	-98	-inf	-95	-inf	-95	
$\hat{E}_{s}/N_{oc}$	dB	0 0 -inf 3 -inf				-inf	3	
Propagation Condition		AWGN ETU70 ETU70						
Note 1:       OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.         Note 2:       The resources for uplink transmission are assigned to the UE prior to the start of time period T2.         Note 3:       Interference from other cells and noise sources not specified in the test is assumed to be constant over         Start of the start of the start of the start of the constant over								
subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{oc}$ to be fulfilled. Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.								

### A.8.11.2.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for cell 2 with a measurement reporting delay less than 7680 ms from the beginning of time period T2.

The UE shall send one Event A3 triggered measurement report for cell 3 with a measurement reporting delay less than 7680 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE 1: The actual overall delays measured in the test may be up to 2xTTI<sub>DCCH</sub> higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

### A.8.11.3 E-UTRAN FDD-FDD Inter-frequency and UTRAN FDD event triggered reporting under fading propagation conditions

### A.8.11.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter frequency and UTRAN FDD measurements. This test will partly verify the FDD-FDD inter-frequency cell search requirements in section 8.1.2.3 and the E-UTRAN FDD- UTRAN FDD cell search requirements in section 8.1.2.4.1.

The test parameters are given in Tables A.8.11.3.1-1, A.8.11.3.1-2 and A.8.11.3.1-3. In this test, there are two cells on different carrier frequencies and one cell on UTRAN carrier frequency and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 and B2 is used. The test consists of two successive time periods, with time duration of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2 and cell 3.

### Table A.8.11.3.1-1: General test parameters for Combined inter-frequency and UTRAN event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement	As specified in section A.3.1.1.1.
		Channel R.0 FDD	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in section A.3.1.2.1.
(E-UTRAN FDD)		Channel R.6 FDD	
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section
			8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cells		Cell 2, 3	Cell 2 is on E-UTRA RF channel number 2.
			Cell 3 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1, 2	Two FDD carrier frequencies are used.
E-UTRA Channel Bandwidth	MHz	10	
(BW <sub>channel</sub> )			
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
E-UTRAN FDD measurement		RSRP	
quantity			
Inter-RAT (UTRA FDD)		CPICH Ec/N0	
measurement quantity			
A3-Offset	dB	-6	
b2-Threshold-E-UTRA	dB	-88	RSRP threshold for event B2.
b2-Threshold-UTRA	dB	-18	CPICH Ec/N0 threshold for event B2.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA FDD cell list size		12	UTRA cells on UTRA RF channel 1 provided
			in the cell list.
Time offset between cells		3 ms	Asynchronous cells
T1	S	5	
T2	S	8	

Parameter	Unit	Ce	ll 1	Cel	12	
		T1	T2	T1	T2	
E-UTRA RF Channel				2		
Number						
BW <sub>channel</sub>	MHz	1	0	1(	)	
OCNG Patterns						
defined in A.3.2.1.1		OP.1	FDD	OP.2	FDD	
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB		<b>`</b>	0		
PHICH_RB	dB		)	0		
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA <sup>Note 1</sup>	dB					
OCNG_RB <sup>Note 1</sup>	dB					
$N_{_{oc}}$ Note 3	dBm/15 kHz			-98		
RSRP <sup>Note 4</sup>	dBm/15 kHz	-94	-94	-Infinity	-91	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4	-Infinity	7	
SCH_RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	
$\hat{E}_s/N_{oc}$	dB	4	4	-Infinity	7	
Propagation Condition		AW		ETU		
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.						
	for uplink transmiss			or to the start of time	e period T2.	
over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{\it oc}$ to be fulfilled.						
	H_RP levels have b settable parameters		m other parame	ters for information	purposes.	

## Table A.8.11.3.1-2: Cell specific test parameters for Combined inter-frequency and UTRAN event triggered reporting in fading propagation conditions

### Table A.8.11.3.1-3: Cell specific test parameters for UTRAN FDD (cell # 3) for event triggered reporting of UTRAN FDD cell under fading propagation conditions

Parameter	Unit	Cell 3	3			
		T1	T2			
UTRA RF Channel Number		1				
CPICH_Ec/lor	dB	-10				
PCCPCH_Ec/lor	dB	-12				
SCH_Ec/lor	dB	-12				
PICH_Ec/lor	dB	-15				
DPCH_Ec/lor	dB	N/A				
OCNS		-0.94	1			
$\hat{I}_{or}/I_{oc}$	dB	-Infinity	-1.8			
I <sub>oc</sub>	dBm/3.84 MHz	-70				
CPICH_Ec/lo	dB	-Infinity	-14			
Propagation Condition	Case 5 (Note 3)					
Note 1: The DPCH level is controlled by the power control loop.						
Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal						
to I <sub>or</sub> .						
Note 3: Case 5 propagation of	conditions are de	efined in Annex A of 3GPP TS 25.1	01.			

### A.8.11.3.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 7680 ms from the beginning of time period T2.

The UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than 4800 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTI<sub>DCCH</sub> higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

# A.8.11.4 InterRAT E-UTRA TDD to E-UTRA TDD and UTRA TDD cell search test case

### A.8.11.4.1 Test Purpose and Environment

This test is to verify that the UE makes correct reporting of an event when doing inter frequency measurements and UTRA TDD measurements. The test will partly verify the requirements in section 8.1.2.3.2 combined 8.1.2.4.3 under fading propagation conditions.

This test scenario comprised of 2 E-UTRA TDD cells operating on different frequency, and 1 UTRA TDD cell. Test parameters are given in table A.8.11.4.1-1, A.8.11.4.1-2, and A.8.11.4.1-3. Gap pattern configuration #0 as defined in section 8.1.2.1 is provided.

The test consists of 2 successive time periods, with time duration T1 and T2. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 and B2 shall be used.

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference	As specified in section A.3.1.1.2
		Measurement Channel	
		R.0 TDD	
PCFICH/PDCCH/PHICH		DL Reference	As specified in section A.3.1.2.2
parameters		Measurement Channel	
		R.6 TDD	
Active cell		Cell 1	E-UTRA TDD cell is on RF channel
<b>N I I</b>		0	number 1
Neighbour cell		Cell 2	E-UTRA TDD cell is on RF channel
		0.00	number 2
		Cell 3	1.28Mcps TDD cell
CP length of cell1 and cell2		Normal	As specified in Table 4.0.0 in TO 00.044
Uplink-downlink configuration		1	As specified in Table 4.2-2 in TS 36.211.
of cell1 and cell2		6	The same configuration in both cells As specified in table 4.2-1 in TS 36.211.
Special subframe configuration of cell1 and cell2		0	
Gap Pattern Id		0	The same configuration in both cells As specified in 3GPP TS 36.133 section
Gap Fallenniù		0	8.1.2.1.
E-UTRAN TDD measurement		RSRP	0.1.2.1.
quantity		Koki	
UTRAN TDD measurement		RSCP	
quantity			
DRX		OFF	
Ofn	dB	0	Parameter for A3 and B2 event
Ocn	dB	0	Parameter for A3 event
Hys	dB	0	Parameter for A3 and B2 event
Ofs	dB	0	Parameter for A3 event
Ocs	dB	0	Parameter for A3 event
A3-Offset	dB	-6	Parameter for A3 event
Thresh1	dBm	-88	Absolute E-UTRAN RSRP threshold for
			event B2
Thresh2	dBm	-83	Absolute UTRAN RSCP threshold for
			event B2
Hysteresis	dB	0	
TimeToTrigger	dB	0	
Filter coefficient		0	L3 filtering is not used
T1	S	5	During T1, cell 2 and cell 3 shall be
			powered off, and during the off time the
			physical layer cell identity shall be
		45	changed.
T2	S	15	

# Table A.8.11.4.1-1: General test parameters for combined E-UTRA TDD inter-frequency and UTRA TDD cells search under fading propagation conditions

Parameter	Unit	Се	ll 1	Ce	12
		T1	T2	T1	T2
E-UTRA RF Channel			1	2	2
Number					
BWchannel	MHz	1	0	1	0
OCNG Pattern defined					
in A.3.2.2.1 (OP.1		OP.1	TDD	OP.2	TDD
TDD) and in A.3.2.2.2					
(OP.2)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB		_		
PHICH_RB	dB	(	)	C	)
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RANote 1	dB				
OCNG_RBNote 1	dB				
$\hat{E}_{s}/I_{ot}$	dB	4	4	-Infinity	7
$\hat{E}_{s}/N_{oc}$	dB	4	4	-Infinity	7
N <sub>oc</sub>	dBm/15 kHz		-Ç	98	
RSRP	dBm/15 kHz	-94	-94	-Infinity	-91
SCH_RP	dBm/15 kHz	-94	-94	-infinity	-91
Propagation Condition			GN	ETU	
	e used such that	both cells are	fully allocated	and a constant	t total
	wer spectral den				
	for uplink transn	nission are ass	signed to the U	IE priori to the	start of time
period T2.					
	H_RP levels hav			arameters for in	nformation
purposes. The	ey are not settable	e parameters t	hemselves.		

# Table A.8.11.4.1-2: Cell specific test parameters for combined E-UTRAN TDD inter-frequency and UTRA TDD cell search under fading propagation conditions(cell1 and cell2)

Table A.8.11.4.1-3: Cell specific test parameters for combined E-UTRA TDD inter-frequency and UTRA TDD cell search under fading propagation conditions(cell3)

Pa	rameter	Unit	Cell 3 (UTRA)				
Timeslot	Number		C	)	DwF	PTS	
			T1	T2	T1	T2	
UTRA RE	- Channel			Char	nel 3		
Number*					-		
PCCPCH	I_Ec/lor	dB	-3	3			
DwPCH_	Ec/lor	dB			0	)	
OCNS_E	c/lor	dB	-3				
$\hat{I}_{or}/I_{oc}$		dB	-Infinity	9	-Infinity	9	
$I_{oc}$		dBm/1.28 MHz	-80				
PCCPCH	I RSCP	dBm	-Infinity	-74	n.	a.	
Propagat	tion Condition			Cas	se 3		
Note1:	The DPCH of	all cells are located	d in a times	lot other th	nan 0.		
Note2:					Channel N	umber	
Note3:	can be set for the primary frequency in this test.						

### A.8.11.4.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 7680ms from the beginning of time period T2.

The UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than 12.8s from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to  $2xTTI_{DCCH}$  higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

## A.8.11.5 Combined E-UTRAN FDD – E-UTRA FDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

### A.8.11.5.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of multiple events when doing inter frequency and GSM measurements. This test will partly verify the E-UTRAN FDD-FDD inter-frequency cell search requirements in section 8.1.2.3.1 and simultaneously the E-UTRAN FDD- GSM cell search requirements in section 8.1.2.4.5.

The test parameters are given in Tables A.8.11.5.1-1, A.8.11.5.1-2 and A.8.11.5.1-3. In this test, there are two cells on different carrier frequencies and one GSM cell. Gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 and B2 is used. The test consists of two successive time periods, with time duration of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2 and cell 3.

# Table A.8.11.5.1-1: General test parameters for combined E-UTRAN FDD – E-UTRA FDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-		DL Reference Measurement	As specified in section A.3.1.1.1.
UTRAN FDD)		Channel R.0 FDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1.
parameters		Channel R.6 FDD	
(E-UTRAN FDD)			
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cells		Cell 2, 3	Cell 2 is on E-UTRA RF channel number 2. Cell 3 is on Absolute RF Channel Number 3 (GSM cell).
CP length		Normal	Applicable to cell 1 and cell 2
E-UTRA Channel Bandwidth (BW <sub>channel</sub> )	MHz	10	
E-UTRAN FDD measurement quantity		RSRP	
Ofn	dB	0	Parameter for A3 and B2 event
Ocn	dB	0	Parameter for A3 event
Hys	dB	0	Parameter for A3 and B2 event
Ofs	dB	0	Parameter for A3 event
Ocs	dB	0	Parameter for A3 event
A3-Offset	dB	-6	
Hysteresis	dB	0	
TimeToTrigger	s	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
DRA		OFF	OFF
Time offset between E- UTRAN FDD cells	ms	3 ms	Asynchronous cells
Inter-RAT (GSM)		GSM Carrier RSSI	
measurement quantity			
A3-Offset	dB	-6	
b2-Threshold-E-UTRA	dBm	-85	RSRP threshold for event B2. This is the threshold for E-UTRA in the B2 configuration. E- UTRA serving cell RSCP is below this throughout the test to account for measurement accuracy and fading
b2-Threshold-GERAN	dBm	-80	GSM Carrier RSSI threshold for event B2.
Monitored GSM cell list size		6 GSM neighbours including ARFCN 3	List of GSM cells provided before T2 starts.
T1	s	5	

#### Table A.8.11.5.1-2: Cell specific test parameters for E-UTRAN FDD cells for combined E-UTRAN FDD – E-UTRA FDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Parameter	Unit	Ce	ll 1	Ce	2	
		T1	T2	T1	T2	
E-UTRA RF Channel			1		2	
Number						
BW <sub>channel</sub>	MHz	1	0	1	0	
OCNG Patterns						
defined in A.3.2.1.1		OP.1	FDD	OP.2	FDD	
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB	_				
PBCH_RB	dB					
PSS_RA	dB	]				
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB		_			
PHICH_RB	dB	(	)	(	)	
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA <sup>Note 1</sup>	dB					
OCNG_RB <sup>Note 1</sup>	dB					
$N_{_{oc}}$ Note 3	dBm/15 kHz			-98		
RSRP <sup>Note 4</sup>	dBm/15 kHz	-94	-94	-Infinity	-91	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4	-Infinity	7	
SCH_RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	
$\hat{E}_s/N_{oc}$	dB	4	4	-Infinity	7	
Propagation Condition		ET	J70	ETU	J70	
Note 1: OCNG shall be used	d such that both cells a					
achieved for all OF		·				
Note 2: The resources for up						
Note 3: Interference from other		•			over subcarriers	
and time and shall	be modelled as AWG	N of appropriate po	ower for $N_{_{oc}}$ to b	e fulfilled.		
Note 4: RSRP and SCH_RF parameters themse	Plevels have been der				ey are not settable	

## Table A.8.11.5.1-3: Cell specific test parameters for GSM (cell # 3) for combined E-UTRAN FDD – E-UTRA FDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Parameter	Unit	Cell 2		
		T1	T2	
Absolute RF Channel Number		ARFCN3		
RXLEV	dBm	-Infinity	-75	
GSM BSIC		N/A	Valid	

#### A.8.11.5.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for cell 2, with a measurement reporting delay less than 7680 ms from the beginning of time period T2.

The UE shall send one Event B2 triggered measurement report including BSIC of cell 3, with a measurement reporting delay less than [7200] ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to 2xTTI<sub>DCCH</sub> higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.
- NOTE 2: The delay for GSM cell identification with BSIC verified is equal to [7200] ms, which is the sum of the event triggered measurement reporting delay and the initial BSIC identification delay.

The event triggered measurement reporting delay =  $2*T_{\text{Measurement Period, GSM}} = 2*N_{\text{freq}}*480\text{ms} = 1920\text{ms}.$ 

Initial BSIC identification delay = [5280] ms, when one carrier frequency other than GSM is monitored in the gaps.

## A.8.11.6 Combined E-UTRAN TDD – E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

#### A.8.11.6.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of multiple events when doing inter frequency and GSM measurements. This test will partly verify the E-UTRAN TDD-TDD inter-frequency cell search requirements in section 8.1.2.3.2 and simultaneously the E-UTRAN TDD- GSM cell search requirements in section 8.1.2.4.6.

The test parameters are given in Tables A.8.11.6.1-1, A.8.11.6.1-2 and A.8.11.6.1-3. In this test, there are two cells on different carrier frequencies and one GSM cell. Gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 and B2 is used. The test consists of two successive time periods, with time duration of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2 and cell 3.

# Table A.8.11.6.1-1: General test parameters for combined E-UTRAN TDD – E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-		DL Reference Measurement	As specified in section A.3.1.1.2.
UTRAN TDD)		Channel R.0 TDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.2.
parameters		Channel R.6 TDD	
(E-UTRAN TDD)			
Special subframe		6	As specified in table 4.2-1 in TS 36.211. The
configuration of cell1 and		-	same configuration in both cells
cell2			5
Uplink-downlink configuration		1	As specified in 3GPP TS 36.211 section 4.2
of cell1 and cell2			Table 4.2-2
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cells		Cell 2, 3	Cell 2 is on E-UTRA RF channel number 2.
Neighbour cells		06112, 0	Cell 3 is on Absolute RF Channel Number 3
			(GSM cell).
CD longth		Normal	
CP length		Normal	Applicable to cell 1 and cell 2
E-UTRA Channel Bandwidth	MHz	10	
(BW <sub>channel</sub> )			
E-UTRAN TDD measurement		RSRP	
quantity			
Ofn	dB	0	Parameter for A3 and B2 event
Ocn	dB	0	Parameter for A3 event
Hys	dB	0	Parameter for A3 and B2 event
-			
Ofs	dB	0	Parameter for A3 event
Ocs	dB	0	Parameter for A3 event
A3-Offset	dB	-6	
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Time offset between E-	ms	3 ms	Asynchronous cells
UTRAN TDD cells			
Inter-RAT (GSM)	1	GSM Carrier RSSI	
		GSIVI Callier KSSI	
measurement quantity b2-Threshold-E-UTRA	dDm	95	DCDD threaded for event D2. This is the
DZ-THIESHOR-E-UTKA	dBm	-85	RSRP threshold for event B2. This is the
			threshold for E-UTRA in the B2 configuration. E-
			UTRA serving cell RSCP is below this
			throughout the test to account for measurement
			accuracy and fading
b2-Threshold-GERAN	dBm	-80	GSM Carrier RSSI threshold for event B2.
Monitored GSM cell list size		6 GSM neighbours including	List of GSM cells provided before T2 starts.
	ļ	ARFCN 3	
T1	S	5	
T2	S	10	

#### Table A.8.11.6.1-2: Cell specific test parameters for E-UTRAN TDD cells for combined E-UTRAN TDD – E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Parameter	Unit	Ce	ll 1	Ce	ll 2	
		T1	T2	T1	T2	
E-UTRA RF Channel			1	2	2	
Number						
BW <sub>channel</sub>	MHz	1	0	1	0	
OCNG Patterns						
defined in A.3.2.2.1		OP.1	TDD	OP.2	TDD	
(OP.1 TDD) and in						
A.3.2.2.2 (OP.2 TDD)						
PBCH_RA	dB	-				
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	(	)	(	)	
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA <sup>Note 1</sup>	dB					
OCNG_RB <sup>Note 1</sup>	dB					
$N_{_{oc}}$ Note 3	dBm/15 kHz			-98		
RSRP <sup>Note 4</sup>	dBm/15 kHz	-94	-94	-Infinity	-91	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4	-Infinity	7	
SCH_RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	
$\hat{E}_s/N_{oc}$	dB	4	4	-Infinity	7	
Propagation Condition		ET	J70	ETI	J70	
Note 1: OCNG shall be used	d such that both cells a					
achieved for all OF	DM symbols.					
Note 2: The resources for up						
Note 3: Interference from oth		•			over subcarriers	
and time and shall	be modelled as AWG	N of appropriate po	ower for $N_{_{oc}}$ to b	e fulfilled.		
Note 4: RSRP and SCH_RF parameters themse		ived from other pa	rameters for inforr	mation purposes. Th	ey are not settable	

## Table A.8.11.6.1-3: Cell specific test parameters for GSM (cell # 3) for combined E-UTRAN TDD – E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Parameter	Unit	Cell 3		
		T1	T2	
Absolute RF Channel Number		ARFCN3		
RXLEV	dBm	-Infinity	-75	
GSM BSIC		N/A	Valid	

#### A.8.11.6.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for cell 2, with a measurement reporting delay less than 7680 ms from the beginning of time period T2.

The UE shall send one Event B2 triggered measurement report including BSIC of cell 3, with a measurement reporting delay less than [7200] ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

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- NOTE 1: The actual overall delays measured in the test may be up to 2xTTI<sub>DCCH</sub> higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.
- NOTE 2: The delay for GSM cell identification with BSIC verified is equal to [7200] ms, which is the sum of the event triggered measurement reporting delay and the initial BSIC identification delay.

The event triggered measurement reporting delay =  $2*T_{Measurement Period, GSM} = 2*N_{freq}*480ms = 1920ms$ .

Initial BSIC identification delay = [5280] ms, when one carrier frequency other than GSM is monitored in the gaps.

## A.9 Measurement Performance Requirements

Unless explicitly stated otherwise:

- Reported measurements shall be within defined range of accuracy limits defined in Section 9 for 90 % of the reported cases.
- Cell 1 is the serving cell.
- Measurements are performed in RRC\_CONNECTED state.

## A.9.1 RSRP

### A.9.1.1 FDD Intra frequency case

#### A.9.1.1.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.2 for FDD intra frequency measurements.

#### A.9.1.1.2 Test parameters

In this set of test cases all cells are on the same carrier frequency. Both absolute and relative accuracy of RSRP intra frequency measurements are tested by using the parameters in Table A.9.1.1.2-1. In all test cases, Cell 1 is the serving cell and Cell 2 the target cell.

Parameter		Unit	Tes			st 2		st 3	
		Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2	
	Channel Number	NAL 1						1	
BW <sub>channel</sub>		MHz	1			0		0	
Measurement	bandwidth	n <sub>PRB</sub>	22–	-27	22–	-27	22-	-27	
	ence measurement		R.0	-	R.0	-	R.0	_	
channel define	ed in A.3.1.1.1		FDD		FDD		FDD		
PDSCH alloca	ation	n <sub>PRB</sub>	13—36	-	13—36	-	13—36	-	
	CH/PHICH Reference								
	channel defined in		R.6	FDD	R.6	FDD	R.6	FDD	
A.3.1.2.1	ns defined in A.3.2.1.1								
	nd A.3.2.1.2 (OP.2		OP.1	OP.2	OP.1	OP.2	OP.1	OP.2	
(01 11 <i>DD)</i> a FDD)	107.0.2.1.2 (01.2		FDD	FDD	FDD	FDD	FDD	FDD	
PBCH_RA									
PBCH_RB		]							
PSS_RA									
SSS_RA									
PCFICH_RB PHICH_RA		-							
PHICH_RB		dB	0	0	0	0	0	0	
PDCCH_RA		UD UD	0	0	0 0	0	Ŭ	U	
PDCCH_RB PDSCH_RA PDSCH_RB									
									]
		OCNG_RA <sup>Note</sup>	21	-					
OCNG_RB <sup>Note</sup>									
11, 18, 19 and	Bands 1, 4, 6, 10, 11, 18, 19 and 21	-					-1	16	
$N_{_{oc}}$ Note2	Bands 2, 5, 7and 17	dBm/15 kHz	-106	-106	-88	-88	-114		
	Bands 3, 8, 12, 13,							-1	13
	14 and 20	-							
<u> </u>	Band 9						-1	15	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	2.5	-6	2.5	-6	0.46	-5.76	
	Bands 1, 4, 6, 10,						-113	-117	
	11, 18, 19 and 21	4							
RSRP <sup>Note3</sup>	Bands 2, 5, 7 and 17	dBm/15 kHz	-100	-105	-82	-87	-111	-115	
	Bands 3, 8, 12, 13, 14 and 20						-110	-114	
	Band 9	1					-112	-116	
	Bands 1, 4, 6, 10, 11, 18, 19 and 21						-82	.43	
0 <sup>Note3</sup>	Bands 2, 5, 7 and	dBm/9 MHz					-80	.43	
0	Bands 3, 8, 12, 13,		-70	-70	-52	-52		0.43	
	14 and 20	4					-81.43		
â /	Band 9								
$\hat{E}_{s}/N_{oc}$		dB	6	1	6	1	3	-1	
Propagation c		-	AW		AW			'GN	
		h cells are fully allo							

Table A.9.1.1.2-1: RSRP\ FDD Intra free	uency test	parameters
	100109 1001	parameters

time and shall be modelled as AWGN of appropriate power for  $N_{oc}$  to be fulfilled.

Note 3: RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

### A.9.1.1.3 Test Requirements

The RSRP measurement accuracy shall fulfil the requirements in section 9.1.2.

## A.9.1.2 TDD Intra frequency case

### A.9.1.2.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.2 for TDD intra frequency measurements.

### A.9.1.2.2 Test parameters

In this set of test cases all cells are on the same carrier frequency. Both absolute and relative accuracy of RSRP intra frequency measurements are tested by using the parameters in Table A.9.1.2.2-1. In all test cases, Cell 1 is the serving cell and Cell 2 the target cell.

Da	Parameter		Tes			st 2	Test 3	
Γđ	lameter	Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
	hannel Number					1		1
BW <sub>channel</sub>		MHz	1	0	1	0	1	0
Special subfra configuration <sup>No</sup>	ote1		6	6	e	6	6	
Uplink/downlin	k configuration <sup>Note1</sup>					1		1
Measurement	bandwidth	$n_{PRB}$	22–	-27	22–	-27	22-	-27
PDSCH Refer	ence measurement ed in A.3.1.1.2		R.0 TDD	-	R.0 TDD	-	R.0 TDD	-
PDSCH alloca	ition	$n_{PRB}$	13—36	-	13—36	-	13—36	-
PDCCH/PCFI Reference me defined in A.3.	asurement channel		R.6	TDD	R.6	TDD	R.6	TDD
OCNG Pattern A.3.2.2.1 (OP. A.3.2.2.2 (OP.	1 TDD) and		OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RA PDCCH_RA PDCCH_RA PDSCH_RA PDSCH_RB OCNG_RA <sup>Note</sup> OCNG_RB <sup>Note</sup>		dB	0	0	0	0	0	0
$N_{oc}$ Note3	36, 37, 38, 39 and 40	dBm/15 kHz	-106	-106	-88	-88	-1	16
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	2.5	-6	2.5	-6	0.5	-5.76
RSRP <sup>Note4</sup>	Bands 33, 34, 35, 36, 37, 38, 39 and 40	dBm/15 kHz	-100	-105	-82	-87	-113	-117
lo <sup>Note4</sup>	Bands 33, 34, 35, 36, 37, 38, 39 and 40	dBm/9 MHz	-70	-70	-52	-52	-82.43	
$\hat{E}_{s}/N_{oc}$		dB	6	1	6	1	3	-1
Propagation co Note 1: For spec Note 2: OCNG s achieve	ondition cial subframe and uplink- shall be used such that be ed for all OFDM symbols. ence from other cells and	oth cells are fully all	ocated and a	oles 4.2-1 a a constant te	nd 4.2-2 in 3 otal transmit	ted power s	.211. pectral dens	

Table A.9.1.2.2-1: RSRP TDD Intra frequency test parameters

time and shall be modelled as AWGN of appropriate power for  $N_{oc}$  to be fulfilled. Note 4: RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

#### A.9.1.2.3 Test Requirements

The RSRP measurement accuracy shall fulfil the requirements in section 9.1.2.

## A.9.1.3 FDD—FDD Inter frequency case

### A.9.1.3.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.3 for FDD—FDD inter frequency measurements.

#### A.9.1.3.2 Test parameters

In this set of test cases the cells are on different carrier frequencies. Both absolute and relative accuracy of RSRP intra frequency measurements are tested by using the parameters in Table A.9.1.3.2-1 In all test cases, Cell 1 is the serving cell and Cell 2 the target cell. The inter frequency measurements are supported by a measurement gap.

		1	То	st 1	То	st 2		
Parameter		Unit	Cell 1	Cell 2	Cell 1	Cell 2		
E-UTRA RF Char	nel Number		1	2	1	2		
BW <sub>channel</sub>		MHz	10	10	10	10		
Gap Pattern Id			0	-	0	-		
Measurement bar		n <sub>PRB</sub>		27		-27		
PDSCH Referenc channel defined ir			R.0 FDD	-	R.0 FDD	-		
PDSCH allocation		n <sub>PRB</sub>	13—36	-	13—36	-		
PDCCH/PCFICH/ measurement cha A.3.1.2.1	PHICH Reference annel defined in		R.6	FDD	R.6	FDD		
(OP.1 FDD) and A	efined in A.3.2.1.1 A.3.2.1.2 (OP.2 FDD)		OP.1 FDD	OP.2 FDD	OP.1 FDD	OP.2 FDD		
PBCH_RA PBCH_RB								
PSS RA								
SSS_RA								
PCFICH_RB								
PHICH_RA								
PHICH_RB PDCCH RA		dB	0	0	0	0		
PDCCH_RA								
PDSCH_RA								
PDSCH_RB								
OCNG_RANote1						l		
OCNG_RBNote	Decide 4 4 C 40							
	Bands 1, 4, 6, 10, 11, 18, 19 and 21				-109	-116		
$N_{_{oc}}$ Note2	Bands 2, 5, 7 and 17	dBm/15 kHz	-88.65	-88.65	-107	-114		
	Bands 3, 8, 12, 13, 14 and 20				-106	-113		
<u> </u>	Band 9				-108	-115		
$\hat{E}_{s}/I_{ot}$		dB	10	10	14	-5		
	Bands 1, 4, 6, 10, 11, 18 , 19 and 21				-95	-121		
RSRP <sup>Note3</sup>	Bands 2, 5, 7 and 17	dBm/15 kHz	-78.65	-78.65	-93	-119		
	Bands 3, 8, 12, 13, 14 and 20				-92	-118		
	Band 9				-94	-120		
	Bands 1, 4, 6, 10, 11, 18, 19 and 21				-67.05	-87.03		
lo <sup>Note3</sup>	Bands 2, 5, 7, and 17	dBm/9 MHz	-50.45	-50.45	-65.05	-85.03		
	Bands 3, 8, 12, 13, 14 and 20				-64.05	-84.03		
	Band 9				-66.05	-86.03		
$\hat{E}_s/N_{oc}$		dB	10	10	14	-5		
Propagation cond		-		/GN	AW			
Note 1:         OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.           Note 2:         Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of								
Note 3: RSR purpo	appropriate power for $N_{oc}$ to be fulfilled.							
Note 4: RSR	P minimum requirem	ents are specified			ent interfer	ence and		

## Table A.9.1.3.2-1: RSRP FDD—FDD Inter frequency test parameters

## A.9.1.3.3 Test Requirements

The RSRP measurement accuracy shall fulfil the requirements in section 9.1.3.

## A.9.1.4 TDD—TDD Inter frequency case

## A.9.1.4.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.3 for TDD—TDD inter frequency measurements.

## A.9.1.4.2 Test parameters

In this set of test cases the cells are on different carrier frequencies. Both absolute and relative accuracy of RSRP intra frequency measurements are tested by using the parameters in Table A.9.1.4.2-1. In all test cases, Cell 1 is the serving cell and Cell 2 the target cell. The inter frequency measurements are supported by a measurement gap.

			<b>—</b>	- ( 4	<b>.</b>	
Pa	Parameter			Test 1 Cell 1 Cell 2		st 2 Cell 2
E-UTRA RF Channel Number				2	Cell 1	2
BW <sub>channel</sub>		MHz	10	10	10	10
Special subframe	configuration <sup>Note1</sup>	101112		6	-	6
Uplink-downlink	configuration <sup>Note1</sup>			1		1
Gap Pattern Id	oninguration		0	-	0	-
			-		-	-
Measurement ba		n <sub>PRB</sub>		27		-27
PDSCH Reference channel defined i			R.0 TDD	-	R.0 TDD	-
PDSCH allocation		n <sub>PRB</sub>	13—36	-	13—36	-
PDCCH/PCFICH	PHICH Reference	РКВ				
measurement cha			R.6	TDD	R.6	TDD
A.3.1.2.2			_		_	
	lefined in A.3.2.2.1		OP.1	OP.2	OP.1	OP.2
(OP.1 TDD) and	A.3.2.2.2 (OP.2 TDD)		TDD	TDD	TDD	TDD
PBCH_RA						
PBCH_RB						
PSS_RA						
SSS_RA						
PCFICH_RB			1			
PHICH_RA			1			
PHICH_RB		dB	0	0	0	0
PDCCH_RA		]		-	-	
PDCCH_RB						
PDSCH_RA		]	1			
PDSCH_RB		1				
OCNG_RA <sup>Note2</sup>		1				
OCNG RB <sup>Note2</sup>		1				
	Bands 33, 34, 35,					├
	36, 37, 38, 39 and 40	dBm/15 kHz	-88.65	-88.65	-109	-116
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	10	10	14	-5
RSRP <sup>Note4</sup>	Bands 33, 34, 35, 36, 37, 38, 39 and 40.	dBm/15 kHz	-78.65	-78.65	-95	-121
lo <sup>Note4</sup>	Bands 33, 34, 35, 36, 37, 38, 39 and 40	dBm/9 MHz	-50.45	-50.45	-67.05	-87.03
$\hat{E}_s/N_{oc}$		dB	10	10	14	-5
Propagation cond	lition	-	AW	/GN	AW	/GN
	special subframe and	uplink-downlink		-		
	3GPP TS 36.211.		Singulate		2.00 1.2 1	
	IG shall be used suc	h that both cells a	re fully alle	hac haten	a constant	total
						lotai
transmitted power spectral density is achieved for all OFDM symbols. Note 3: Interference from other cells and noise sources not specified in the test is as						
to be	e constant over subca	arriers and time ar	na shall be	modelled	as AWGN	ΟΙ
	N					
	opriate power for $^N$					
	P and lo levels have				or informati	on
	oses. They are not s					
Note 5: RSR	P minimum requirem	nents are specified			ent interfer	ence and
10150		torna port.				

#### Table A.9.1.4.2-1: RSRP TDD—TDD Inter frequency test parameters

## A.9.1.4.3 Test Requirements

The RSRP measurement accuracy shall fulfil the requirements in section 9.1.3.

## A.9.2 RSRQ

## A.9.2.1 FDD Intra frequency case

## A.9.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.5.

### A.9.2.1.2 Test parameters

In this test case all cells are on the same carrier frequency. The absolute accuracy of RSRQ intra frequency measurement is tested by using the parameters in Table A.9.2.1.2-1. In all test cases, Cell 1 is the serving cell and Cell 2 the target cell.

Pa	arameter	Unit		st 1		st 2		st 3
E-UTRA RF Cha			Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
BW <sub>channel</sub>		MHz		0		0		0
Measurement ba	andwidth							
	ce measurement	$n_{PRB}$	R.0	21	R.0	21	R.0	21
channel defined			FDD	-	FDD	-	FDD	-
PDSCH allocation	n	$n_{PRB}$	13—36	-	13—36	-	13—36	-
	H/PHICH Reference nannel defined in		R.6	FDD	R.6	FDD	R.6	FDD
OCNG Patterns (OP.1 FDD) and	defined in A.3.2.1.1 A.3.2.1.2 (OP.2 FDD)		OP.1 FDD	OP.2 FDD	OP.1 FDD	OP.2 FDD	OP.1 FDD	OP.2 FDD
PBCH_RA PBCH_RB								
PSS_RA SSS_RA								
PCFICH_RB								
PHICH_RA								
PHICH_RB		dB	0	0	0	0	0	0
PDCCH_RA								
PDCCH_RB PDSCH_RA								
PDSCH_RB								
OCNG_RA <sup>Note1</sup>								
OCNG_RB <sup>Note1</sup>								
E	Bands 1, 4, 6, 10, 11, 18, 19 and 21	dBm/15 kHz	-84.76	-84.76	-103.85	-103.85	-116	
$N_{\scriptscriptstyle oc}$ Note2	Bands 2, 5, 7 and 17						-114	
	Bands 3, 8, 12, 13, 14 and 20						-113	
<u>^ /</u>	Band 9						-1	15
$\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$		dB	-1.76	-1.76	-4.7	-4.7	-5.4	-5.4
	Bands 1, 4, 6, 10, 11, 18, 19 and 21						-120	-120
RSRP <sup>Note3</sup>	Bands 2, 5, 7 and 17	dBm/15 kHz	-81.76	-81.76	-106.75	-106.75	-118	-118
	Bands 3, 8, 12, 13, 14 and 20						-117	-117
	Band 9						-119	-119
	Bands 1, 4, 6, 10, 11, 18, 19 and 21							
RSRQ <sup>Note3</sup>	Bands 2, 5, 7 and 17	dB	-14.77	-14.77	-16.76	-16.76	-17.33	-17.33
	Bands 3, 8, 12, 13, 14 and 20 Band 9							
	Bands 1, 4, 6, 10,							
	11, 18, 19 and 21						-85	.67
Io <sup>Note3</sup>	Bands 2, 5, 7 and 17	dBm/9 MHz	-50	-50	-73	-73	-83	.67
	Bands 3, 8, 12, 13, 14 and 20						-82	67
	Band 9						-84.67	
$\hat{E}_{s}/N_{oc}$		dB	3	3	-2.9	-2.9	-4	-4
Propagation condition			1	GN			1	1

Table A.9.2.1.2-1: RSRQ FDD Intra frequency test parameters

achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for  $\,N_{\scriptscriptstyle oc}\,$  to be fulfilled.

Note 3: RSRQ, RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Note 4: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver

antenna port.

### A.9.2.1.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Section 9.1.5.

## A.9.2.2 TDD Intra frequency case

### A.9.2.2.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.5.

### A.9.2.2.2 Test parameters

In this test case all cells are on the same carrier frequency. The absolute accuracy of RSRQ intra frequency measurement is tested by using the parameters in Table A.9.2.2.2-1. In all test cases, Cell 1 is the serving cell and Cell 2 the target cell.

Parameter		Unit		st 1	Tes	st 2	Test 3	
		Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
E-UTRA RF Chan	nel Number	N411-		1		1		1
BW <sub>channel</sub>	Note1	MHz		0		0		0
Special subframe of Uplink-downlink co	coniguration Note1			6 1		<u>6</u> 1		6 1
Measurement ban	0	n				-27		-27
PDSCH Reference		$n_{PRB}$	R.0	21	R.0	2,	R.0	21
channel defined in			TDD	-	TDD	-	TDD	-
PDSCH allocation		$n_{PRB}$	13—36	-	13—36	-	13—36	-
PDCCH/PCFICH/F measurement char A.3.1.2.2			R.6	TDD	R.6	TDD	R.6	TDD
OCNG Patterns de			OP.1	OP.2	OP.1	OP.2	OP.1	OP.2
	.3.2.2.2 (OP.2 TDD)		TDD	TDD	TDD	TDD	TDD	TDD
PBCH_RA								
PBCH_RB								
PSS_RA								
SSS_RA								
PCFICH_RB								
PHICH_RA								
PHICH_RB		dB	0	0	0	0	0	0
PDCCH_RA								
PDCCH_RB	PDCCH_RB							
PDSCH_RA PDSCH_RB								
OCNG_RA <sup>Note2</sup>								
OCNG_RB <sup>Note2</sup>								
Note3	Bands 33, 34, 35, 36, 37, 38, 39 and 40	dBm/15 kHz	-84.76	-84.76	-103.85	-103.85	-1	16
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	40	dB	-1.76	-1.76	-4.7	-4.7	-5.4	-5.4
L <sub>s</sub> /L <sub>ot</sub>	Data da 00. 04. 05	üÐ	1.70	1.70	4.7	ч. <i>1</i>	-0.4	0.4
RSRP <sup>Note4</sup>	Bands 33, 34, 35, 36, 37, 38, 39 and 40	dBm/15 kHz	-81.76	-81.76	-106.75	-106.75	-120	-120
RSRQ <sup>Note4</sup>	Bands 33, 34, 35, 36, 37, 38, 39 and 40	dB	-14.77	-14.77	-16.76	-16.76	-17.33	-17.33
Bands 33, 34, 35, 36, 37, 38, 39 and 40		dBm/9 MHz	-50	-50	-73	-73	-85	5.67
$\hat{E}_s/N_{oc}$		dB	3	3	-2.9	-2.9	-4	-4
	tion	-	AW	/GN	AW	/GN	AW	/GN
Propagation condition		der meliete e e efierenet						
Note 2: OCNG sha achieved	I subframe and uplink- all be used such that be for all OFDM symbols. the from other cells and	oth cells are fully all	located and a	a constant t	otal transmit	ted power s	pectral dens	-

Note 4: RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable

parameters themselves. Note 5: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

## A.9.2.2.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Sections 9.1.5.

## A.9.2.3 FDD—FDD Inter frequency case

## A.9.2.3.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.6.

## A.9.2.3.2 Test parameters

In this test case the two cells are on different carrier frequencies and measurement gaps are provided. Both RSRQ inter frequency absolute and relative accuracy requirements are tested by using test parameters in Table A.9.2.3.2-1. In all tests, Cell 1 is the serving cell and Cell 2 the target cell.

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Table A.9.2.3.2-1: RSRQ FDD—FDD Inter frequency test parameters

Parameter	Unit	Test 1		Test 2		Test 3	
	Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2

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E-UTRA RF Cł	annel Number		1	2	1	2	1	2
BW <sub>channel</sub>		MHz	10	10	10	10	10	10
Gap Pattern Id			0	-	0	-	0	-
Measurement I		n <sub>PRB</sub>	22-	27	22-	27	22—27	
PDSCH Refere channel define	ence measurement d in A.3.1.1.1		R.0 FDD	-	R.0 FDD	-	R.0 FDD	-
PDSCH allocat		n <sub>PRB</sub>	13—36	-	13—36	-	13—36	-
	CH/PHICH Reference channel defined in		R.6	FDD	R.6	FDD	R.6 F	DD
A.3.1.2.1			0.0.4		0.5.4			
(OP.1 FDD) an	s defined in A.3.2.1.1 d A.3.2.1.2 (OP.2 FDD)		OP.1 FDD	OP.2 FDD	OP.1 FDD	OP.2 FDD	OP.1 FDD	OP.2 FDD
PBCH_RA PBCH RB								
PSS_RA								
SSS_RA								
PCFICH_RB PHICH RA								
PHICH_RB		dB	0	0	0	0	0	0
PDCCH_RA			_	-	-	-	-	
PDCCH_RB PDSCH_RA								
PDSCH_RA								
OCNG_RA <sup>Note1</sup>								
OCNG_RB <sup>Note1</sup>								
	Bands 1, 4, 6, 10, 11, 18, 19 and 21						-119	-119
$N_{\scriptscriptstyle oc}$ Note2	Bands 2, 5, 7 and 17	5, 7 and dBm/15 kHz -80 -80 -104	-104	-104	-117	-117		
	Bands 3, 8, 12, 13,						-116	-116
	14 and 20 Band 9						-118	-118
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	-1.75	-1.75	-4.7	-4.7	-4.5	-4.5
37 00	Bands 1, 4, 6, 10, 11, 18 ,19 and 21						-123.50	-123.50
RSRP <sup>Note3</sup>	Bands 2, 5, 7 and 17	dBm/15 kHz	-81.75	-81.75	-108.70	-108.70	-121.50	-121.50
	Bands 3, 8, 12, 13, 14 and 20						-120.50	-120.50
	Band 9						-122.50	-122.50
	Bands 1, 4, 6, 10,							
	11, 18 ,19 and 21 Bands 2, 5, 7 and							
RSRQ <sup>Note3</sup>	17	dB	-14.76	-14.76	-16.76	-16.76	-16.61	-16.61
	Bands 3, 8, 12, 13,							
	14 and 20							
 	Band 9 Bands 1, 4, 6, 10, 11, 18 ,19 and 21						-89.90	-89.90
lo <sup>Note3</sup>	Bands 2, 5, 7 and 17	dBm/9 MHz	-50	-50	-74.95	-74.95	-87.90	-87.90
	Bands 3, 8, 12, 13,		-30	-30	-14.30	-14.30	-86.90	-86.90
	14 and 20 Band 9						-88.90	-88.90
$\hat{E}_s / N_{oc}$		dB	-1.75	-1.75	-4.7	-4.7	-4.5	-4.5
Propagation co	ndition	-	AW	'GN	AW	'GN	AWO	GN
Note 1: OC	CNG shall be used suc				ind a const	ant total tra	ansmitted pov	wer
	ectral density is achiev erference from other co				in the test	is assume	d to be const	ant over
				-				
Note 3: RS	bcarriers and time and SRQ, RSRP and Io leve	els have been	derived froi	GN of app m other pa	ropriate po rameters fo	wer for T	<sup>oc</sup> to be fulfill ion purposes	ed. . They
Note 4: RS	e not settable paramete SRP and RSRQ minimu	um requiremer		cified assu	ming indep	endent inte	erference and	l noise at
ea	ch receiver antenna po	ort.						

#### A.9.2.3.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Section 9.1.6.

## A.9.2.4 TDD—TDD Inter frequency case

### A.9.2.4.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.6.

#### A.9.2.4.2 Test parameters

In this test case the two cells are on different carrier frequencies and measurement gaps are provided. Both RSRQ inter frequency absolute and relative accuracy requirements are tested by using test parameters in Table A.9.2.4.2-1. In all tests, Cell 1 is the serving cell and Cell 2 the target cell.

Parameter		Unit	Tes	Test 1		t 2	Test 3	
		Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
E-UTRA RF Cha	annel Number		1	2	1	2	1	2
BW <sub>channel</sub>		MHz	10	10	10	10	10	10
Gap Pattern Id			0	-	0	-	0	-
Special subfram	e configuration Note1		(	6	6			6
Uplink-downlink	configuration Note1			1	1			1
Measurement ba	andwidth	$n_{PRB}$	22-	-27	22—	-27	22-	-27
PDSCH Referer channel defined	nce measurement in A.3.1.1.2		R.0 TDD	-	R.0 TDD	-	R.0 TDD	-
PDSCH allocation	on	n <sub>PRB</sub>	13—36	-	13—36	-	13—36	-
PDCCH/PCFICH	H/PHICH Reference	The						
	hannel defined in		R.6	TDD	R.6 1	DD	R.6	TDD
A.3.1.2.2								
	defined in A.3.2.2.1		OP.1	OP.2	OP.1	OP.2	OP.1	OP.2
	A.3.2.2.2 (OP.2 TDD)		TDD	TDD	TDD	TDD	TDD	TDD
PBCH_RA					1			
PBCH_RB								
PSS_RA								
SSS_RA								
PCFICH_RB								
PHICH_RA								
PHICH_RB		dB	0	0	0	0	0	0
PDCCH_RA		uВ	0	0	0	0	0	0
PDCCH RB								
PDSCH RA								
PDSCH_RB OCNG_RA <sup>Note2</sup>								
OCNG_RB <sup>Note2</sup>								
$N_{\scriptscriptstyle oc}$ Note3	Bands 33, 34, 35, 36, 37, 38, 39 and 40	dBm/15 kHz	-80	-80	-104	-104	-119	-119
$\hat{E}_{s}/I_{ot}$		dB	-1.75	-1.75	-4.7	-4.7	-4.5	-4.5
\$7 01	Bands 33, 34, 35,						-	
RSRP <sup>Note4</sup>	36, 37, 38, 39 and 40	dBm/15 kHz	-81.75	-81.75	-108.70	- 108.70	-123.50	-123.5
RSRQ <sup>Note4</sup>	Bands 33, 34, 35, 36, 37, 38, 39 and 40	dB	-14.76	-14.76	-16.76	-16.76	-16.61	-16.61
Io <sup>Note4</sup>	Bands 33, 34, 35, 36, 37, 38, 39 and 40	dBm/9 MHz	-50	-50	-74.95	-74.95	-89.90	-89.90
$\hat{E}_{s}/N_{oc}$		dB	-1.75	-1.75	-4.7	-4.7	-4.5	-4.5
Propagation con	dition	-	AW	'GN	AW	GN	AW	/GN
Note 1: For spec Note 2: OCNG s achieve Note 3: Interfere	cial subframe and uplink- shall be used such that be ad for all OFDM symbols. ance from other cells and	oth cells are fully al noise sources not	llocated and a specified in th	a constant to ne test is as	otal transmitt sumed to be	ed power s	spectral den	
	d shall be modelled as A							
Noto 1. DODO	RSRP and to levels have	boon dorived from	othor param	otors for inf	ormation pur	nocos Th	ov are not c	ottoblo

Note 4: RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Note 5: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver

## A.9.2.4.3 Test Requirements

antenna port.

The RSRQ measurement accuracy shall fulfil the requirements in Section 9.1.6.

## A.9.3 UTRAN FDD CPICH RSCP

## A.9.3.1 E-UTRAN FDD

### A.9.3.1.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH RSCP absolute measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.2.1. There are two different test setups with different UTRAN parameters.

### A.9.3.1.2 Parameters

The test parameters are given in Tables A.9.3.1.2-1, A.9.3.1.2-2 and A.9.3.1.2-3 below.

## Table A.9.3.1.2-1: General test parameters for UTRAN FDD CPICH RSCP absolute measurement accuracy test in E-UTRAN FDD

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1
parameters		Channel R.6 FDD	
E-UTRAN RF Channel		1	One E-UTRAN FDD carrier frequency is
Number			used.
UTRAN RF Channel		1	One UTRAN FDD carrier frequency is
Number			used.
E-UTRAN Channel	MHz	10	
Bandwidth (BW <sub>channel</sub> )			
Active cell		Cell 1	E-UTRAN cell 1 on RF channel number 1
Neighbor cells		Cell 2	UTRAN cell 2 on RF channel number 1
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section
			8.1.2.1.
Inter-RAT (UTRAN FDD)		CPICH RSCP	
measurement quantity			
Monitored UTRA FDD cell		12	UTRA cells on UTRA RF channel 1
list size			provided in the cell list.
CP length		Normal	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF

Parameter	Unit	Test 1 Test 2					
E-UTRAN RF Channel		1					
Number							
BW <sub>channel</sub>	MHz	1	0				
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD)		OP.1	FDD				
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB	(	)				
PDCCH_RA	dB						
PDCCH_RB	dB	-					
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA <sup>Note 1</sup>	dB						
OCNG_RB <sup>Note 1</sup>	dB						
N <sub>oc</sub> Note 2	dBm/15 kHz	-9	98				
RSRP <sup>Note 3</sup>	dBm/15 kHz	-9	)4				
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	1				
SCH_RP <sup>Note 3</sup>	dBm/15 kHz	-Ç	)4				
$\hat{E}_{s}/N_{oc}$	dB	2	4				
Propagation Condition		AW					
Note 1: OCNG shall be used such t			otal transmitted power				
spectral density is achieve Note 2: Interference from other cells			assumed to be constant				
over subcarriers and time a	and shall be mode	eled as AWGN of appropriate	e power for $N_{_{oc}}$ to be				
fulfilled. Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.							

# Table A.9.3.1.2-2: E-UTRAN FDD cell specific test parameters for UTRAN FDD CPICH RSCP absolute measurement accuracy test in E-UTRAN FDD

Parameter	Unit	Test 1	Test 2
		Cell 2	Cell 2
CPICH_Ec/lor		-10	-10
PCCPCH_Ec/lor	dB	-12	-12
SCH_Ec/lor	dB	-12	-12
PICH_Ec/lor	dB	-15	-15
DPCH_Ec/lor	dB	-	-
OCNS_Ec/lor	dB	-0.94	-0.94
	dBm/3.84		-94.46
XXI	MHz		
		-60.00	-92.46
Band III, VIII, XII, XIII, XIV	_		-91.46
Band IX (Note 2)			-93.46
		9.54	-9.54
	dBm		-114.0
XXI	_		
Band II, V, VII	_	-60.46	-112.0
Band III, VIII, XII, XIII, XIV	_		-111.0
Band IX (Note 2)			-113.0
Band I, IV, VI, X, XI, XIX,	dBm/3.84		-94.0
XXI	MHz		
	_	-50.00	-92.0
	_		-91.0
Band IX (Note 2)			-93.0
pagation condition	-	AWGN	AWGN
		ted from other parameters for	information purposes.
			, the measurement
			ed test parameters for test
	CPICH_Ec/lor PCCPCH_Ec/lor SCH_Ec/lor DPCH_Ec/lor DPCH_Ec/lor OCNS_Ec/lor Band I, IV, VI, X, XI, XIX, XXI Band II, V, VII Band III, VIII, XII, XIII, XIV Band IX (Note 2) for/loc Band I, V, VI, X, XI, XIX, XXI Band II, V, VI, X, XI, XIX, XXI Band II, V, VI, X, XI, XIX, XXI Band II, V, VI Band II, V,	CPICH_Ec/lor       dB         PCCPCH_Ec/lor       dB         PICH_Ec/lor       dB         DPCH_Ec/lor       dB         OCNS_Ec/lor       dB         OCNS_Ec/lor       dB         Band I, IV, VI, X, XI, XIX,       dBm/3.84         XXI       dBm/3.84         Band II, V, VII       dBm/3.84         Band II, V, VII       dB         Band II, V, VI       dBm/3.84         MHz       dBm/3.84         MHz       dBm/3.84         MHz       Band II, V, VII         Band II, V, VI, X, XI, XIX,       dBm         XXI       dBm         Band II, V, VI, X, XI, XIX,       dBm/3.84         MHz       Band II, V, VII         Band II, V, VI, X, XI, XIX,       dBm/3.84         XXI       Band II, V, VII         Band II, V, VI, X, XI, XIX,       MHz         Band II, V, VI, X, XI, XIX,       MHz         Band II, V, VII, XII, XIII, XIII, XIV       Band IX (Note 2)         pagation condition       -         PICH RSCP and lo levels have been calculate       -         PICH RSCP and lo levels have been calculate       -         PICH RSCP and lo levels have been calculates       -         Pa	Cell 2CPICH_Ec/lordB-10PCCPCH_Ec/lordB-12SCH_Ec/lordB-12PICH_Ec/lordB-15DPCH_Ec/lordB-0.94Band I, IV, VI, X, XI, XIX, MHzdBm/3.84 MHzBand II, V, VII-60.00Band II, V, VI, X, XI, XIX, MHzdBmBand II, V, VI, X, XI, XIX, MHzdBmBand II, V, VII, X, XI, XIX, MHzdBmBand II, V, VI, X, XI, XIX, MHzdBmSchield II, V, VI, X, XI, XIX, MHzdBmSand I, IV, VI, X, XI, XIX, MXIdBmBand II, V, VI, X, XI, XIX, MXIdBm/3.84 MHzSand II, V, VI, X, XI, XIX, MHz-60.46Band II, V, VI, X, XI, XIX, MHzdBm/3.84 MHzSand II, V, VI, X, XI, XIX, MHz-50.00Band III, VIII, XIII, XIII, XIV Band IX (Note 2)-Band II, V, VII Band IX (Note 2)-Awgn-Pich RSCP and lo levels have been calculated from other parameters for

## Table A.9.3.1.2-3: UTRAN FDD cell specific test parameters for UTRAN FDD CPICH RSCP absolute measurement accuracy test in E-UTRAN FDD

### A.9.3.1.3 Test Requirements

The CPICH RSCP measurement absolute accuracy shall meet the requirements in Section 9.2.1.

## A.9.3.2 E-UTRAN TDD

#### A.9.3.2.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH RSCP absolute measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.2.1. There are three different test setups with different UTRAN parameters.

#### A.9.3.2.2 Parameters

The test parameters are given in Tables A.9.3.2.2-1, A.9.3.2.2-2 and A.9.3.2.2-3 below.

## Table A.9.3.2.2-1: General test parameters for UTRAN FDD CPICH RSCP absolute measurement accuracy test in E-UTRAN TDD

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.2
parameters		Channel R.6 TDD	
E-UTRAN RF Channel		1	One E-UTRAN TDD carrier frequency is
Number			used.
UTRAN RF Channel		1	One UTRAN FDD carrier frequency is
Number			used.
E-UTRAN Channel	MHz	10	
Bandwidth (BW <sub>channel</sub> )			
Active cell		Cell 1	E-UTRAN cell 1 on RF channel number 1
Neighbor cells		Cell 2	UTRAN cell 2 on RF channel number 1
Gap Pattern Id		1	As specified in 3GPP TS 36.133 section
			8.1.2.1.
Inter-RAT (UTRAN FDD)		CPICH RSCP	
measurement quantity			
Monitored UTRA FDD cell		12	UTRA cells on UTRA RF channel 1
list size			provided in the cell list.
CP length		Normal	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF

#### Table A.9.3.2.2-2: E-UTRAN TDD cell specific test parameters for UTRAN FDD CPICH RSCP absolute measurement accuracy test in E-UTRAN TDD

Parameter	Unit	Test 1	Test 2	
E-UTRAN RF Channel Number			1	
BW <sub>channel</sub>	MHz	10		
Special subframe configuration <sup>Note1</sup>	guration <sup>Note1</sup> 6		6	
Uplink-downlink configuration <sup>Note1</sup>			1	
OCNG Patterns defined in A.3.2.2.1 (OP.1 TDD)		OP.	1 TDD	

PBCH RA	dB					
PBCH RB	dB					
PSS RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA <sup>Note 2</sup>	dB					
OCNG_RB <sup>Note 2</sup>	dB					
$N_{_{oc}}$ Note 3	dBm/15 kHz	-98				
RSRP Note 4	dBm/15 kHz	-94				
${f \hat{E}_{s}}/{f I_{ot}}$	dB	4				
SCH_RP <sup>Note 4</sup>	dBm/15 kHz	-94				
$\hat{E}_{s}/N_{oc}$	dB	4				
Propagation Condition		AWGN				
	downlink configurat	tions see Tables 4.2-1 and 4.2-2 in 3GPP TS				
36.211.						
Note 2: OCNG shall be used such that al spectral density is achieved for a		cated and a constant total transmitted power				
Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant						
		AWGN of appropriate power for $N_{ac}$ to be				
fulfilled.						

Note 4: RSRP and SCH\_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Parameter		Unit	Test 1	Test 2		
			Cell 2	Cell 2		
CPICH_Ec/lor		dB	-10	-10		
	PCCPCH_Ec/lor		-12	-12		
	SCH_Ec/lor	dB	-12	-12		
	PICH_Ec/lor	dB	-15	-15		
	DPCH_Ec/lor	dB	-	-		
	OCNS_Ec/lor	dB	-0.94	-0.94		
loc	Band I, IV, VI, X, XI, XIX,	dBm/3.84		-94.46		
	XXI	MHz				
	Band II, V, VII		-60.00	-92.46		
	Band III, VIII, XII, XIII, XIV	_		-91.46		
	Band IX (Note 2)			-93.46		
	lor/loc	dB	9.54	-9.54		
	CPICH Band I, IV, VI, X, XI, XIX,			-114.0		
RSCP,	XXI	_				
Note 1	Note 1 Band II, V, VII		-60.46	-112.0		
	Band III, VIII, XII, XIII, XIV			-111.0		
Band IX (Note 2)				-113.0		
Io, Note 1	Band I, IV, VI, X, XI, XIX,	dBm/3.84		-94.0		
	XXI	MHz				
	Band II, V, VII		-50.00	-92.0		
	Band III, VIII, XII, XIII, XIV			-91.0		
	Band IX (Note 2)			-93.0		
	opagation condition	-	AWGN	AWGN		
	PICH RSCP and lo levels have		ted from other parameters for	information purposes.		
	They are not settable parameters themselves. NOTE 2: For the UE which supports both Band III and Band IX operating frequencies, the measurement					
				the measurement		
	erformance requirements for Ba e done sequentially. Test 1 shall			ed test parameters for test		
	shall be set within 5 seconds so					

## Table A.9.3.2.2-3: UTRAN FDD cell specific test parameters for UTRAN FDD CPICH RSCP absolute measurement accuracy test in E-UTRAN TDD

### A.9.3.2.3 Test Requirements

The CPICH RSCP measurement absolute accuracy shall meet the requirements in Section 9.2.1.

## A.9.4 UTRAN FDD CPICH Ec/No

## A.9.4.1 E-UTRAN FDD

#### A.9.4.1.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH Ec/No absolute measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.2.3. There are three different test setups with different UTRAN parameters.

### A.9.4.1.2 Parameters

The test parameters are given in Tables A.9.4.1.2-1, A.9.4.1.2-2 and A.9.4.1.2-3 below.

## Table A.9.4.1.2-1: General test parameters for UTRAN FDD CPICH Ec/No absolute measurement accuracy test in E-UTRAN FDD

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1
parameters		Channel R.6 FDD	
E-UTRAN RF Channel		1	One E-UTRAN FDD carrier frequency is
Number			used.
UTRAN RF Channel		1	One UTRAN FDD carrier frequency is
Number			used.
E-UTRAN Channel	MHz	10	
Bandwidth (BW <sub>channel</sub> )			
Active cell		Cell 1	E-UTRAN cell 1 on RF channel number 1
Neighbor cells		Cell 2	UTRAN cell 2 on RF channel number 1
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section
			8.1.2.1.
Inter-RAT (UTRAN FDD)		CPICH Ec/N0	
measurement quantity			
Monitored UTRA FDD cell		12	UTRA cells on UTRA RF channel 1
list size			provided in the cell list.
CP length		Normal	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF

## Table A.9.4.1.2-2: E-UTRAN FDD cell specific test parameters for UTRAN FDD CPICH Ec/No absolute measurement accuracy test in E-UTRAN FDD

Parameter	Unit	Test 1	Test 2	Test 3	
E-UTRAN RF Channel Number		1			
BW <sub>channel</sub>	MHz	10			
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD)		OP.1 FDD			

PBCH RA	dB					
PBCH RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA <sup>Note 1</sup>	dB					
OCNG_RB <sup>Note 1</sup>	dB					
N <sub>oc</sub> Note 2	dBm/15 kHz	-98				
RSRP <sup>Note 3</sup>	dBm/15 kHz	-94				
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4				
SCH_RP <sup>Note 3</sup>	dBm/15 kHz	-94				
$\hat{E}_s / N_{oc}$	dB	4				
Propagation Condition		AWGN				
Note 1: OCNG shall be used such that	t all cells are fully	allocated and a constant total transmitted power				
spectral density is achieved f						
Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant						
over subcarriers and time and shall be modeled as AWGN of appropriate power for $N_{_{oc}}$ to be						
fulfilled. Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.						

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	Parameter	Unit	Test 1	Test 2	Test 3		
	Farameter		Cell 2	Cell 2	Cell 2		
	CPICH_Ec/lor		-10	-10	-10		
F	PCCPCH_Ec/lor	dB	-12	-12	-12		
	SCH_Ec/lor	dB	-12	-12	-12		
	PICH_Ec/lor	dB	-15	-15	-15		
	DPCH_Ec/lor	dB	-	-	-		
	OCNS_Ec/lor	dB	-0.94	-0.94	-0.94		
	Band I, IV, VI, X, XI, XIX, XXI				-94.46		
loc	Band II, V, VII	dBm/ 3.84	-52.22	-87.27	-92.46		
100	Band III, VIII, XII, XIII, XIV	MHz			-91.46		
	Band IX (Note 2)				-93.46		
	Îor/loc	dB	-1.75	-4.7	-9.54		
CP	PICH Ec/Io, Note 1	dBm	-14.0	-16.0	-20.0		
	Band I, IV, VI, X, XI, XIX, XXI				-94		
lo,	Band II, V, VII	dBm/	-50	-86	-92.0		
Note 1	Band III, VIII, XII, XIII, XIV	3.84 MHz	-50	-00	-91.0		
	Band IX (Note 2)				-93		
Pro	Propagation condition - AWGN AWGN AWGN						
NOTE	<ul> <li>NOTE 1: CPICH Ec/lo and lo levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.</li> <li>NOTE 2: For the UE which supports both Band III and Band IX operating frequencies, the measurement performance requirements for Band III shall apply to the multi-band UE.</li> </ul>						
Tests			all be done first. After test 1 h	as been executed test paran	neters for tests 2 and 3 shall		
			UE does not loose the Cell 2				

## Table A.9.4.1.2-3: UTRAN FDD cell specific test parameters for UTRAN FDD CPICH Ec/No absolute measurement accuracy test in E-UTRAN FDD

### A.9.4.1.3 Test Requirements

The CPICH Ec/No measurement absolute accuracy shall meet the requirements in Section 9.2.3.

## A.9.4.2 E-UTRAN TDD

### A.9.4.2.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH Ec/No absolute measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.2.3. There are three different test setups with different UTRAN parameters.

### A.9.4.2.2 Parameters

The test parameters are given in Tables A.9.4.2.2-1, A.9.4.2.2-2 and A.9.4.2.2-3 below.

## Table A.9.4.2.2-1: General test parameters for UTRAN FDD CPICH Ec/No absolute measurement accuracy test in E-UTRAN TDD

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.2
parameters		Channel R.6 TDD	
E-UTRAN RF Channel		1	One E-UTRAN TDD carrier frequency is
Number			used.
UTRAN RF Channel		1	One UTRAN FDD carrier frequency is
Number			used.
E-UTRAN Channel	MHz	10	
Bandwidth (BW <sub>channel</sub> )			
Active cell		Cell 1	E-UTRAN cell 1 on RF channel number 1
Neighbor cells		Cell 2	UTRAN cell 2 on RF channel number 1
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section
			8.1.2.1.
Inter-RAT (UTRAN FDD)		CPICH Ec/N0	
measurement quantity			
Monitored UTRA FDD cell		12	UTRA cells on UTRA RF channel 1
list size			provided in the cell list.
CP length		Normal	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF

## Table A.9.4.2.2-2: E-UTRAN TDD cell specific test parameters for UTRAN FDD CPICH Ec/No absolute measurement accuracy test in E-UTRAN TDD

Parameter	Unit	Test 1	Test 2	Test 3
E-UTRAN RF Channel Number			1	1
BW <sub>channel</sub>	MHz	z 10		
Special subframe configuration <sup>Note1</sup>		6		
Uplink-downlink configuration <sup>Note1</sup>			1	
OCNG Patterns defined in A.3.2.1.2 (OP.1 TDD)			OP.1 TDD	

PBCH_RA	dB	
PBCH_RB	dB	
PSS_RA	dB	
SSS_RA	dB	
PCFICH_RB	dB	
PHICH_RA	dB	
PHICH_RB	dB	0
PDCCH_RA	dB	
PDCCH_RB	dB	
PDSCH_RA	dB	
PDSCH_RB	dB	
OCNG_RA <sup>Note 2</sup>	dB	
OCNG_RB <sup>Note 2</sup>	dB	
$N_{_{oc}}$ Note 3	dBm/15 kHz	-98
RSRP <sup>Note 4</sup>	dBm/15 kHz	-94
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$	dB	4
SCH_RP <sup>Note 4</sup>	dBm/15 kHz	-94
$\hat{E}_{s}/N_{oc}$	dB	4
Propagation Condition		AWGN
36.211.	that all cells are fully a	urations see Tables 4.2-1 and 4.2-2 in 3GPP TS allocated and a constant total transmitted power ols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant

over subcarriers and time and shall be modeled as AWGN of appropriate power for  $\,N_{oc}\,$  to be fulfilled.

Note 4: RSRP and SCH\_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

	Parameter		Test 1	Test 2	Test 3	
	Parameter	Unit Cell 2		Cell 2	Cell 2	
	CPICH_Ec/lor dB		-10	-10	-10	
F	PCCPCH_Ec/lor	dB	-12	-12	-12	
	SCH_Ec/lor	dB	-12	-12	-12	
	PICH_Ec/lor	dB	-15	-15	-15	
	DPCH_Ec/lor	dB	-	-	-	
	OCNS_Ec/lor	dB	-0.94	-0.94	-0.94	
	Band I, IV, VI, X, XI, XIX, XXI				-94.46	
1	Band II, V, VII	dBm/	50.00	07.07	-92.46	
loc	Band III, VIII, XII, XIII, XIV	and III, VIII, XII, MHz	-52.22	-87.27	-91.46	
	Band IX (Note 2)				-93.46	
	Îor/loc dB		-1.75	-4.7	-9.54	
CP	PICH Ec/Io, Note 1	dBm	-14.0	-16.0	-20.0	
	Band I, IV, VI, X, XI, XIX, XXI				-94	
lo,	Band II, V, VII	dBm/	50	86	-92.0	
Note 1	Band III, VIII, XII, XIII, XIV	3.84 MHz	-50	-86	-91.0	
	Band IX (Note 2)				-93	
Pro	pagation condition	-	AWGN	AWGN	AWGN	
NOTE 1:         CPICH Ec/Io and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.           NOTE 2:         For the UE which supports both Band III and Band IX operating frequencies, the measurement performance requirements for Band III shall apply to the multi-band UE.						
Tests shall be done sequentially. Test 1 shall be done first. After test 1 has been executed test parameters for tests 2 and 3 shall						
1	be set within 5 seconds so that UE does not loose the Cell 2 in between the tests.					

# Table A.9.4.2.2-3: UTRAN FDD cell specific test parameters for UTRAN FDD CPICH Ec/No absolute measurement accuracy test in E-UTRAN TDD

## A.9.4.2.3 Test Requirements

The CPICH Ec/No measurement absolute accuracy shall meet the requirements in Section 9.2.3.

## A.9.5 UTRAN TDD measurement

## A.9.5.1 P-CCPCH RSCP absolute accuracy for E-UTRAN FDD

### A.9.5.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UTRAN TDD P-CCPCH RSCP measurement absolute accuracy is within the specified limits. This test will verify the requirements in section 9.3.1 and applies to UE supporting this capability.

Gap pattern configuration with id #1 as specified in Table 8.1.2.1-1 is provided. In the measurement control information it is indicated to the UE that periodic reporting of the UTRA TDD P-CCPCH RSRP measurement is used.

### A.9.5.1.2 Test parameters

In this set of test cases there are two cells. Cell 1 is a E-UTRA FDD cell and cell 2 is a UTRA TDD cell. The absolute accuracy of P-CCPCH RSCP measurements are tested by using test parameters in Table A.9.5.1-1, Table A.9.5.1-2, and Table A.9.5.1-3. In all test cases, Cell 1 is the serving cell and Cell 2 is the target cell.

# Table A.9.5.1-1: General test parameters for UTRA TDD P-CCPCH RSCP measurement absolute accuracy in E-UTRAN FDD

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
E-UTRAN RF Channel Number		1	One E-UTRAN FDD carrier frequency is used.
UTRAN RF Channel Number		2	One UTRAN TDD carrier frequency is used.
E-UTRAN Channel Bandwidth (BWchannel)	MHz	10	
Active cell		Cell 1	E-UTRAN FDD cell 1 on RF channel number 1
Neighbor cells		Cell 2	1.28Mcps UTRA TDD cell 2 on RF channel number 2
Gap Pattern Id		1	As specified in 3GPP TS 36.133 section 8.1.2.1.
CP length of cell 1		Normal	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Inter-RAT (UTRAN TDD) measurement quantity		P-CCPCH RSRP	

## Table A.9.5.1-2: UTRA TDD P-CCPCH RSCP measurement tests parameters (cell 1)

Parameter	Unit	Test 1	Test 2	Test 3		
E-UTRA RF Channel Number		1				
BWchannel	MHz	10				
OCNG Patterns defined in A.3.2.1.1 (OP.1			OP.1 FDD	<b>`</b>		
FDD)			JP.IFDL	)		
PBCH_RA						
PBCH_RB						
PSS_RA						
SSS_RA						
PCFICH_RB						
PHICH_RA						
PHICH_RB	dB		0			
PDCCH_RA						
PDCCH_RB						
PDSCH_RA						
PDSCH_RB						
OCNG_RA <sup>Note1</sup>						
OCNG_RB <sup>Note1</sup>						
N <sub>oc</sub> Note2	dBm/15 kHz		-98			
$\hat{E}_s / I_{ot}$	dB		4			
RSRP <sup>Note3</sup>	dBm/15 kHz		-94			
Io <sup>Note3</sup>	dBm/9 MHz		-64.76			
$\hat{E}_s / N_{oc}$	dB		4			
Propagation condition	-		AWGN			
Note 1: OCNG shall be used such that both cells are fully allocated and a constant						
total transmitted power spectral de	ensity is achieve	d for all C	FDM sym	nbols.		
Note 2: Interference from other cells and noise sources not specified in the test is						
assumed to be constant over subcarriers and time and shall be modelled as						
N						
AWGN of appropriate power for to be fulfilled.						
Note 3: RSRP and lo levels have been derived from other parameters for information						
purposes. They are not settable parameters themselves.						
Note 4: RSRP minimum requirements are specified assuming independent						
interference and noise at each receiver antenna port.						

### Table A.9.5.1-3: UTRA TDD P-CCPCH RSCP measurement tests parameters (cell 2)

	Parameter	Unit	Unit Test 1		Tes	st 2	Test 3	
DL timeslot			0		DwPTS		0	DwPTS
UTRA RF C	Channel number Note2		Chan	nel 2	Channel 2		Channel 2	
PCCPCH_E	Ec/lor	dB	-3		-3		-3	
DwPCH_Ec	c/lor	dB		0		0		0
OCNS_Ec/	lor	dB	-3		-3		-3	
loc		dBm/1.28MHz	-54.1		-75.2		-97	
Îor/loc		dB	2	2	5			0
PCCPCH R	RSCP Note1	dBm	-55.1		-73.2		-100	
lo Note1		dBm/1.28MHz	-50		-6	9	-9	94
Propagation	n condition		AWGN					
a	are not settable parameters themselves.							
	lote 2: In the case of multi-frequency network of 1.28 Mcps TDD, the UTRA RF Channel Number can be set for the primary frequency in this test.							

## A.9.5.1.3 Test Requirements

The UTRA TDD P-CCPCH RSCP measurement accuracy shall meet the requirements in section 9.3.1.

## A.9.5.2 P-CCPCH RSCP absolute accuracy for E-UTRAN TDD

## A.9.5.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UTRAN TDD P-CCPCH RSCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.3.1 and applies to UE supporting this capability.

Gap pattern configuration with id #1 as specified in Table 8.1.2.1-1 is provided. In the measurement control information it is indicated to the UE that periodic reporting of the UTRA TDD P-CCPCH RSRP measurement is used.

## A.9.5.2.2 Test parameters

In this set of test cases there are two cells. Cell 1 is a E-UTRA TDD cell and cell 2 is a UTRA TDD cell. The absolute accuracy of P-CCPCH RSCP measurements are tested by using test parameters in Table A.9.5.2-1, Table A.9.5.2-2, and Table A.9.5.2-3. In all test cases, Cell 1 is the serving cell and Cell 2 is the target cell.

## Table A.9.5.2-1: General test parameters for UTRA TDD P-CCPCH RSCP measurement

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
E-UTRAN RF Channel Number		1	One E-UTRAN TDD carrier frequency is used.
UTRAN RF Channel Number		2	One UTRAN TDD carrier frequency is used.
E-UTRAN Channel Bandwidth (BWchannel)	MHz	10	
Active cell		Cell 1	E-UTRA TDD cell1 on RF channel number 1
Neighbour cell		Cell 2	1.28Mcps UTRA TDD Cell2 on RF channel number 2
Gap Pattern Id		1	As specified in 3GPP TS 36.133 section 8.1.2.1.
Uplink-downlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
CP length of cell 1		Normal	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
Time offset between cells	ms	3	Asynchronous cells
Inter-RAT (UTRAN TDD) measurement quantity		P-CCPCH RSCP	

Parameter	Unit	Test 1 Test 2 Test 3					
E-UTRA RF Channel Number		1					
BWchannel	MHz	10					
OCNG Patterns defined in A.3.2.2.1 (OP.1		OP.1 TDD					
TDD)		OP.I IDD					
PBCH_RA							
PBCH_RB							
PSS_RA							
SSS_RA							
PCFICH_RB							
PHICH_RA							
PHICH_RB	dB	0					
PDCCH_RA							
PDCCH_RB							
PDSCH_RA							
PDSCH_RB							
OCNG_RA <sup>Note1</sup>							
OCNG_RB <sup>Note1</sup>							
$N_{oc}^{ m Note2}$	dBm/15 kHz	-98					
$\hat{E}_s / I_{ot}$	dB	4					
RSRP <sup>Note3</sup>	dBm/15 kHz	-94					
Io <sup>Note3</sup>	dBm/9 MHz	-64.76					
$\hat{E}_s / N_{oc}$	dB	4					
Propagation condition	-	AWGN					
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as							
AWGN of appropriate power for $\Lambda$	AWGN of appropriate power for $N_{ac}$ to be fulfilled.						
Note 3: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.							
Note 4: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.							

### Table A.9.5.2-2: UTRA TDD P-CCPCH RSCP measurement tests parameters (cell 1)

### Table A.9.5.2-3: UTRA TDD P-CCPCH RSCP measurement tests parameters (cell 2)

Parameter	Unit	Tes	st 1	Tes	st 2	Tes	st 3
DL timeslot number		0		DwPTS		0	DwPTS
UTRA RF Channel number Note2		Channel 2		Channel 2		Channel 2	
PCCPCH_Ec/lor	dB	-3		-3		-3	
DwPCH_Ec/lor	dB		0		0		0
OCNS_Ec/lor	dB	-3		-3		-3	
loc	dBm/1.28MHz -54.1		4.1	-75.2		-97	
Îor/loc	dB	1	2	5	5	(	)
PCCPCH RSCP Note1	dBm	-55.1		-73.2		-100	
lo <sup>Note1</sup>	dBm/1.28MHz	/Hz -50 -69		-9	94		
Propagation condition		AWGN					
Note 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.							
Note 2: In the case of multi-frequency network of 1.28 Mcps TDD, the UTRA RF Channel Number can be set for							

Note 2: In the case of multi-frequency network of 1.28 Mcps TDD, the UTRA RF Channel Number can be set for the primary frequency in this test.

## A.9.5.2.3 Test Requirements

The UTRA TDD P-CCPCH RSCP measurement accuracy shall meet the requirements in section 9.3.1.

# A.9.6 GSM Carrier RSSI

# A.9.6.1 E-UTRAN FDD

## A.9.6.1.1 Test Purpose and Environment

The purpose of this test is to verify that the GSM Carrier RSSI measurement accuracy is within the specified limits when the active cell is E-UTRAN FDD. This test will verify the requirements in section 9.4.1. There are 12 different test setups with different signal levels for the GSM cells.

Measurement gaps are configured to measure on the GSM cells. Table A.9.6.1.1-2 defines the cell specific test parameters for the E-UTRAN FDD cell. In the measurement control information it is indicated to the UE that periodic reporting of the GSM RSSI measurement is used. The limits of the GSM test parameters in terms of GSM BCCH received level at the receiver inputs are defined in Table A.9.6.1.1-3.

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1.
Active cell	-	Cell 1	
DRX	-	OFF	
Gap pattern Id		1	As specified in 3GPP TS 36.133 section 8.1.2.1.
Filtering coefficient	-	0	L3 filtering is not used.
Inter-RAT measurement quantity		GSM Carrier RSSI	
Monitored cell list size		6 GSM neighbours including ARFCN 1	Included in the Measurement control information

# Table A.9.6.1.1.-2: E-UTRAN FDD Cell specific test parameters for GSM Carrier RSSI accuracy test in E-UTRAN FDD

Parameter	Unit	Tests 1-12
E-UTRAN RF Channel Number		1
BW <sub>channel</sub>	MHz	10
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD)		OP.1 FDD

	r					
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA <sup>Note 1</sup>	dB					
OCNG_RB <sup>Note 1</sup>	dB					
$N_{_{oc}}$ Note 2	dBm/15 kHz	-98				
RSRP <sup>Note 3</sup>	dBm/15 kHz	-94				
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4				
SCH_RP <sup>Note 3</sup>	dBm/15 kHz	-94				
$\hat{E}_s / N_{oc}$	dB	4				
Propagation Condition	Propagation Condition AWGN					
Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over						
subcarriers and time and shall be modeled as AWGN of appropriate power for $N_{_{oc}}$ to be fulfilled.						
Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.						

Step	BCCH1	BCCH2	BCCH3	BCCH4	BCCH5	BCCH6
1	-38.5	-38.5	NA	NA	NA	NA
2	-48.5	-48.5	NA	NA	NA	NA
3	-70.5	-70.5	NA	NA	NA	NA
4	-109.5	-109.5	NA	NA	NA	NA
5	-57.5	NA	-54.5	NA	NA	NA
6	-64.5	NA	-59.5	NA	NA	NA
7	-71.5	NA	NA	-64.5	NA	NA
8	-78.5	NA	NA	-69.5	NA	NA
9	-85.5	NA	NA	NA	-74.5	NA
10	-92.5	NA	NA	NA	-79.5	NA
11	-99.5	NA	NA	NA	NA	-84.5
12	-106.5	NA	NA	NA	NA	-89.5

## A.9.6.1.2 Test Requirements

The GSM Carrier RSSI measurement accuracy shall meet the requirements in section 9.4.1.

## A.9.6.2 E-UTRAN TDD

## A.9.6.2.1 Test Purpose and Environment

The purpose of this test is to verify that the GSM Carrier RSSI measurement accuracy is within the specified limits when the active cell is E-UTRAN TDD. This test will verify the requirements in section 9.4.1. There are 12 different test setups with different signal levels for the GSM cells.

Measurement gaps are configured to measure on the GSM cells. Table A.9.6.2.1-2 defines the cell specific test parameters for the E-UTRAN TDD cell. In the measurement control information it is indicated to the UE that periodic reporting of the GSM RSSI measurement is used. The limits of the GSM test parameters in terms of GSM BCCH received level at the receiver inputs are defined in Table A.9.6.2.1-3.

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2.
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2.
Active cell	-	Cell 1	
DRX	-	OFF	
Uplink-downlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
Gap pattern Id		1	As specified in 3GPP TS 36.133 section 8.1.2.1.
Filtering coefficient	-	0	L3 filtering is not used.
Inter-RAT measurement quantity		GSM Carrier RSSI	
Monitored cell list size		6 GSM neighbours including ARFCN 1	Included in the Measurement control information

# Table A.9.6.2.1-2: E-UTRAN TDD Cell specific test parameters for GSM Carrier RSSI accuracy test in E-UTRAN TDD

Parameter	Unit	Tests 1 - 12
E-UTRAN RF Channel Number		1
BW <sub>channel</sub>	MHz	10
OCNG Patterns defined in A.3.2.2.1 (OP.1 TDD)		OP.1 TDD

PBCH_RA	dB	-
PBCH_RB	dB	
PSS_RA	dB	
SSS_RA	dB	
PCFICH_RB	dB	
PHICH_RA	dB	
PHICH_RB	dB	0
PDCCH_RA	dB	
PDCCH_RB	dB	
PDSCH_RA	dB	
PDSCH_RB	dB	1
OCNG_RA <sup>Note 1</sup>	dB	
OCNG_RB <sup>Note 1</sup>	dB	
$N_{_{oc}}$ Note 2	dBm/15 kHz	-98
RSRP <sup>Note 3</sup>	dBm/15 kHz	-94
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4
SCH_RP Note 3	dBm/15 kHz	-94
$\hat{E}_{s}/N_{oc}$	dB	4
Propagation Condition		AWGN

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over

subcarriers and time and shall be modeled as AWGN of appropriate power for  $\,N_{oc}\,$  to be fulfilled.

Note 3: RSRP and SCH\_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Step	BCCH1	BCCH2	BCCH3	BCCH4	BCCH5	BCCH6
1	-38.5	-38.5	NA	NA	NA	NA
2	-48.5	-48.5	NA	NA	NA	NA
3	-70.5	-70.5	NA	NA	NA	NA
4	-109.5	-109.5	NA	NA	NA	NA
5	-57.5	NA	-54.5	NA	NA	NA
6	-64.5	NA	-59.5	NA	NA	NA
7	-71.5	NA	NA	-64.5	NA	NA
8	-78.5	NA	NA	-69.5	NA	NA
9	-85.5	NA	NA	NA	-74.5	NA
10	-92.5	NA	NA	NA	-79.5	NA
11	-99.5	NA	NA	NA	NA	-84.5
12	-106.5	NA	NA	NA	NA	-89.5

### Table A.9.6.2.1-3: BCCH signal levels at receiver input in dBm

## A.9.6.2.2 Test Requirements

The GSM Carrier RSSI measurement accuracy shall meet the requirements in section 9.4.1.

# Annex B (informative): Change history:

Date	story TSG#	TSG Doc.	CR	Rev	Subject	Old	Nev
2007-12	RP#38	RP-071037			Approved version in TSG RAN#38	-	8.0.0
2008-03	RP#39	RP-080123	2		Updates of TS36.133	8.0.0	8.1.0
2008-05	RP#40	RP-080325	3		Updates of TS36.133	8.1.0	8.2.0
2008-09	RP#41	RP-080644	006	1	E-UTRAN TDD intra frequency measurements when DRX is used	8.2.0	8.3.0
2008-09	RP#41	RP-080644	008	1	E-UTRAN TDD - UTRAN TDD measurements	8.2.0	8.3.0
2008-09	RP#41	RP-080644	012		RSRQ reporting Range	8.2.0	8.3.0
2008-09	RP#41	RP-080644	018	1	Interfrequency and UTRA interRAT DRX peformance requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080644	020	1	Additions to UE transmit timing requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080644	043		Received interference power measurement performance requirement	8.2.0	8.3.0
2008-09	RP#41	RP-080644	044		Cell Synchronization requirement for E-UTRA TDD	8.2.0	8.3.0
2008-09	RP#41	RP-080644	047		Power Headroom Requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080644	048		Event Triggering and Reporting Criteria Capability Requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080642	004		Correction of E-UTRAN to UTRAN TDD handover	8.2.0	8.3.0
2008-09	RP#41	RP-080642	016	1	Definition of Symbols	8.2.0	8.3.0
2008-09	RP#41	RP-080642	019	1	Idle mode requirements updates	8.2.0	8.3.0
2008-09	RP#41	RP-080642	021	1	General updates to 36.133	8.2.0	8.3.0
2008-09	RP#41	RP-080642	023	1	Handover requirements for E-UTRAN to cdma200 HRPD/1x	8.2.0	8.3.0
2008-09	RP#41	RP-080642	024		Inter-frequency and inter-RAT measurement requirements for multiple layer monitoring	8.2.0	8.3.0
2008-09	RP#41	RP-080642	025		Side conditions for UE measurement procedures and measurement performance requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080642	026		Correction to cell reselection Requirement from E-UTRAN to HRPD/cdma200 1x	8.2.0	8.3.0
2008-09	RP#41	RP-080642	027		IRAT Measurement requirements in TS 36.133	8.2.0	8.3.0
2008-09	RP#41	RP-080713	022	1	Corrections to Handover requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713	028		Measurement reporting requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713	029	2	RRC re-establishment requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713	032		Correction to UE measurement requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713	033		Correction for the definition of interruption time	8.2.0	8.3.0
2008-09	RP#41	RP-080713	040	1	Correction to idle mode higher priority search requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713	045		E-UTRAN TDD inter frequency measurement requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713	046		Updates of the Measurement procedures in RRC_Connected state from RAN 4#47bis and RAN 4#48	8.2.0	8.3.0
2008-12	RP#42	RP-080919	53		Introduction of 700MHz Bands 12, 14 and 17	8.3.0	8.4.0
2008-12	RP#42	RP-080928	88	1	CR to 36.133 on Radio Link Failure Monitoring	8.3.0	8.4.0
2008-12	RP#42	RP-080929	51		Correction to idle mode requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080929	52		Definition of out of service area	8.3.0	8.4.0
2008-12	RP#42	RP-080929	54		Measurement requirements for UTRAN TDD cells in idle state	8.3.0	8.4.0
2008-12	RP#42	RP-080929	69	2	Correction of Inter-RAT UTRA cell reselection requirement	8.3.0	8.4.0
2008-12	RP#42	RP-080929	55		Correction of E_UTRAN cell measurement requirements in idle state	8.3.0	8.4.0
2008-12	RP#42	RP-080930	76		Correction to HO Requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080931	71		Random access requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080932	85		Cell phase synchronization error for large cell	8.3.0	8.4.0
2008-12	RP#42	RP-080932	63	4	Synchronization Requirements for E-UTRAN to 1xRTT and HRPD Handovers	8.3.0	8.4.0
2008-12	RP#42	RP-080933	49		E-UTRAN TDD-TDD intra/inter frequency measurement reporting requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080933	50		E-UTRAN FDD – UTRAN FDD Measurement reporting requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080933	58		Measurement requirement for E-UTRAN TDD to UTRAN TDD/FDD when DRX is used	8.3.0	8.4.0
2008-12	RP#42	RP-080933	60		Interfrequency and GSM measurement performance requirements in large DRX	8.3.0	8.4.0
2008-12	RP#42	RP-080933	62		Correction of implementation margin for transmission gap.	8.3.0	8.4.0
2008-12	RP#42	RP-080933	72		Alignement of DRX cycle dependent requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080933	73	1	Alignement of side conditions for mobility measurements	8.3.0	8.4.0
2000 12	RP#42	RP-080933	66	1	Measurement models in RRC_CONNECTED	8.3.0	8.4.0
2008-12 2008-12	RP#42	RP-080933	78	1	Limitation of maximum number of layers for multiple	8.3.0	8.4.0

2008-12	RP#42	RP-080933	83	1	GSM Cell identification requirements for parallel monitoring	8.3.0	8.4.0
2008-12	RP#42	RP-080933	87		UE transmit timing requirement	8.3.0	8.4.0
2008-12	RP#42	RP-080933	56		Correction of TS 36.133 section 8.1.2.1.1.	8.3.0	8.4.0
2008-12	RP#42	RP-080934	77		Correction to RSRQ Report Mapping	8.3.0	8.4.0
2008-12	RP#42		86		Missing side conditions for RSRP and RSRQ	8.3.0	8.4.0
2008-12	RP#42	RP-080935	81	1	Phase I RRM Test Cases	8.3.0	8.4.0
2008-12	RP#42		80	1	Test Configuration for RRM Tests: Measurement Reference	8.3.0	8.4.0
					Channels and OCNG		
2008-12	RP#42	RP-080936	75		Cdma200 1xRTT Measurement Requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080937	74	1	E-UTRA to UTRA cell search requirements for SON	8.3.0	8.4.0
2009-03	RP#43	RP-090182	101	1	Correction of A3-offset parameter in RRM test case	8.4.0	8.5.0
2009-03	RP#43	RP-090182	105		Some Editorial Corrections	8.4.0	8.5.0
2009-03	RP#43	RP-090182	145		Clarifications for the DRX state	8.4.0	8.5.0
2009-03	RP#43	RP-090183	89		Modification on measurements of UTRAN TDD cells	8.4.0	8.5.0
2009-03	RP#43	RP-090183	91		Clarification of the correct behavior when Treselection is not	8.4.0	8.5.0
2009-03	KF#43	KF-090105	91		a multiple of idle mode reselection evaluation period	0.4.0	0.5.0
2009-03	RP#43	RP-090183	98		Clarification of 'Out of Service Area' Concept and Definition	8.4.0	8.5.0
2009-03	RP#43	RP-090183	118		Radio link monitoring	8.4.0	8.5.0
2009-03	KP#43	RP-090163	110		Radio link monitoring	0.4.0	0.5.0
2009-03	RP#43	RP-090183	142	1	Update of RRC_IDLE state mobility side conditions	8.4.0	8.5.0
2009-03	RP#43	RP-090183	150		UE measurement capability in Idle mode	8.4.0	8.5.0
2009-03	RP#43	RP-090184	133		Removal of RRC re-establishment procedure delay	8.4.0	8.5.0
2009-03	RP#43	RP-090184	138	1	Correction for the UE Re-establishment delay requirement	8.4.0	8.5.0
2009-03	RP#43	RP-090185	92	2	Cell phase synchronization accuracy	8.4.0	8.5.0
2009-03	RP#43	RP-090185	97		Radio link monitoring in DRX	8.4.0	8.5.0
2009-03	RP#43	RP-090185	120		UE Transmit Timing	8.4.0	8.5.0
2009-03	RP#43	RP-090185	137	1	Clarification of the reference point for the UE initial	8.4.0	8.5.0
2009-03	RP#43	RP-090186	90		transmission timing control requirement Correction of section 8.1.2.2.2.2 in TS36.133	8.4.0	8.5.0
2009-03	RP#43	RP-090186	93	1	cdma2000 1xRTT and HRPD Measurement Requirements	8.4.0	8.5.0
2009-03	RP#43	RP-090186	94		Event Triggered Periodic Reporting Requirements for IRAT Measurements	8.4.0	8.5.0
2009-03	RP#43	RP-090186	95		Measurement Reporting Requirements for E-UTRAN TDD – UTRAN TDD Measurements	8.4.0	8.5.0
2009-03	RP#43	RP-090186	99	1	Clarification of UE behavior when measurement gap is used	8.4.0	8.5.0
2009-03	RP#43	RP-090186	100		E-UTRA to UTRA cell search requirements in DRX for SON	8.4.0	8.5.0
2009-03	RP#43	RP-090186	110	1	Correction to GSM BSIC Requirements for Parallel	8.4.0	8.5.0
2009-03	RP#43	RP-090186	117		Monitoring Alignment of terminology for GAP	8.4.0	8.5.0
2009-03	RP#43	RP-090186	134		Inter frequency and Inter RAT cell search requirement when	8.4.0	8.5.0
2009-03	RP#43	RP-090186	139		DRX is used Correction of E-UTRAN FDD – UTRAN FDD measurements	8.4.0	8.5.0
2009-03	RP#43	RP-090186	146		when no DRX Addition of the definition of "when DRX is used"	8.4.0	8.5.0
2009-03	RP#43	RP-090186	147	1	Corrections to E-UTRAN inter-frequency side conditions	8.4.0	8.5.0
2009-03	RP#43	RP-090187	96		Correction to Intra-frequency RSRP Accuracy Requirements	8.4.0	8.5.0
2009-03	RP#43	RP-090187	136	1	Power Headroom reporting delay	8.4.0	8.5.0
2009-03	RP#43	RP-090370	103	1	E-UTRAN -GSM Handover Test Case	8.4.0	8.5.0
2003-03	RP#43	RP-090370	100	1	E-UTRAN FDD - UTRAN TDD Cell Search Test Cases in	8.4.0	8.5.0
				1	Fading		
	1	RP-090370	106	1	E-UTRA FDD to UTRA FDD Handover Test Case	8.4.0	8.5.0
2009-03	RP#43			1	Correction of E-UTRA FDD-FDD Intra-frequency cell	8.4.0	8.5.0
2009-03 2009-03	RP#43	RP-000370	107			1 0.4.0	1 0.0.0
2009-03 2009-03	RP#43 RP#43	RP-090370	107		reselection test case		
2009-03 2009-03 2009-03		RP-090370 RP-090370	107	1	reselection test case Correction of E-UTRA FDD-FDD priority based Inter-	8.4.0	8.5.0
2009-03 2009-03 2009-03 2009-03	RP#43 RP#43	RP-090370	108		Correction of E-UTRA FDD-FDD priority based Inter- frequency cell reselection test case	8.4.0	8.5.0
2009-03 2009-03 2009-03 2009-03 2009-03 2009-03	RP#43				Correction of E-UTRA FDD-FDD priority based Inter-		

2009-03	RP#43	RP-090370	114	1	E-UTRAN UE Timing Accuracy Related Test Cases	8.4.0	8.5.0
2009-03	RP#43	RP-090370	115	1	Inclusion of MBSFN Configurations for RRM Test Cases	8.4.0	8.5.0
2009-03	RP#43	RP-090370	116		E-UTRAN FDD HRPD Cell Reselection Test Case; HRPD of Low Priority	8.4.0	8.5.0
2009-03	RP#43	RP-090370	122	1	Clarification on Annex A.9: Measurement performance requirements	8.4.0	8.5.0
2009-03	RP#43	RP-090370	125		E-UTRA TDD – UTRA TDD cell reselection: UTRA is of higher priority	8.4.0	8.5.0
2009-03	RP#43	RP-090370	126		E-UTRA TDD – UTRA TDD cell reselection: UTRA is of lower priority	8.4.0	8.5.0
2009-03	RP#43	RP-090370	127		E-UTRA FDD – UTRA TDD cell reselection	8.4.0	8.5.0
2009-03	RP#43	RP-090370	128	1	E-UTRA TDD-UTRA TDD cell search (fading)	8.4.0	8.5.0
2009-03	RP#43	RP-090370	129	1	E-UTRA TDD-UTRA TDD handover	8.4.0	8.5.0
2009-03	RP#43	RP-090370	132	1	Addition of E-UTRA FDD to UTRA FDD reselection test cases	8.4.0	8.5.0
2009-03	RP#43	RP-090370	141	1	Correction and introduction of some test related parameters	8.4.0	8.5.0
2009-03	RP#43	RP-090370	143		Description of Annex A in TS 36.133	8.4.0	8.5.0
2009-03	RP#43	RP-090370	148		Reselection from E-UTRA to GSM cell test case	8.4.0	8.5.0
2009-03	RP#43	RP-090370	149		Radio Link Monitoring Test Cases	8.4.0	8.5.0
2009-05	RP#44	RP-090546	151		E-UTRA FDD UTRA TDD HO delay test case	8.5.0	8.6.0
2009-05	RP#44	RP-090546	153		Correction of CQI reporting periodicity for TDD RLM test cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546	157		Correction to inter RAT reselection requirements to exclude equal priority. (Technically Endorsed CR in R4-50bis - R4- 091092)	8.5.0	8.6.0
2009-05	RP#44	RP-090546	167		Clarification of the number of monitoring carriers in idle mode. (Technically Endorsed CR in R4-50bis - R4-091394)	8.5.0	8.6.0
2009-05	RP#44	RP-090546	180		Correction of Core spec references in A.9 Measurements performance test cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546	984		UTRA FDD-E-UTRA FDD/ TDD handover test cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546	184		SON ANR UTRAN FDD Cell Search Test Case	8.5.0	8.6.0
2009-05	RP#44	RP-090546	187		E-UTRAN FDD cdma2000 1x RTT Cell Reselection Test Case; Cdma2000 1X of Low Priority	8.5.0	8.6.0
2009-05	RP#44	RP-090546	188		E-UTRAN FDD cdma2000 HO Test cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546	190		E-UTRAN Random Access Test Cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546	191		E-UTRAN RRC Re-establishment Test Cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546	192		E-UTRAN TDD - GSM Cell Search Test Case in AWGN	8.5.0	8.6.0
2009-05	RP#44	RP-090546	197		Correction to E-UTRAN FDD - GSM Handover Test case	8.5.0	8.6.0
2009-05	RP#44	RP-090546	173 179	1	Correction of cell reselection test cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546	179	1	Test cases of E-UTRA TDD intra-frequency cell search in fading environment when DRX is used	8.5.0	8.6.0
2009-05	RP#44	RP-090546	152	1	E-UTRA TDD GSM handover test case	8.5.0	8.6.0
2009-05	RP#44	RP-090546	178	1	Test cases of E-UTRA FDD intra-frequency cell search in	8.5.0	8.6.0
2009-05	RP#44	RP-090546	201	1	fading environment when DRX is used Test case for E-UTRA FDD E-UTRA FDD inter frequency	8.5.0	8.6.0
2009-05	RP#44	RP-090546	185	1	cell search when DRX is used in fading conditions Correction to Radio Link Monitoring Tests	8.5.0	8.6.0
2009-05	RP#44	RP-090546	203		Correction to E-UTRAN FDD to HRPD Cell Reselection Test	8.5.0	8.6.0
2009-05	RP#44	RP-090546	177	1	Case Introduction of New Reference Channels and OCNG Patterns	8.5.0	8.6.0
2009-05	RP#44	RP-090546	200	2	for 1.4MHz Bandwidth Test case for E-UTRA TDD E-UTRA TDD inter frequency	8.5.0	8.6.0
				2	cell search when DRX is used in fading conditions Alignment of inter frequency and inter RAT RRM reselection		
2009-05	RP#44	RP-090547	158		testcases with core requirements. (Technically Endorsed CR in R4-50bis - R4-091094)	8.5.0	8.6.0
2009-05	RP#44	RP-090547	160		Correction relating E-UTRAN TDD - UE Transmit Timing Accuracy Tests. (Technically Endorsed CR in R4-50bis - R4- 091198)	8.5.0	8.6.0
2009-05	RP#44	RP-090547	165		Modifications of T3 and the verification point for in-sync test cases. (Technically Endorsed CR in R4-50bis - R4-091386)	8.5.0	8.6.0
2009-05	RP#44	RP-090547	172		E-UTRAN UE Timing Accuracy Related Test Cases. (Technically Endorsed CR in R4-50bis - R4-091517)	8.5.0	8.6.0
2009-05	RP#44	RP-090547	171	1	Reference measurement Channels for Radio Link Monitoring Tests with 2 Antennas. (Technically Endorsed CR in R4- 50bis - R4-091508)	8.5.0	8.6.0
2009-05	RP#44	RP-090548	170		Misalignment between TS36.133 and TS36.321. (Technically Endorsed CR in R4-50bis - R4-091457)	8.5.0	8.6.0
2009-05	RP#44	RP-090548	193		Correction to Inter-RAT HO Interruption Time Definition	8.5.0	8.6.0
2009-05	RP#44	RP-090548	195		CR c2k RRC delay	8.5.0	8.6.0
2009-05	RP#44	RP-090548	196	ļ	CR c2k interruption time	8.5.0	8.6.0
2009-05	RP#44	RP-090548	162		Clarifications to UE UL timing requirements. (Technically Endorsed CR in R4-50bis - R4-091357)	8.5.0	8.6.0
2009-05	RP#44	RP-090548	176		Corrections of Random Access Requirements	8.5.0	8.6.0
2009-05	RP#44	RP-090548	154		Correction of TGRP in clause 8.1.2.1.1	8.5.0	8.6.0

2000-05         RP444         RP-000549         11         E-UTRAN UTRAN HC Command Processing Delay.         8.5.0         8.6.0           2000-05         RP444         RP-000549         175         Corrections of Cell Reselection Requirements in Idle Mode         8.5.0         8.6.0           2000-05         RP444         RP-000550         156         Corrections of Cell Reselection Requirements in Idle mode cell         8.5.0         8.6.0           2000-05         RP444         RP-000550         159         Corrections of Cell Reselection Requirements.         8.5.0         8.6.0           2000-05         RP444         RP-000551         166         Further claffication of DRXNon-DRX state (Technically Editions Action Number for Tinter1.         8.5.0         8.6.0           2000-05         RP444         RP-000551         168         Further claffication of DRXNon-DRX state (Technically Editions Action Number for Tinter1.         8.5.0         8.6.0           2000-05         RP444         RP-000551         156         Endored CR in R4-50bis -R4-01023)         8.5.0         8.6.0           2000-05         RP444         RP-000551         155         Endored CR in R4-50bis -R4-01023)         8.0.0         9.0.0         9.0.0         9.0.0         9.0.0         9.0.0         9.0.0         9.0.0         9.0.0	2009-05	RP#44	RP-090548	168		Clarifications for the Relative RSRP and RSRQ measurement requirements. (Technically Endorsed CR in R4-50bis - R4-091407)	8.5.0	8.6.0
2009-05         RP44         RP-00649         115         Corrections of Cell Reselection Requirements in Idle Model 8.5.0         8.6.0         8.6.0           2009-05         RP444         RP-00659         156         Correction on the TDD TDD inter frequency measurements.         8.5.0         8.6.0           2009-05         RP444         RP-00650         159         Correction on the TDD TDD inter frequency measurements.         8.5.0         8.6.0           2009-05         RP444         RP-006551         159         Correction on the TDD TDD. Net frequency measurements.         8.5.0         8.6.0           2009-05         RP444         RP-006551         169         Correction on reference to 3GPP2 specification         8.5.0         8.6.0           2009-05         RP444         RP-006551         155         Introduction of Reset Dist Pointserintserints. (Technically Endosed CR in R4-50bis - R-40013)         8.6.0         9.0.0 </td <td>2009-05</td> <td>RP#44</td> <td>RP-090549</td> <td>161</td> <td></td> <td>E-UTRAN UTRAN HO Command Processing Delay.</td> <td>8.5.0</td> <td>8.6.0</td>	2009-05	RP#44	RP-090549	161		E-UTRAN UTRAN HO Command Processing Delay.	8.5.0	8.6.0
200606         RP#44         RP-000540         181         2         Removal of [] from ranking criteria in Idle mode cell         8.5.0         6.6.0           2009-05         RP#44         RP-000550         156         Correction on the TDD-TDD Inter frequency measurements.         8.5.0         8.6.0           2009-05         RP#44         RP-000551         159         Correction to the Referenced School Number for Timter1.         8.5.0         8.6.0           2009-05         RP#44         RP-000551         166         Correction or the Referenced 3 School Number for Timter1.         8.5.0         8.6.0         8.6.0           2009-05         RP#44         RP-000551         169         COrrection or therence to 3 SCPP specification         8.5.0         8.6.0	2009-05	RP#44	RP-090549	175			8.5.0	8.6.0
2000-05         RP444         RP-090550         156         Correction on the TDO-TDD inter frequency measurements.         8.5.0         6.6.0           2000-05         RP444         RP-090550         159         Correction to the Referenced Section Number for Tinter1.         8.5.0         8.6.0           2009-05         RP444         RP-090551         166         Further claffication of DRVNon-DRX stat. (Technically Endoted CR in R4-50bs - R4-09139)         8.5.0         8.6.0         8.6.0           2009-05         RP444         RP-090551         155         Correction on reference to 3GP2 specification         8.5.0         8.6.0         8.6.0           2009-05         RP444         RP-090551         155         Endotsed CR in R4-50bs - R4-091031         8.6.0         9.0.0					2	Removal of [] from ranking criteria in Idle mode cell		
2009:05         RP444         RP-090550         159         Correction to the Referenced Section Number for Timert.         8.5.0         8.6.0           2009:05         RP444         RP-090551         166         Further clafification of DRXNon-DRX state. (Technically         8.5.0         8.6.0           2009:05         RP444         RP-090551         169         CORS station[Intertuction]         6.5.0         6.6.0           2009:05         RP444         RP-090551         156         CORS station[Intertuction]         6.6.0         8.6.0         6.0.0           2009:05         RP444         RP-090871         211         Correction to TDD RMC references in RLM test cases         9.0.0         9.1.0           2009:06         RP445         RP-090880         205         Introduction of Reference DRA configurations         9.0.0         9.1.0           2009:06         RP445         RP-090880         227         Correction to HO Text configurations         9.0.0         9.1.0           2009:06         RP445         RP-090880         216         Correction to HO Text Cases         9.0.0         9.1.0           2009:07         RP445         RP-090880         315         E-UTRA ND and UTRA FDD and UTRA FDD atest cases. unknow         9.0.0         9.1.0           2009:08	2009-05	RP#44	RP-090550	156		Correction on the TDD-TDD inter frequency measurements.	8.5.0	8.6.0
2009-05         RP444         RP-900551         166         Further clarification of DRX/Non-DRX state. (Technically Endorsed CR Ne4401389)         8.5.0         8.6.0           2009-05         RP444         RP-900551         169         Correction on reference to 3GPP2 specification         8.5.0         8.6.0           2009-05         RP444         RP-900551         169         CORG simplification. (Technically Endorsed CR in R4-50bis - R4-091053)         8.6.0         9.0.0         9.1.0           2009-05         RP444         RP-900551         155         Introduction of Extended LTE800 requirements. (Technically Endorsed CR in R4-50bis - R4-091053)         8.6.0         9.0.0         9.1.0           2009-05         RP445         RP-900880         207         Addition of DX configurations into non DRX test cases         9.0.0         9.1.0           2009-05         RP445         RP-900880         227         Correction to HO Test Cases         9.0.0         9.1.0           2009-06         RP445         RP-900880         134         Current PD and UTRA FDD and UTRA FDD cell search test         9.0.0         9.1.0           2009-06         RP445         RP-900880         15         E-UTRA FDD UTRA FDD and UTRA FDD cell search intest         9.0.0         9.1.0           2009-06         RP445         RP-900830         <	2009-05	RP#44	RP-090550	159		Correction to the Referenced Section Number for Tinter1.	8.5.0	8.6.0
2000-05         RP#44         RP-000551         109         Correction on reference to 3GPP2 specification         8.5.0         8.6.0           2000-05         RP#44         RP-000551         109         OCNG simplification, Tcennically Endorsed CR in R4-50bis -         8.5.0         8.6.0           2000-05         RP#44         RP-000851         121         Correction of Extended LTE800 requirements. (Technically         8.6.0         9.0.0         9.1.0           2000-05         RP#45         RP-000880         205         Introduction of Reference DRX configurations         9.0.0         9.1.0           2000-05         RP#45         RP-000880         225         Correction to HO RX configurations into non DRX test cases         9.0.0         9.1.0           2000-05         RP#45         RP-000880         225         Correction of Test Cases         9.0.0         9.1.0           2000-05         RP#45         RP-000880         225         Correction of Test Cases         9.0.0         9.1.0           2000-05         RP#45         RP-00880         225         Correction of Test Cases         9.0.0         9.1.0           2000-05         RP#45         RP-008080         259         E-UTRA Modu Int Monitoring Test Cases in DRX         9.0.0         9.1.0           2000-05	2009-05	RP#44	RP-090551	166		Further clarification of DRX/Non-DRX state. (Technically	8.5.0	8.6.0
2009-05         RP#44         RP-090551         199         OCNG simplification. (Technically Endorsed CR in R4-50bis - 8.5.0         8.6.0           2009-05         RP#44         RP-090559         155         Introduction of Extended LTE800 requirements. (Technically Endorsed CR in R4-50bis - R4-991053)         8.6.0         9.0.0           2009-05         RP#45         RP-090880         207         Addition of DRX configurations into no DRX test cases         9.0.0         9.1.0           2009-05         RP#45         RP-090880         207         Addition of DRX configurations into no DRX test cases         9.0.0         9.1.0           2009-05         RP#45         RP-090880         227         Correction to E-UTRAN CSM ESIC Identification         9.0.0         9.1.0           2009-05         RP#45         RP-090880         315         E-UTRAN FDD E-UTRA FDD and UTRA FDD cell search test         9.0.0         9.1.0           2009-05         RP#45         RP-090880         316         Interfrequency E-UTRA - E-UTRA HD test cases: unknown         9.0.0         9.1.0           2009-05         RP#45         RP-090880         321         E-UTRAN TDD E-UTRA FDD Bind Handover test case:         9.0.0         9.1.0           2009-05         RP#45         RP-090836         281         E-UTRAN TDD E-UTRA FDD and UTRA TDD and <t< td=""><td>2009-05</td><td>RP#44</td><td>RP-090551</td><td>202</td><td></td><td></td><td>8.5.0</td><td>8.6.0</td></t<>	2009-05	RP#44	RP-090551	202			8.5.0	8.6.0
Cons-05         RP#45         RP-900807         211         Correction to TDD RNC references in RLM test cases         9.0.0         9.1.0           2009-05         RP#45         RP-900800         205         Introduction of References in RLM test cases         9.0.0         9.1.0           2009-05         RP#45         RP-900800         225         Correction to HO Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-900800         227         Correction to HO Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-900800         227         Correction of Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-900800         215         E-UTRA FDD -E-UTRA FDD and UTRA FDD cell search test         9.0.0         9.1.0           2009-05         RP#45         RP-900800         315         E-UTRA FDD UTRA FDD Bind Handover test case:         9.0.0         9.1.0           2009-05         RP#45         RP-900836         221         1         Small corrections to Measurements performance tests         9.0.0         9.1.0           2009-05         RP#45         RP-900836         227         Set 3.2. E-UTRA ND DU TRA FDD Cell Search in DRX         9.0.0         9.1.0           2009-05         R	2009-05	RP#44	RP-090551			OCNG simplification. (Technically Endorsed CR in R4-50bis -	8.5.0	8.6.0
2000-05         RP#45         RP-09087         211         Correction to TDD RMC references in RLM test cases         9.0.0         9.1.0           2000-05         RP#45         RP-090880         207         Addition of DRX configurations into non DRX test cases         9.0.0         9.1.0           2000-05         RP#45         RP-090880         225         Correction to HO Test Cases         9.0.0         9.1.0           2000-05         RP#45         RP-090880         225         Corrections of Test Cases         9.0.0         9.1.0           2000-05         RP#45         RP-090880         314         E-UTRAN Cases         9.0.0         9.1.0           2000-05         RP#45         RP-090880         316         E-UTRAN Radio Link Monitoring Test Cases in DRX         9.0.0         9.1.0           2000-05         RP#45         RP-090880         316         E-UTRAN FDD UTRA FDD Biln Handover test case:         9.0.0         9.1.0           2000-05         RP#45         RP-090836         221         1         Small corrections to Measurements performance tests         9.0.0         9.1.0           2000-05         RP#45         RP-090836         221         1         Small corrections to Measurements performance tests         9.0.0         9.1.0           2000-05	2009-05	RP#44	RP-090559	155			8.6.0	9.0.0
2009-05         RP#45         RP-090880         205         Addition of DRX configurations into non DRX test cases         9.0.0         9.1.0           2009-05         RP#45         RP-090880         227         Correction to HOT Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090880         227         Correction to HOT Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090880         227         Corrections of Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090880         214         Corrections of Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090880         315         E-UTRA PDD test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090880         316         Inter-frequency E-UTRA + E-UTRA HO test cases: unknown         9.0.0         9.1.0           2009-05         RP#45         RP-090880         321         1         Small corrections to Measurements performance tests         9.0.0         9.1.0           2009-05         RP#45         RP-090836         227         1         Stat 3.2         E-UTRA TDD test Cases         9.0.0         9.1.0           2009-05         RP#45	2009-05	RP#45	RP-090817	211			9.0.0	9.1.0
2009-05         RP#45         RP-090880         225         Correction to HO Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090880         225         Correction to HO Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090880         225         Corrections of Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090880         314         EUTRAN Radio Link Monitoring Test Cases in DRX         9.0.0         9.1.0           2009-05         RP#45         RP-090880         316         Inter-frequency E-UTRA Fab Tote Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090880         316         Inter-frequency E-UTRA Fab Tote Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090880         231         E-UTRA Fab UTRA FDD UTRA FDD Bind Handover test cases:         9.0.0         9.1.0           2009-05         RP#45         RP-090836         226         1         E-UTRA FDD UTRA FDD UTRA FDD Cellsearch in DRX         9.0.0         9.1.0           2009-05         RP#45         RP-090836         226         1         E-UTRA TD Cellsearch in DRX Test Cases         9.0.0         9.1.0           2009-05         RP					İ			
2009-05         RP#45         RP-090880         225         Correction to HO Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090880         227         Correction to E-UTRAN GSM BSIC Identification         9.0.0         9.1.0           2009-05         RP#45         RP-090880         314         E-UTRA FDD -E-UTRA FDD and UTRA FDD cell search test         9.0.0         9.1.0           2009-05         RP#45         RP-090880         316         E-UTRA FDD -E-UTRA FDD Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090880         316         Inter-frequency E-UTRA -E-UTRA HO Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090880         263         2         E-UTRA PD DItA HO Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090880         263         1         E-UTRA PD DItA Handover test case:         9.0.0         9.1.0           2009-05         RP#45         RP-09086         221         1         Small concertions to Measurements performance tests         9.0.0         9.1.0           2009-05         RP#45         RP-090836         267         Set 3.2         E-UTRA TDD to UTRA TDD test Cases         9.0.0         9.1.0      <					1			
2009-05         RP445         RP-090880         227         Correction to E-UTRAN GSM BSIC Identification         9.0.0         9.1.0           2009-05         RP445         RP-090880         259         Corrections of Test Cases         9.0.0         9.1.0           2009-05         RP445         RP-090880         314         E-UTRA FDD -E-UTRA FDD and UTRA FDD cell search test         9.0.0         9.1.0           2009-05         RP445         RP-090880         316         Inter-frequency E-UTRA - E-UTRA HO test cases: unknown target cell unknown target cell cell corrections to Measurements performance tests         9.0.0         9.1.0           2009-05         RP445         RP-090880         263         2         E-UTRA FDD UTRA FDD Blind Handover test case:         9.0.0         9.1.0           2009-05         RP445         RP-090836         261         E-UTRA TDD UTRA FDD Cases         9.0.0         9.1.0           2009-05         RP445         RP-090836         285         1         E-UTRAN GSM Cell search in DRX test Cases         9.0.0         9.1.0           2009-05         RP445         RP-090836         287         Set 3.2         E-UTRAN TDD to UTRA TDD call search in DRX         9.0.0         9.1.0           2009-05         RP445         RP-090836         271         Set 3.2				-	t i			
2009-05         RP#45         RP-090880         259         Corrections of Test Cases         9.0         9.0         9.10           2009-05         RP#45         RP-090880         314         E-UTRA PD 2-UTRA FDD and UTRA FDD cell search test         9.0.0         9.1.0           2009-05         RP#45         RP-090880         315         E-UTRA N Radio Link Monitoring Test Cases in DRX         9.0.0         9.1.0           2009-05         RP#45         RP-090880         263         2         E-UTRA FDD UTRA FDD Blind Handover test cases: unknown         9.0.0         9.1.0           2009-05         RP#45         RP-090836         221         1         Small corrections to Measurements performance tests         9.0.0         9.1.0           2009-05         RP#45         RP-090836         287         1         E-UTRAN GSM Cell Search in DRX test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         287         1         E-UTRAN TDD to UTRA TDD to UTRA TDD and test cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         271         Set 3.2. E-UTRA TDD to UTRA TDD to UTRA TDD and test case         9.0.0         9.1.0           2009-05         RP#45         RP-090836         271         E-UTRAN TDD coutmoe cell						Correction to E-UTRAN GSM BSIC Identification		
2009-05         RP#45         RP-090880         314         E-UTRA FDD -E-UTRA FDD and UTRA FDD cell search test         9.0.0         9.1.0           2009-05         RP#45         RP-090880         316         E-UTRAN Radio Link Monitoring Test Cases in DRX         9.0.0         9.1.0           2009-05         RP#45         RP-090880         316         Interfrequency E-UTRA - E-UTRA HO test case: unknown         9.0.0         9.1.0           2009-05         RP#45         RP-090880         263         2         E-UTRA FDD Blind Handover test case:         9.0.0         9.1.0           2009-05         RP#45         RP-090836         281         1         Strait corrections to Measurements performance tests         9.0.0         9.1.0           2009-05         RP#45         RP-090836         285         1         E-UTRAN GM Cell Search in DRX Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         287         Set 3.12         L'TRAN TDD coll TRA TDD to TEX TDD and         9.0.0         9.1.0           2009-05         RP#45         RP-090836         271         E-UTRAN TDD to UTRAN TDD call search in DRX         9.0.0         9.1.0           2009-05         RP#45         RP-090836         271         E-UTRAN TDD call tho tand thing         9.0	2009-05	RP#45	RP-090880	259			9.0.0	9.1.0
2009-05         RP#45         RP-090880         315         E-UTRAN Radio Link Monitoring Test Cases in DRX         9.0.0         9.1.0           2009-05         RP#45         RP-090880         316         Inter-frequency E-UTRA - E-UTRA HO test cases: unknown         9.0.0         9.1.0           2009-05         RP#45         RP-090880         263         2         E-UTRA FDD UTRA FDD Blind Handover test case:         9.0.0         9.1.0           2009-05         RP#45         RP-090836         321         1         Small corrections to Measurements performance tests         9.0.0         9.1.0           2009-05         RP#45         RP-090836         285         1         E-UTRAN CSM Cell Search in DRX Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         271         Set 3.1.2. E-UTRA TDD to UTRA TDD cell Search in DRX         9.0.0         9.1.0           2009-05         RP#45         RP-090836         271         Set 3.1.2. E-UTRAN TDD to UTRA TDD to E-UTRAN TDD and E-UTRAN TDD Inter-ITRAN TPM         9.0.0         9.1.0           2009-05         RP#45         RP-090836         271         Set 3.1.2. E-UTRAN TDD Cell Search Test Case         9.0.0         9.1.0           2009-05         RP#45         RP-090836         287         E-UTRAN FDD ChDD Cell S						E-UTRA FDD - E-UTRA FDD and UTRA FDD cell search test		
Larget cell         target cell         Larget cell	2009-05	RP#45	RP-090880	315		E-UTRAN Radio Link Monitoring Test Cases in DRX	9.0.0	9.1.0
unknown target cell         unknown target cell         unknown target cell           2009-05         RP#45         RP-090836         321         1         Small corrections to Measurements performance tests         9.0.0         9.1.0           2009-05         RP#45         RP-090836         285         1         E-UTRAN GSM Cell Search in DRX Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         267         Set 3.1.E         LTRA TDD to UTRA TDD cell search in DRX         9.0.0         9.1.0           2009-05         RP#45         RP-090836         269         Set 3.1.E         LTRAN TDD to UTRA TDD to LTRA TDD and UTRA TDD Set 9.0.0         9.1.0           2009-05         RP#45         RP-090836         271         Set 3.1.E         LUTRAN TDD Cell Search in DRX Test         9.0.0         9.1.0           2009-05         RP#45         RP-090836         281         E-UTRAN TDD - UTRAN TDD Cell Search in DRX Test         9.0.0         9.1.0           2009-05         RP#45         RP-090836         283         E-UTRAN FDD cdma2000 Bind HO Test cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         283         CR SI HRPD correction         9.0.0         9.1.0           2009-05         RP#45	2009-05	RP#45	RP-090880	316			9.0.0	9.1.0
parameters         parameters         parameters           2009-05         RP#45         RP-090836         285         1         E-UTRAN GSM Cell Search in DRX Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         267         Set 3.2. E-UTRA TDD to UTRA TDD to E-UTRA TDD and Fading         9.0.0         9.1.0           2009-05         RP#45         RP-090836         271         Set 3.12. E-UTRA TDD to UTRA TDD bid handover test         9.0.0         9.1.0           2009-05         RP#45         RP-090836         279         E-UTRAN FDD - UTRA TDD bid handover test         9.0.0         9.1.0           2009-05         RP#45         RP-090836         281         E-UTRAN TDD - E-UTRAN TDD and E-UTRAN TDD Inter- frequency Cell Search Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         287         E-UTRAN SOB Bind Handover Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         302         RRM Test case tor multiple E-UTRAN FDD - IDTenter- requency event triggered reporting under fading propagation conditions         9.0.0         9.1.0           2009-05         RP#45         RP-090836         302         CR SI HRPD correction         9.0.0         9.1.0           2009-05 <td>2009-05</td> <td>RP#45</td> <td>RP-090880</td> <td>263</td> <td>2</td> <td></td> <td>9.0.0</td> <td>9.1.0</td>	2009-05	RP#45	RP-090880	263	2		9.0.0	9.1.0
2009-05         RP#45         RP-090836         267         Set 3.2. E-UTRA TDD to UTRA TDD cell search in DRX under fading         9.0.0         9.1.0           2009-05         RP#45         RP-090836         269         Set 3.6. Test case of E-UTRA TDD to E-UTRA TDD and UTRA TDD combined cell search under fading         9.0.0         9.1.0           2009-05         RP#45         RP-090836         271         Set 3.1.2. E-UTRA TDD to UTRA TDD bind handover test         9.0.0         9.1.0           2009-05         RP#45         RP-090836         271         E-UTRAN FDD - UTRAN TDD and E-UTRAN TDD Inter- frequency Cell Search Test Case         9.0.0         9.1.0           2009-05         RP#45         RP-090836         287         E-UTRAN TDD c-UTRAN TDD and E-UTRAN TDD Inter- frequency Cell Search Test Case         9.0.0         9.1.0           2009-05         RP#45         RP-090836         302         RRM Test case for multiple E-UTRAN FDD-FDD Inter- frequency event triggered reporting under fading propagation conditions         9.0.0         9.1.0           2009-05         RP#45         RP-090826         304         Fading reselection test case between E-UTRA and UTRA or dower priority         9.0.0         9.1.0           2009-05         RP#45         RP-090879         215         1         Corrections to Measurements of GSM cells in RRC_IDLE         9.0.0         9.1.0 </td <td>2009-05</td> <td>RP#45</td> <td>RP-090836</td> <td>321</td> <td>1</td> <td></td> <td>9.0.0</td> <td>9.1.0</td>	2009-05	RP#45	RP-090836	321	1		9.0.0	9.1.0
cm         under fading         under fading           2009-05         RP#45         RP-090836         269         Set 3.6. Test case of E-UTRA TDD to E-UTRA TDD and UTRA TDD combined cell search under fading         9.0.0         9.1.0           2009-05         RP#45         RP-090836         271         Set 3.12. E-UTRA TDD to UTRA TDD bind handover test         9.0.0         9.1.0           2009-05         RP#45         RP-090836         279         E-UTRAN TDD - E-UTRAN TDD and E-UTRAN TDD Inter- frequency Cell Search Test Case         9.0.0         9.1.0           2009-05         RP#45         RP-090836         281         E-UTRAN GSM Blind Handover Test Case         9.0.0         9.1.0           2009-05         RP#45         RP-090836         287         E-UTRAN CSM Blind Handover Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         302         RRM Test case for multiple E-UTRAN FDD-FDD Inter- frequency event triggered reporting under fading propagation conditions         9.0.0         9.1.0           2009-05         RP#45         RP-090879         215         1         Corrections to Measurements of HRPD cells and cdma2000         9.0.0         9.1.0           2009-05         RP#45         RP-090879         231         CR reference correction         9.0.0         9.1.0	2009-05	RP#45	RP-090836	285	1		9.0.0	9.1.0
2009-05         RP#45         RP-090836         269         Set 3.6. Test case of E-UTRA TDD to E-UTRA TDD and UTRA TDD combined cell search under fading         9.0.0         9.1.0           2009-05         RP#45         RP-090836         271         Set 3.1.2 E-UTRA TDD to UTRA TDD blind handover test         9.0.0         9.1.0           2009-05         RP#45         RP-090836         279         E-UTRAN FDD - UTRAN FDD Cell Search in DRX Test         9.0.0         9.1.0           2009-05         RP#45         RP-090836         281         E-UTRAN TDD-E-UTRAN TDD and E-UTRAN TDD Inter- frequency Cell Search Test Case         9.0.0         9.1.0           2009-05         RP#45         RP-090836         283         E-UTRAN GSM Blind Handover Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         287         E-UTRAN FDD cdma2000 Blind HO Test cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         302         RRM Test case for multiple E-UTRAN FDD FDI Inter- frequency event triggered reporting under fading propagation conditions         9.0.0         9.1.0           2009-05         RP#45         RP-090828         233         CR SI HRPD correction         9.0.0         9.1.0           2009-05         RP#45         RP-090879         215         1	2009-05	RP#45	RP-090836	267			9.0.0	9.1.0
2009-05         RP#45         RP-090836         271         Set 3.12. E-UTRA TDD to UTRA TDD blind handover test         9.0.0         9.1.0           2009-05         RP#45         RP-090836         279         E-UTRAN FDD - UTRAN FDD Cell Search in DRX Test         9.0.0         9.1.0           2009-05         RP#45         RP-090836         281         E-UTRAN TDD E-UTRAN TDD and E-UTRAN TDD Inter- frequency Cell Search Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         283         E-UTRAN GSM Blind Handover Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         287         E-UTRAN FDD cdm2200 Blind HO Test cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         302         RRM Test case for multiple E-UTRAN FDD-FDD Inter- frequency event triggered reporting under fading propagation conditions         9.0.0         9.1.0           2009-05         RP#45         RP-090828         304         CR SI HRPD correction         9.0.0         9.1.0           2009-05         RP#45         RP-090879         215         1         Corrections to Measurements of HRPD cells and cdm2000         9.0.0         9.1.0           2009-05         RP#45         RP-090879         231         CA reference correction <td>2009-05</td> <td>RP#45</td> <td>RP-090836</td> <td>269</td> <td></td> <td>Set 3.6. Test case of E-UTRA TDD to E-UTRA TDD and</td> <td>9.0.0</td> <td>9.1.0</td>	2009-05	RP#45	RP-090836	269		Set 3.6. Test case of E-UTRA TDD to E-UTRA TDD and	9.0.0	9.1.0
2009-05         RP#45         RP-090836         279         E-UTRAN FDD - UTRAN FDD Cell Search in DRX Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         281         E-UTRAN TDD - E-UTRAN TDD and E-UTRAN TDD Inter- frequency Cell Search Test Case         9.0.0         9.1.0           2009-05         RP#45         RP-090836         283         E-UTRAN FDD cdma2000 Bind HO Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         302         RRM Test case for multiple E-UTRAN FDD-FDD Inter- frequency event triggered reporting under fading propagation conditions         9.0.0         9.1.0           2009-05         RP#45         RP-090836         304         Fading reselection test case between E-UTRA and UTRA (UTRA of lower priority         9.0.0         9.1.0           2009-05         RP#45         RP-090879         215         1         Corrections to Measurements of HRPD cells and cdma2000         9.0.0         9.1.0           2009-05         RP#45         RP-090879         235         1         Corrections to Measurements of GSM cells in RRC_IDLE         9.0.0         9.1.0           2009-05         RP#45         RP-090879         247         Range of Ide Mode Es/lot side conditions         9.0.0         9.1.0           2009-05         RP#45	2000.05	DD#45	<b>BD 000926</b>	071			0.0.0	010
2009-05         RP#45         RP-090836         281         E-UTRAN TDD-E-UTRAN TDD and E-UTRAN TDD Inter- frequency Cell Search Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         283         E-UTRAN GSM Blind Handover Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         287         E-UTRAN GSM Blind Handover Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         302         RRM Test case for multiple E-UTRAN FDD-IDD Inter- frequency event triggered reporting under fading propagation conditions         9.0.0         9.1.0           2009-05         RP#45         RP-090836         304         Fading reselection test case between E-UTRA and UTRA (UTRA of lower priority         9.0.0         9.1.0           2009-05         RP#45         RP-090879         215         1         Corrections to Measurements of HRPD cells and cdma2000         9.0.0         9.1.0           2009-05         RP#45         RP-090879         231         CR reference correction         9.0.0         9.1.0           2009-05         RP#45         RP-090879         231         Carrefrence corrections         9.0.0         9.1.0           2009-05         RP#45         RP-090879         247         Range of Idle Mode Es/Iot						E-UTRAN FDD - UTRAN FDD Cell Search in DRX Test		
2009-05         RP#45         RP-090836         283         E-UTRAN GSM Blind Handover Test Cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         287         E-UTRAN FDD cdma2000 Blind HO Test cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         302         RRM Test case for multiple E-UTRAN FDD-FDD Inter- frequency event triggered reporting under fading propagation conditions         9.0.0         9.1.0           2009-05         RP#45         RP-090836         304         Fading reselection test case between E-UTRA and UTRA (UTRA of lower priority         9.0.0         9.1.0           2009-05         RP#45         RP-090878         215         1         Corrections to Measurements of HRPD cells and cdma2000         9.0.0         9.1.0           2009-05         RP#45         RP-090879         231         CR reference correction         9.0.0         9.1.0           2009-05         RP#45         RP-090879         235         1         Corrections to Measurements of GSM cells in RRC_IDLE         9.0.0         9.1.0           2009-05         RP#45         RP-090879         247         Range of Idle Mode Es/lot side conditions         9.0.0         9.1.0           2009-05         RP#45         RP-090879         245         1	2009-05	RP#45	RP-090836	281		E-UTRAN TDD- E-UTRAN TDD and E-UTRAN TDD Inter-	9.0.0	9.1.0
2009-05         RP#45         RP-090836         287         E-UTRAN FDD cdma2000 Blind HO Test cases         9.0.0         9.1.0           2009-05         RP#45         RP-090836         302         RRM Test case for multiple E-UTRAN FDD-DD Inter- frequency event triggered reporting under fading propagation conditions         9.0.0         9.1.0           2009-05         RP#45         RP-090836         304         Fading reselection test case between E-UTRA and UTRA (UTRA of lower priority         9.0.0         9.1.0           2009-05         RP#45         RP-090828         233         CR SI HRPD correction         9.0.0         9.1.0           2009-05         RP#45         RP-090879         215         1         Corrections to Measurements of HRPD cells and cdma2000 1X         9.0.0         9.1.0           2009-05         RP#45         RP-090879         235         1         Corrections to Measurements of GSM cells in RRC_IDLE         9.0.0         9.1.0           2009-05         RP#45         RP-090879         247         Range of Idle Mode Es/lot side conditions         9.0.0         9.1.0           2009-05         RP#45         RP-090879         249         Removal of [] from Tdetect, Tmeasure and Tevaluate         9.0.0         9.1.0           2009-05         RP#45         RP-090879         317	2009-05	RP#45	RP-090836	283			900	910
2009-05         RP#45         RP-090836         302         RRM Test case for multiple E-UTRAN FDD-FDD Inter- frequency event triggered reporting under fading propagation conditions         9.0.0         9.1.0           2009-05         RP#45         RP-090836         304         Fading reselection test case between E-UTRA and UTRA (UTRA of lower priority         90.0         9.1.0           2009-05         RP#45         RP-090828         233         CR SI HRPD correction         90.0         9.1.0           2009-05         RP#45         RP-090879         215         1         Corrections to Measurements of HRPD cells and cdma2000         90.0         9.1.0           2009-05         RP#45         RP-090879         231         CR reference correction         9.0.0         9.1.0           2009-05         RP#45         RP-090879         235         1         Corrections to Measurements of GSM cells in RRC_IDLE         9.0.0         9.1.0           2009-05         RP#45         RP-090879         247         Range of Idle Mode Es/Iot side conditions         9.0.0         9.1.0           2009-05         RP#45         RP-090879         245         1         Clarification to applicability of RSRP side conditions in Idle mode         9.0.0         9.1.0           2009-05         RP#45         RP-090879         318 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
2009-05         RP#45         RP-090836         304         Fading reselection test case between E-UTRA and UTRA (UTRA of lower priority         9.0.0         9.1.0           2009-05         RP#45         RP-090828         233         CR SI HRPD correction         9.0.0         9.1.0           2009-05         RP#45         RP-090879         215         1         Corrections to Measurements of HRPD cells and cdma2000         9.0.0         9.1.0           2009-05         RP#45         RP-090879         231         CR reference correction         9.0.0         9.1.0           2009-05         RP#45         RP-090879         235         1         Corrections to Measurements of GSM cells in RRC_IDLE         9.0.0         9.1.0           2009-05         RP#45         RP-090879         247         Range of Idle Mode Es/Iot side conditions         9.0.0         9.1.0           2009-05         RP#45         RP-090879         247         Range of Idle Mode Es/Iot side conditions         9.0.0         9.1.0           2009-05         RP#45         RP-090879         247         Range of Idle mode IF measurement and Tevaluate         9.0.0         9.1.0           2009-05         RP#45         RP-090879         317         CR Idle mode IF measurement condition         9.0.0         9.1.0						RRM Test case for multiple E-UTRAN FDD-FDD Inter- frequency event triggered reporting under fading propagation		
2009-05         RP#45         RP-090828         233         CR SI HRPD correction         9.0.0         9.0.0         9.1.0           2009-05         RP#45         RP-090879         215         1         Corrections to Measurements of HRPD cells and cdma2000         9.0.0         9.1.0           2009-05         RP#45         RP-090879         231         CR reference correction         9.0.0         9.1.0           2009-05         RP#45         RP-090879         235         1         Corrections to Measurements of GSM cells in RRC_IDLE         9.0.0         9.1.0           2009-05         RP#45         RP-090879         247         Range of Idle Mode Es/lot side conditions         9.0.0         9.1.0           2009-05         RP#45         RP-090879         249         Removal of [] from Tdetect, Tmeasure and Tevaluate         9.0.0         9.1.0           2009-05         RP#45         RP-090879         245         1         Clarification to applicability of RSRP side conditions in Idle mode         9.0.0         9.1.0           2009-05         RP#45         RP-090879         317         CR Idle mode IF measurement condition         9.0.0         9.1.0           2009-05         RP#45         RP-090816         221         Corrections to E-UTRAN RRC_IDLE state mobility requirements	2009-05	RP#45	RP-090836	304			9.0.0	9.1.0
2009-05         RP#45         RP-090879         231         1X         90.0         9.1.0           2009-05         RP#45         RP-090879         235         1         CR reference correction         90.0         9.1.0           2009-05         RP#45         RP-090879         235         1         Corrections to Measurements of GSM cells in RRC_IDLE         9.0.0         9.1.0           2009-05         RP#45         RP-090879         247         Range of Idle Mode Es/Iot side conditions         9.0.0         9.1.0           2009-05         RP#45         RP-090879         249         Removal of [] from Tdetect, Tmeasure and Tevaluate         9.0.0         9.1.0           2009-05         RP#45         RP-090879         245         1         Clarification to applicability of RSRP side conditions in Idle         9.0.0         9.1.0           2009-05         RP#45         RP-090879         317         CR Idle mode IF measurement condition         9.0.0         9.1.0           2009-05         RP#45         RP-090879         217         2         Corrections to E-UTRAN RRC_IDLE state mobility         9.0.0         9.1.0           2009-05         RP#45         RP-090816         221         E-UTRAN TDD-TDD inter frequency cell         9.0.0         9.1.0	2009-05	RP#45	RP-090828	233		CR SI HRPD correction	9.0.0	9.1.0
2009-05         RP#45         RP-090879         235         1         Corrections to Measurements of GSM cells in RRC_IDLE         9.0.0         9.1.0           2009-05         RP#45         RP-090879         247         Range of Idle Mode Es/lot side conditions         9.0.0         9.1.0           2009-05         RP#45         RP-090879         249         Removal of [] from Tdetect, Tmeasure and Tevaluate         9.0.0         9.1.0           2009-05         RP#45         RP-090879         245         1         Clarification to applicability of RSRP side conditions in Idle         9.0.0         9.1.0           2009-05         RP#45         RP-090879         317         CR Idle mode IF measurement condition         9.0.0         9.1.0           2009-05         RP#45         RP-090879         318         CR Idle mode IF measurement period         9.0.0         9.1.0           2009-05         RP#45         RP-090879         217         2         Corrections to E-UTRAN RRC_IDLE state mobility         9.0.0         9.1.0           2009-05         RP#45         RP-090814         265         1         Correction to Random Access         9.0.0         9.1.0           2009-05         RP#45         RP-090816         221         E-UTRAN TDD-TDD inter frequency cell         9.0.0	2009-05	RP#45	RP-090879	215	1		9.0.0	9.1.0
2009-05         RP#45         RP-090879         247         Range of Idle Mode Es/lot side conditions         9.0.0         9.1.0           2009-05         RP#45         RP-090879         249         Removal of [] from Tdetect, Tmeasure and Tevaluate         9.0.0         9.1.0           2009-05         RP#45         RP-090879         245         1         Clarification to applicability of RSRP side conditions in Idle mode         9.0.0         9.1.0           2009-05         RP#45         RP-090879         317         CR Idle mode IF measurement condition         9.0.0         9.1.0           2009-05         RP#45         RP-090879         318         CR Idle mode IF measurement period         9.0.0         9.1.0           2009-05         RP#45         RP-090879         217         2         Corrections to E-UTRAN RRC_IDLE state mobility         9.0.0         9.1.0           2009-05         RP#45         RP-090814         265         1         Correction to Random Access         9.0.0         9.1.0           2009-05         RP#45         RP-090816         221         E-UTRAN TDD-TDD inter frequency cell search/measurement requirements when DRX is used         9.0.0         9.1.0           2009-05         RP#45         RP-090816         223         E-UTRAN inter RAT measurement requirements								
2009-05         RP#45         RP-090879         249         Removal of [] from Tdetect, Tmeasure and Tevaluate         9.0.0         9.1.0           2009-05         RP#45         RP-090879         245         1         Clarification to applicability of RSRP side conditions in Idle mode         9.0.0         9.1.0           2009-05         RP#45         RP-090879         317         CR Idle mode IF measurement condition         9.0.0         9.1.0           2009-05         RP#45         RP-090879         318         CR Idle mode IF measurement period         9.0.0         9.1.0           2009-05         RP#45         RP-090879         217         2         Corrections to E-UTRAN RRC_IDLE state mobility requirements         9.0.0         9.1.0           2009-05         RP#45         RP-090814         265         1         Correction to Random Access         9.0.0         9.1.0           2009-05         RP#45         RP-090816         221         E-UTRAN TDD-TDD inter frequency cell search/measurement requirements when DRX is used         9.0.0         9.1.0           2009-05         RP#45         RP-090816         229         Correction to Monitoring of Multiple Layers Using Gaps         9.0.0         9.1.0           2009-05         RP#45         RP-090816         229         Correction to Monitoring					1			9.1.0
2009-05         RP#45         RP-090879         245         1         Clarification to applicability of RSRP side conditions in Idle mode         9.0.0         9.1.0           2009-05         RP#45         RP-090879         317         CR Idle mode IF measurement condition         9.0.0         9.1.0           2009-05         RP#45         RP-090879         318         CR Idle mode IF measurement period         9.0.0         9.1.0           2009-05         RP#45         RP-090879         217         2         Corrections to E-UTRAN RRC_IDLE state mobility requirements         9.0.0         9.1.0           2009-05         RP#45         RP-090814         265         1         Correction to Random Access         9.0.0         9.1.0           2009-05         RP#45         RP-090816         221         E-UTRAN TDD-TDD inter frequency cell search/measurement requirements when DRX is used         9.0.0         9.1.0           2009-05         RP#45         RP-090816         223         E-UTRAN inter RAT measurement requirements         9.0.0         9.1.0           2009-05         RP#45         RP-090816         229         Correction to Monitoring of Multiple Layers Using Gaps         9.0.0         9.1.0           2009-05         RP#45         RP-090816         219         1         E-UTRAN FDD-FD	2009-05	RP#45		247		Range of Idle Mode Es/lot side conditions		9.1.0
Image         Image <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>								
2009-05         RP#45         RP-090879         318         CR Idle mode IF measurement period         9.0.0         9.1.0           2009-05         RP#45         RP-090879         217         2         Corrections to E-UTRAN RRC_IDLE state mobility requirements         9.0.0         9.1.0           2009-05         RP#45         RP-090814         265         1         Correction to Random Access         9.0.0         9.1.0           2009-05         RP#45         RP-090816         221         E-UTRAN TDD-TDD inter frequency cell search/measurement requirements when DRX is used         9.0.0         9.1.0           2009-05         RP#45         RP-090816         223         E-UTRAN TDD-TDD inter frequency cell search/measurement requirements when DRX is used         9.0.0         9.1.0           2009-05         RP#45         RP-090816         223         E-UTRAN inter RAT measurement requirements         9.0.0         9.1.0           2009-05         RP#45         RP-090816         229         Correction to Monitoring of Multiple Layers Using Gaps         9.0.0         9.1.0           2009-05         RP#45         RP-090816         219         1         E-UTRAN FDD-FDD inter frequency measurements when DRX is used         9.0.0         9.1.0           2009-05         RP#45         RP-090816         322					1	mode		
2009-05RP#45RP-0908792172Corrections to E-UTRAN RRC_IDLE state mobility requirements9.0.09.1.02009-05RP#45RP-0908142651Correction to Random Access9.0.09.1.02009-05RP#45RP-090816221E-UTRAN TDD-TDD inter frequency cell search/measurement requirements when DRX is used9.0.09.1.02009-05RP#45RP-090816223E-UTRAN inter RAT measurement requirements9.0.09.1.02009-05RP#45RP-090816229Correction to Monitoring of Multiple Layers Using Gaps9.0.09.1.02009-05RP#45RP-0908162191E-UTRAN FDD-FDD inter frequency measurements when DRX is used9.0.09.1.02009-05RP#45RP-0908162191Correction to Monitoring of Multiple Layers Using Gaps9.0.09.1.02009-05RP#45RP-090816322CR GSM measurement period9.0.09.1.0					ļ			
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2009-05RP#45RP-090816221E-UTRAN TDD-TDD inter frequency cell search/measurement requirements when DRX is used9.0.09.1.02009-05RP#45RP-090816223E-UTRAN inter RAT measurement requirements9.0.09.1.02009-05RP#45RP-090816229Correction to Monitoring of Multiple Layers Using Gaps9.0.09.1.02009-05RP#45RP-0908162191E-UTRAN FDD-FDD inter frequency measurements when DRX is used9.0.09.1.02009-05RP#45RP-090816322CR GSM measurement period9.0.09.1.0						requirements		
2009-05RP#45RP-090816223E-UTRAN inter RAT measurement requirements90.09.1.02009-05RP#45RP-090816229Correction to Monitoring of Multiple Layers Using Gaps90.09.1.02009-05RP#45RP-0908162191E-UTRAN FDD-FDD inter frequency measurements when DRX is used9.0.09.1.02009-05RP#45RP-0908162191E-UTRAN FDD-FDD inter frequency measurements when DRX is used9.0.09.1.02009-05RP#45RP-090816322CR GSM measurement period9.0.09.1.0					1			
2009-05         RP#45         RP-090816         229         Correction to Monitoring of Multiple Layers Using Gaps         9.0.0         9.1.0           2009-05         RP#45         RP-090816         219         1         E-UTRAN FDD-FDD inter frequency measurements when DRX is used         9.0.0         9.1.0           2009-05         RP#45         RP-090816         322         CR GSM measurement period         9.0.0         9.1.0						search/measurement requirements when DRX is used		
2009-05         RP#45         RP-090816         219         1         E-UTRAN FDD-FDD inter frequency measurements when DRX is used         9.0.0         9.1.0           2009-05         RP#45         RP-090816         322         CR GSM measurement period         9.0.0         9.1.0					ļ			
2009-05 RP#45 RP-090816 322 CR GSM measurement period 9.0.0 9.1.0					1	E-UTRAN FDD-FDD inter frequency measurements when		
	2009-05 2009-05	RP#45 RP#45	RP-090816 RP-090816	322 323			9.0.0 9.0.0	9.1.0 9.1.0

2009-05	RP#45	RP-090816	213	1	Editorial correction on E-UTRAN inter frequency measurements	9.0.0	9.1.0
2009-05	RP#45	RP-090816	261	1	E-UTRAN TDD intra frequency measurements	9.0.0	9.1.0
2009-05	RP#45	RP-090816	319	1	Clarification of the number of monitoring cells for intra frequency measurements	9.0.0	9.1.0
2009-05	RP#45	RP-090815	237		Correction of timing advance adjustment accuracy test case	9.0.0	9.1.0
2009-05	RP#45	RP-090815	291		Correction to UE Transmit Timing Requirements	9.0.0	9.1.0
2009-12	RP-46	RP-091275	329		Defining requirements for UTRA TDD measurements for	9.1.0	9.2.0
2009-12	RP-46	RP-091272	332		SON (Technically endorsed at RAN 4 52bis in R4-093512) Modification of test case of E-UTRA TDD intra frequency cell reselection (Technically endorsed at RAN 4 52bis in R4- 093552)	9.1.0	9.2.0
2009-12	RP-46	RP-091272	333		Modification of test case of E-UTRA TDD inter frequency cell reselection (Technically endorsed at RAN 4 52bis in R4- 093553)	9.1.0	9.2.0
2009-12	RP-46	RP-091286	334		Introduction of Extended LTE1500 requirements for TS36.133 (Technically endorsed at RAN 4 52bis in R4- 093636)	9.1.0	9.2.0
2009-12	RP-46	RP-091272	336		Addition of E-UTRA TDD to UTRA FDD reselection test cases (Technically endorsed at RAN 4 52bis in R4-093686)	9.1.0	9.2.0
2009-12	RP-46	RP-091271	338		Correction of missing accuracy requirements for UTRAN FDD (Technically endorsed at RAN 4 52bis in R4-093689)	9.1.0	9.2.0
2009-12	RP-46	RP-091275	340		CR cdma2000 HRPD measurement period (Technically endorsed at RAN 4 52bis in R4-093720)	9.1.0	9.2.0
2009-12	RP-46	RP-091275	342		CR cdma2000 1x measurement period (Technically endorsed at RAN 4 52bis in R4-093721)	9.1.0	9.2.0
2009-12	RP-46	RP-091272	344		Correction for E-UTRAN FDD - UTRAN FDD Cell Search in DRX Test Cases (Technically endorsed at RAN 4 52bis in R4-093890)	9.1.0	9.2.0
2009-12	RP-46	RP-091272	346		Revise geometry factors for Intra freq Reselection Test Cases	9.1.0	9.2.0
2009-12	RP-46	RP-091271	348		Corrections on RRM parameters for Bands 12, 14, 17	9.1.0	9.2.0
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RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47	RP-100255           RP-100255           RP-100255           RP-100255           RP-100255           RP-100262           RP-100263           RP-100264	415 399 397 421 427 419 407 413	1	Enhanced UTRA FDD Requirements for CSFB         Correction of RSRP value in E-UTRAN FDDFDD Inter         frequency reselection test         Addition of missing Es/Noc parameters in RRM test         cases         Correction to RRC Re-establishment Test Case         Correction of UE transmit timing test case         Correction to RLM Test Cases	9.2.0 9.2.0 9.2.0 9.2.0	9.3.0 9.3.0 9.3.0 9.3.0
RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47	RP-100255 RP-100255 RP-100255 RP-100255 RP-100262 RP-100263 RP-100264	399 397 421 427 419 407 413		Correction of RSRP value in E-UTRAN FDDFDD Inter frequency reselection test Addition of missing Es/Noc parameters in RRM test cases Correction to RRC Re-establishment Test Case Correction of UE transmit timing test case Correction to RLM Test Cases	9.2.0 9.2.0 9.2.0	9.3.0 9.3.0 9.3.0
RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47	RP-100255 RP-100255 RP-100255 RP-100262 RP-100263 RP-100264	397 421 427 419 407 413		frequency reselection test Addition of missing Es/Noc parameters in RRM test cases Correction to RRC Re-establishment Test Case Correction of UE transmit timing test case Correction to RLM Test Cases	9.2.0 9.2.0	9.3.0 9.3.0
RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47	RP-100255 RP-100255 RP-100255 RP-100262 RP-100263 RP-100264	421 427 419 407 413		Addition of missing Es/Noc parameters in RRM test cases Correction to RRC Re-establishment Test Case Correction of UE transmit timing test case Correction to RLM Test Cases	9.2.0 9.2.0	9.3.0 9.3.0
RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47	RP-100255 RP-100255 RP-100255 RP-100262 RP-100263 RP-100264	421 427 419 407 413		cases         Correction to RRC Re-establishment Test Case         Correction of UE transmit timing test case         Correction to RLM Test Cases	9.2.0 9.2.0	9.3.0 9.3.0
RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47	RP-100255 RP-100255 RP-100262 RP-100263 RP-100264	427 419 407 413		Correction to RRC Re-establishment Test Case Correction of UE transmit timing test case Correction to RLM Test Cases	9.2.0	9.3.0
RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47	RP-100255 RP-100255 RP-100262 RP-100263 RP-100264	427 419 407 413		Correction of UE transmit timing test case Correction to RLM Test Cases	9.2.0	9.3.0
RP-47 RP-47 RP-47 RP-47 RP-47 RP-47 RP-47	RP-100255 RP-100262 RP-100263 RP-100264	419 407 413		Correction to RLM Test Cases		
RP-47 RP-47 RP-47 RP-47 RP-47 RP-47	RP-100262 RP-100263 RP-100264	407 413			0.2.0	9.3.0
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