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History			

Foreword

This Technical Specification has been produced by the 3rd 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 36.300: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2"
- [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"
- [26] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [26] 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 [26].

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 _{Channel}	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 _{PRB}	Physical Resource Block number as defined in subclause 3.1 in 3GPP TS 36.211.
$P_{\rm CMAX}$	Configured UE transmitted power as defined in subclause 6.2.5 in 3GPP TS 36.101.
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
SCH RP	spectral density at the UTRA Node B antenna connector Received (linear) average power of the resource elements that carry E-UTRA
SCII_Kr	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
$\mathrm{Thresh}_{\mathrm{x, high}}$	Defined in TS 36.304, subclause 5.2.4.7
$\text{Thresh}_{x, \text{ low}}$	Defined in TS 36.304, subclause 5.2.4.7
Thresh _{serving, low}	Defined in TS 36.304, subclause 5.2.4.7
T _{RE-ESTABLISH-REQ}	The RRC Re-establishment delay requirement, the time between the moment when
2	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 _{RAT}	Defined in TS 36.304, subclause 5.2.4.7
Treselection _{EUTRAN}	Defined in TS 36.304, subclause 5.2.4.7
Treselection _{UTRAN}	Defined in TS 36.304, subclause 5.2.4.7
Treselection _{GERAN}	Defined in TS 36.304, subclause 5.2.4.7
Ts	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].

1x RTT	CDMA2000 1x Radio Transmission Technology
ARQ	Automatic Repeat Request
AWGN	Additive White Gaussian Noise
BCCH	Broadcast Control Channel
BCH	Broadcast Channel
CCCH SDU	Common Control Channel SDU
CPICH	Common Pilot Channel
CPICH Ec/No	CPICH Received energy per chip divided by the power density in the band
C-RNTI	Cell RNTI
DCCH	Dedicated Control Channel
DL	Downlink
DRX	Discontinuous Reception
DTCH	Dedicated Traffic Channel
DUT	Device Under Test
eNB	E-UTRAN NodeB
E-UTRA	Evolved UTRA
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
MAC	Medium Access Control

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OCNG OFDM OFDMA PBCH P-CCPCH PCFICH PDCCH PDSCH PHICH PLMN PRACH PUCCH PUSCH RSCP RSRP RSRQ RSSI	OFDMA Channel Noise Generator Orthogonal Frequency Division Multiplexing Orthogonal Frequency Division Multiple Access Physical Broadcast Channel Primary Common Control Physical Channel Physical Control Format Indicator CHannel Physical Downlink Control CHannel Physical Downlink Shared CHannel Physical Hybrid-ARQ Indicator CHannel Public Land Mobile Network Physical Random Access CHannel Physical Uplink Control CHannel Physical Uplink Control CHannel Physical Uplink Shared Channel Received Signal Code Power Reference Signal Received Power Reference Signal Received Quality Received Signal Strength Indicator
	Received Signal Code Power
RSSI	Received Signal Strength Indicator
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
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.

Editors note: The measurement of cells that are detected in this search is still to be described.

4.2.2.1 Measurement and evaluation of serving cell

The UE shall measure the RSRP 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 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 _{serv} [number of DRX cycles]
0.32	4
0.64	4
1.28	2
2.56	2

Table 4.2.2.1-1: Nserv

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 measurements of identified intrafrequency 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 $|_{dBm} \ge -124 \text{ dBm}$ for Bands 1, 4, 6, 10, 11, 33, 34, 35, 36, 37, 38, 39, 40 and RSRP $\hat{E}s/Iot \ge -4 \text{ dB}$,
- RSRP $|_{dBm} \ge -123 \text{ dBm}$ for Bands 9 and RSRP $\hat{E}s/Iot \ge -4 \text{ dB}$,
- RSRP $|_{dBm} \ge -122 \text{ dBm}$ for Bands 2, 5, 7 and RSRP $\hat{E}s/Iot \ge -4 \text{ dB}$,
- RSRP $|_{dBm} \ge -121$ dBm for Bands 3, 8, 12, 13, 14, 17 and RSRP $\hat{E}s/Iot \ge -4$ dB,
- SCH_RP|_{dBm} > -124 dBm for Bands 1, 4, 6, 10, 11, 33, 34, 35, 36, 37, 38, 39, 40 and SCH $\hat{E}s/Iot \ge -4 dB$,
- SCH_RP|_{dBm} \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 and SCH $\hat{E}s/Iot \ge -4$ dB,
- SCH_RP $|_{dBm} \ge$ -121 dBm for Bands 3, 8, 12, 13, 14, 17 and SCH $\hat{E}s/Iot \ge$ -4 dB.

The UE shall measure RSRP 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 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 $T_{measure,EUTRAN Intra}/2$

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 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 _{detect,EUTRAN_Intra} [s] (number of DRX cycles)	T _{measure,EUTRAN_Intra} [s] (number of DRX cycles)	T _{evaluate,E-UTRAN_intra} [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 : $T_{detect,EUTRAN_Intra}$, $T_{measure,EUTRAN_Intra}$ and $T_{evaluate, E-UTRAN_intra}$

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 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.

If the $S_{ServingCell}$ of the E-UTRA serving cell is greater than $S_{nonintrasearch}$ 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 the $S_{\text{ServingCell}}$ of the E-UTRA serving cell is less than or equal to $S_{\text{nonintrasearch}}$ 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 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:

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

When higher priority cells are found by the higher priority search, they shall be measured at least every $T_{measure,E-}_{UTRAN_Inter}$. 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 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 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 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 _{detect,EUTRAN_Inter} [s] (number of DRX cycles)	T _{measure,EUTRAN_Inter} [s] (number of DRX cycles)	T _{evaluate,E} - 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_{detect,EUTRAN_Inter}, T_{measure,EUTRAN_Inter} and T_{evaluate,E-UTRAN_Inter}

4.2.2.5 Measurements of inter-RAT cells

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

If the $S_{\text{ServingCell}}$ of the E-UTRA serving cell is less than or equal to $S_{\text{nonintrasearch}}$ 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 used 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 the $S_{ServingCell}$ of the E-UTRA serving cell is less than $S_{nonintrasearch}$ when Treselection_{RAT} = 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 $(N_{UTRA_carrier}) * T_{measureUTRA_FDD}$ when the $S_{ServingCell}$ of the E-UTRA serving cell is less than $S_{nonintrasearch}$.

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.

DRX cycle length [s]	T _{detect} UTRA_FDD [S]	T _{measureUTRA_FDD} [s] (number of DRX cycles)	T _{evaluateUTRA_FDD} [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)	

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 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 the $S_{ServingCell}$ of the E-UTRA serving cell is less than $S_{nonintrasearch}$ 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 $(N_{UTRA_carrier_TDD}) * T_{measureUTRA_TDD}$ when the $S_{ServingCell}$ of the E-UTRA serving cell is less than $S_{nonintrasearch}$.

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 $N_{\text{UTRA_carrier_TDD}} *T_{\text{evaluateUTRA_TDD}}$ when $T_{\text{reselection}} = 0$ as specified in table 4.2.2.5.2-1 provided that the reselection criteria is met by a margin of at least 6dB.

DRX cycle length [s]	T _{detect} UTRA_TDD	T _{measureUTRA_TDD} [s] (number of DRX cycles)	T _{evaluateUTRA_TDD} [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_{detectUTRA_TDD}, T_{measureUTRA_TDD} and T_{evaluateUTRA_TDD}

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.

DRX cycle length	T _{measure,GSM} [s] (number of DRX	
[s]	cycles)	
0.32	5.12 (16)	
0.64	5.12 (8)	
1.28	6.4(5)	
2.56	7.68 (3)	

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.

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 _{measureHRPD} [s] (number of DRX cycles)	T _{evaluateHRPD} [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

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 $T_{measureCDMA2000_{1X}}$ and $T_{evaluateCDMA2000_{1X}}$.

1.28

2.56

DRX cycle length [s]	T _{measureCDMA2000_1X} [s] (number of DRX cycles)	T _{evaluateCDMA2000_1X} [s] (number of DRX cycles)
0.32	5.12 (16)	15.36 (48)
0.64	5.12 (8)	15.36 (24)

19.2 (15)

23.04 (9)

6.4 (5)

7.68 (3)

Table 4.2.2.5.5-1: TmeasureCDMA2000 1X and TevaluateCDMA2000 1X

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 $T_{SI-EUTRA}$ + 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_{BCCH} 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 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, GSM (one GSM layer corresponds to 32 cells), cdma2000 1x and HRPD layers.

4.2.2.10 Reselection to CSG cells

Note: Requirements in this section are minimum requirements defined to ensure the testability of autonomous CSG search. Further information on autonomous search times in practical deployments is available in [25].

Reselection from non CSG to CSG cells may be performed using UE autonomous search as defined in [1] when at least one CSG ID is included in the UE's CSG whitelist. The requirements in this section are valid for reselection to CSG cells previously visited by the UE when the radio configuration parameters, including the carrier frequency and physical cell identity of the CSG cell, non CSG cell and other neighbour cells are unchanged from the most recent previous visit.

NOTE: The UE autonomous search function, per UE implementation, determines when and/or where to search for allowed CSG cells.

4.2.2.10.1 Reselection from a non CSG to an inter-frequency CSG cell

The UE shall perform search and reselection to an allowed inter-frequency CSG cell that has met CSG reselection criterion defined in [1] and that is in its whitelist, within 6 minutes in the conditions shown in table 4.2.2.10.1-1. There is no need for statistical testing of this requirement.

Parameter	Unit	Cell 1	Cell 2
E-UARFCN Note1		Channel 1	Channel 2
CSG indicator		False	True
Physical cell identity ^{Note1}		1	2
CSG identity		Not sent	Sent
			(Already stored
			in UE whitelist
			from previous
			visit)
Propagation conditions		Static, non	
CSG cell previously		Ye	s
visited by UE PBCH RA	dB		
PBCH_RB	dB dB		
_ PSS_RA 			
	dB dB		
<i>PCFICH_RB</i> PHICH RA	dB		
	dB dB	0	0
PHICH_RB PDCCH RA	dB	Ū	· ·
PDCCH_RA	dB		
PDSCH_RB	dB		
PDSCH_RA	dB dB		
OCNG_RA ^{Note 1}	dB		
OCNG_RA	dB		
Qrxlevmin	dBm	-140	-140
	dBm/15 kHz	-140 Of	
N_{oc}		0	1
RSRP ^{Note2}	dBm/15 KHz	[≥TBD]	[≥TBD]
	: For this requirement to be applicable, the E-UARFCN and physical cell		
	identity for cell 1 and cell 2 shall be unchanged from when the CSG cell		
	was visited previously		
Note 2: Chosen to ensure that CSG autonomous search has a high probabilit			nigh probability
of success on e	very attempt made b	by UE	

Table 4.2.2.10.1-1: Parameters for CSG inter-frequency reselection	on
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4.2.2.10.2 Reselection from a non CSG to an inter-RAT UTRAN FDD CSG cell

The UE shall perform search and reselection to an allowed inter-RAT UTRAN FDD CSG cell that has met CSG reselection criterion defined in [1] and that is in its whitelist, within 6 minutes in the conditions shown in table 4.2.2.10.2-1. There is no need for statistical testing of this requirement.

Parameter	Unit	Cell 1	Cell 2
E-UARFCN Note1	0	Channel 1	N/A
UARFCN Note1		N/A	Channel 2
CSG indicator		False	True
Physical cell identity ^{Note1}		1	N/A
Primary scrambling code		N/A	Scrambling
Note1			code 2
CSG identity		Not sent	Sent
, ,			(Already stored
			in UE whitelist
			from previous
			visit)
Propagation conditions		Static, non	
CSG cell previously		Ye	S
visited by UE			
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB	0	N/A
PHICH_RB	dB	0	IN/A
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA ^{Note 1}	dB		
OCNG_RB ^{Note 1}	dB		
Qrxlevmin	dBm	-140	
N_{oc}	dBm/15 kHz	Off	
RSRP Note2	dBm/15 KHz	[≥TBD]	
CPICH_Ec ^{Note2}	dBm		[≥TBD]
CPICH_Ec/lor	dB		-10
PCCPCH_Ec/lor	dB		-12
SCCPCH_Ec/lor	dB		-12
AICH_Ec/lor	dB	N/A	-15
SCH_Ec/lor	dB		-15
PICH_Ec/lor	dB		-15
I _{oc}	dBm/3.84 MHz		Off
Note 1:For this requirement to be applicable, the E-UARFCN and physical cell identity for cell 1 and the UARFCN and scrambling code for cell 2 shall be unchanged from when the CSG cell was visited previouslyNote 2:Chosen to ensure that CSG autonomous search has a high probability			
or success on e	very attempt made b	Dy UE	

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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
 - o *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_{IU} 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)
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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.

5.2.2.3.2 (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_{IU} shall depend upon the PRACH configuration used in the target cell.

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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_{handover} 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 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 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 section 4.3.1.2 [20]. In case higher layers indicate the usage of a post-verification period $T_{sync}=0$ 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_{handover} 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 _{offset}	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 _{UL}	Equal to 10 ms, the time that can elapse until the appearance of the UL timeslot in the target cell
$\mathbf{F}_{\mathrm{SFN}}$	Equal to 1 if SFN decoding is required and equal to 0 otherwise
F _{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.

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 ha	andover - interruption time
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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 $T_{interrupt}$

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

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_K is SW_K =
$$\left[\frac{\text{srch}_win_k}{60}\right]$$
 where srch_win_k is the number of HRPD chips indicated by the

search window for known target HRPD cells in the message

SW₀ is SW₀ =
$$\left| \frac{\text{srch}_win_o}{60} \right|$$
 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}:

$$T_{interrupt} = T_{IU} + 140 + 10*KC*SW_{K} + 10*OC*SW_{O} ms$$

Where:

$$T_{IU}$$
It is the interruption uncertainty when changing the timing from the E-UTRAN to the new
cdma2000 1X cell. T_{IU} can be up to one cdma2000 1X frame (20 ms). SW_K is $SW_K = \left[\frac{\text{srch}_win}{300}\right]$ 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 $SW_O = \left[\frac{\text{srch}_win}{300}\right]$ 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 $SW_O = \left[\frac{\text{srch}_win}{300}\right]$ where srch_win_o is the number of cdma2000 1x chips indicated by
the search window for unknown target cdma2000 1x cells in the messageKCIt is the number of known target cdma2000 1X cells in the message, andOCIt 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:

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

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

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

 $T_{search} = It$ 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.

Downlink Bandwidth (MHz)	T _e _
1.4	24*T _S
≥3	12*T _S
Note: T _S is the basic timing unit defined in TS 36.211	

Table 7.1.2-1: T_e Timing Error Limit

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 _{q_}
1.4	17.5*T _S
3	9.5*T _S
5	5.5*T _S
≥10 3.5*T _S	
Note: T _S is the basic timing unit defined in TS 36.211	

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

Timer value [s]	Accuracy
timer value < 4	±0.1s
timer value ≥ 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 $\pm 4^* T_S$ seconds to the signalled timing advance value compared to the timing of preceding uplink transmission. The timing advance command is expressed in multiples of $16^* T_S$ 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

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 Cel	I phase synchronization	requirement (TDD)
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Cell Type	Cell Radius	Requirement
Small cell	≤ 3 km	≤ 3 μs
Large cell	> 3 km	≤ 10 μs

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 μ 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 μ 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.

Attribute	Value
DCI format	1A
Number of control OFDM symbols	2; Bandwidth ≥ 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.

Table 7.6.1-2 PDCCH/PCFICH transmission param	eters for in-sync
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Attribute	Value
DCI format	1C
Number of control OFDM symbols	2; Bandwidth ≥ 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
	-3 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 1C is defined in section 5.3.3.1.4 in 3GPP TS 36.212 [21].	
Note 2: A hypothetical PCFICH trans symbols shall be assumed.	smission corresponding to the number of control

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 Qout, Layer 1 of the UE shall send an out-of-sync indication to the higher layers within 200 ms Qout 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 Qin, Layer 1 of the UE shall send an in-sync indication to the higher layers within 100 ms Qin 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 Qout evaluation period ($T_{Evaluate}Q_{out}DRX$) and the Qin 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 Qout, 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 Qin, 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 _{Evaluate} _Q _{out_DRX} and T _{Evaluate} _Q _{in_DRX} (s) (DRX cycles)
≤ 0.01	Non-DRX requirements in section
	7.6.2.1 are applicable.
0.01 < DRX cycle ≤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.

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

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

- [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.

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_{freq} , which is defined as:

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

where

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

 $N_{freq, UTRA}$ 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:

- 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 FDD, UTRA TDD and GSM layers (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_{basic_identify_E-UTRA_FDD, intra} 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|_{dBm} \geq -127 dBm for Bands 1, 4, 6, 10, 11 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 $|_{dBm} \ge$ -125 dBm for Bands 2, 5, 7 and SCH $\hat{E}s/Iot \ge$ 6 dB,
- SCH_RP $|_{dBm} \ge -124$ dBm for Bands 3, 8, 12, 13, 14, 17 and SCH $\hat{E}s/Iot \ge -6$ dB.

 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 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 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

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

T_{Measurement Period Intra} = 200 ms. The measurement period for Intra frequency RSRP and RSRQ 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 ≤ 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 _{identify_intra} (s) (DRX cycles)		
≤0.04	0.8 (Note1)		
0.04 <drx-< td=""><td>Note2 (40)</td></drx-<>	Note2 (40)		
cycle≤0.08			
0.128	3.2 (25)		
0.128 <drx-< td=""><td colspan="2">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 $\ge |_{dBm}$ -127 dBm for Bands 1, 4, 6, 10, 11 and SCH $\hat{E}s/Iot \ge -6$ dB.
- SCH_RP|_{dBm} \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, 7and SCH $\hat{E}s/Iot \ge -6$ dB,
- SCH_RP $|_{dBm} \ge -124 \text{ dBm}$ for Bands 3, 8, 12, 13, 14, 17 and SCH $\hat{E}_s/Iot \ge -6 \text{ dB}$.

In the RRC_CONNECTED state 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 and 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 $T_{measure_intra}$.

Table 8.1.2.2.1.2-2: Requirement to measure FDD intrafrequency cells

DRX cycle	T _{measure_intra} (s)			
length (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

8.1.2.2.1.2.1.1 Periodic Reporting

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

8.1.2.2.1.2.1.2 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 8.1.2.2.1.3 Event Triggered Reporting.

8.1.2.2.1.2.1.3 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 8.1.2.2.1.2. 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 ≤ 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 ± 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

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

where

T_{basic_identify_E-UTRA_TDD, intra} 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_{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 RSRP and 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 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 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.

$$\mathbf{Y}_{\text{measurement intra}} = Floor \left\{ X_{\text{basic measurement TDD}} \cdot \frac{\mathbf{T}_{\text{Intra}}}{\mathbf{T}_{\text{Measurement_Period, Intra}}} \right\} \text{cells}$$

where

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

 $T_{Measurement Period Intra} = 200 \text{ ms.}$ The measurement period for Intra frequency RSRP and RSRQ 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_{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 8.1.2.2.2.1. 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 ≤ 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 8.1.2.2.2-1

DRX cycle	Tidentify_intra (S)	
length (s)	(DRX cycles)	
≤0.04	0.8 (Note1)	
0.04 <drx-< td=""><td>Note2 (40)</td></drx-<>	Note2 (40)	
cycle≤0.08		
0.128	3.2 (25)	
0.128 <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 de	pends 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 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 and 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 $T_{measure_intra}$.

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

DRX cycle length (s)	T _{measure_intra} (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.

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 ≤ 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.

8.1.2.3 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_{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} \geq -125 dBm and for Bands 1, 4, 6, 10, 11 and RSRP $\hat{E}s/Iot \geq$ -4 dB,
- RSRP $|_{dBm} \ge -124 \text{ dBm}$ for Bands 9 and RSRP $\hat{E}s/\text{Iot} \ge -4 \text{ dB}$,
- RSRP $|_{dBm} \ge -123$ dBm for Bands 2, 5, 7 and RSRP $\hat{E}s/Iot \ge -4$ dB,
- RSRP $|_{dBm} \ge -122 \text{ dBm}$ for Bands 3, 8, 12, 13, 14, 17 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|_{dBm} \geq -125 dBm for Bands 1, 4, 6, 10, 11 and SCH Ês/Iot \geq -4 dB,
- SCH_RP|_{dBm} \geq -124 dBm for Band 9 and SCH \hat{E} s/Iot \geq -4 dB,
- SCH_RP $|_{dBm} \ge -123$ dBm for Bands 2, 5, 7 and SCH $\hat{E}s/Iot \ge -4$ dB,
- SCH_RP $|_{dBm}$ ≥ -122 dBm for Bands 3, 8, 12, 13, 14, 17 and SCH Ês/Iot ≥ -4 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.

Configuration	Physical Layer Measurement period:	Measurement bandwidth [RB]
	T _{Measurement_Period_Inter_FDD} [ms]	
0	480 x N _{freq}	6
1 (Note)	240 x N _{freq}	50

Table 8.1.2.3.1.1-1: RSRP measurement period and measurement bandwidth

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.

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. 3.1.1.1.3 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 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 $_{identify-inter}$ 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

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 _{freq}	7.68*N _{freq}			
	(20*N _{freq})	(30*N _{freq})			
0.32	6.4*N _{freq}	7.68*N _{freq}			
	(20*N _{freq})	(24*N _{freq})			
0.32<	Note	Note			
DRX-	(20*N _{freq})	(20*N _{freq})			
cycle≤2.56	((
Note: Time depends upon the DRX					
	cycle in use dxc fdfs sfd				

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

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 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 $|_{dBm} \ge -123 \text{ dBm}$ for Bands 2, 5, 7 and RSRP $\hat{E}s/Iot \ge -4 \text{ dB}$,
- RSRP $|_{dBm} \ge -122 \text{ dBm}$ for Bands 3, 8, 12, 13, 14, 17 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 1, 4, 6, 10, 11 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 $|_{dBm} \ge -123$ dBm for Bands 2, 5, 7 and SCH $\hat{E}s/Iot \ge -4$ dB,
- SCH_RP $|_{dBm} \ge -122$ dBm for Bands 3, 8, 12, 13, 14, 17 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 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.

Table 8.1.2.3.1.2-2: Requirement to measure FDD interfrequency cells

DRX cycle length (s)	T _{measure_inter} (s) (DRX cycles)	
≤0.08	Non DRX	
	Requirements in	
	section 8.1.2.3.1.1	
	are applicable	
0.08 < DRX-	Note (5*N _{freq})	
cycle ≤ 2.56		
Note: Time	e depends upon the	
DRX	cycle in use	

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

8.1.2.3.1.2.1 Measurement Reporting Requirements

8.1.2.3.1.2.1.1 Periodic Reporting

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

8.1.2.3.1.2.1.2 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. 3.1.2.1.3 Event Triggered Reporting.

8.1.2.3.1.2.1.3 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 $T_{identify_{inter}}$ 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:

$$\Gamma_{\text{Identify_Inter}} = T_{\text{Basic_Identify_Inter}} \cdot \frac{480}{T_{\text{Inter}1}} \cdot N_{freq} \quad ms$$

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:

Configuration	Measurement bandwidth [RB]	Number of UL/DL sub- frames per half frame (5 ms)		DwPTS		T _{Measurement_} 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 _{freq}
1 (Note 1)	50	2	2	$19760 \cdot T_s$	$20480 \cdot T_s$	240 x N _{freq}
Note 1: This conf	iguration is option	al				
Note 2: T _s is define	ned in 3GPP TS 3	6.211 [16]				

Table 8.1.2.3.2.1-1: T_{Measurement_Period_TDD_Inter} for different configurations

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_{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 8.1.2.3.2.1. 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	Tidentify_inter (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: Time	Note: Time 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|_{dBm} \geq -125 dBm for Bands 33, 34, 35, 36, 37, 38, 39, 40 and SCH $\hat{E}s/Iot \geq -4$ 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 length (s)	T _{measure_inter} (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_{freq})</td></drx-<>	Note (5*N _{freq})	
cycle ≤ 2.56		
Note: Time dep	pends upon the DRX	
cycle in use		

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

8.1.2.3.2.2.1 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_{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 8.1.2.3.2.2. 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.

8.1.2.3.4 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.

8.1.2.4 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.

8.1.2.4.1.1.2 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

$$\mathbf{T}_{\text{measurement}_UTRA_FDD} = Max \left\{ \mathbf{T}_{\text{Measurement}_Period UTRA_FDD}, \mathbf{T}_{\text{basic}_measurement}_UTRA_FDD} \cdot \frac{480}{\mathbf{T}_{\text{interl}}} \cdot N_{Freq} \right\} ms$$

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 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_{freq} is defined in section 8.1.2.1.1 and T_{inter1} 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 ± 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

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

DRX cycle length (s)	T _{identify_UTRA_FDD} (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 are
	applicable	applicable
0.064	2.56* Nfreq	4.8* Nfreq (75*
	(40* Nfreq)	Nfreq)
0.08	3.2* Nfreq	4.8* Nfreq (60*
	(40* Nfreq)	Nfreq)
0.128	3.2* Nfreq (25*	4.8* Nfreq
	Nfreq)	(37.5* Nfreq)
0.16	3.2* Nfreq (20*	4.8* Nfreq (30*
	Nfreq)	Nfreq)
0.16 <drx-< td=""><td>Note (20*</td><td>Note</td></drx-<>	Note (20*	Note
cycle≤2.56	Nfreq)	(20* Nfreq)
Note: Time depends upon the DRX cycle in use		

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 _{measure_UTRA_FDD} (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 _{freq}	0.8* N _{freq}
	(7.5* N _{freq})	(12.5* N _{freq})
0.08	0.48* N _{freq}	0. 8* N _{freq} (10*
	(6* N _{freq})	N _{freq})
0.128	0.64* N _{freq}	0. 8* N _{freq}
	(5* N _{freq})	(6.25* N _{freq})
0.128 <drx-< td=""><td>Note (5* N_{freq})</td><td>Note (5* N_{freq})</td></drx-<>	Note (5* N _{freq})	Note (5* N _{freq})
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.

- 8.1.2.4.2.2 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.

A cell shall be considered detectable when

- P-CCPCH Ec/Io \geq -8 dB,
- $DwPCH_Ec/Io \ge -5 dB$.

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 $X_{basic measurementUTRA_TDD}$ 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 $T_{Measurement UTRA TDD}$.

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

 $T_{Measurement_Period UTRA_TDD} = 480$ ms is the period used for calculating the measurement period $T_{measurement_UTRA_TDD}$ for UTRA TDD P-CCPCH RSCP measurements.

 $T_{\text{basic_identify}_UTRA_TDD} = 800 \text{ ms}$ 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.

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

 N_{freq} is defined in section 8.1.2.1.1 and T_{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 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.

If a cell which has been detectable at least for the time period $T_{identify, UTRA_TDD}$ defined in section 8.1.2.4.3.1.1 for the minimum requirements and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than $T_{measurement_UTRA_TDD}$ defined in section 8.1.2.4.3.1.2 provided the timing to that cell has not changed more than ± [10] 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.

8.1.2.4.3.1.5 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 length (s)	T _{identify_UTRA_TDD} (s) (DRX cycles)	
iengin (3)	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
0.32 <drx-< td=""><td>Note (20*</td><td>Note (25*</td></drx-<>	Note (20*	Note (25*
cycle≤0.512	Nfreq)	Nfreq)
0.512 <drx-< td=""><td>Note (20*</td><td>Note</td></drx-<>	Note (20*	Note
cycle≤2.56	Nfreq)	(20* Nfreq)
Note: Tim	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 _{measure_UTRA_TDD} (s) (DRX cycles)		
	Gap period = 40 ms	Gap period = 80 ms	
≤0.04	Non DRX Requirements in	Non DRX Requirements in	
	section 8.1.2.4.3.1 are	section 8.1.2.4.3.1 are	
	applicable	applicable	
0.064	0.48*N _{freq} (7.5*N _{freq})	0.8*N _{freq} (12.5*N _{freq})	
0.08	0.48*N _{freq} (6*N _{freq})	0. 8*N _{freq} (10*N _{freq})	
0.128	0.64*N _{freq} (5*N _{freq})	0. 8*N _{freq} (6.25*N _{freq})	
0. 128 <drx- cycle≤2.56</drx- 	Note (5*N _{freq})	Note (5*N _{freq})	
Note: Time depen	pends 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 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 8.1.2.4.3.2 When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify, UTRA_TDD}$ defined in section 8.1.2.4.3.2 and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than $T_{measurement_UTRA_TDD}$ defined in section 8.1.2.4.3.2 provided the timing to that cell has not changed more than ± [10] 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.

8.1.2.4.3.2.3 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.

Table 8.1.2.4.5.1.2-1: The gap length and maximum time difference for BSIC verification

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.

Number	T _{identify,gsm} (ms)		T _{reconfirm,gsm} (ms)	
of				
carriers				
other	40ms gap	80ms gap	40ms gap	80ms gap
than	configuration	configuration	configuration	configuration
GSM	(ID 0)	(ID 1)	(ID 0)	(ID 1)
0	2160	5280	1920	5040
1	5280	21760	5040	17280
2	5280	31680	5040	29280
3	19440	No	13320	No

Table 8.1.2.4.5.1.2.1-1

		requirement		requirement
		No		No
4	31680	requirement	29280	requirement
		No		No
5	31680	requirement	29280	requirement

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 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.

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

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 if BSIC verified measurements are activated by RRC. 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:

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

 $T_{\text{basic_identify}_UTRA_FDD} = 300 \text{ ms.}$ 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 \geq -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 $T_{identify, UTRA_{FDD}}$ 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 8.1.2.4.7.1.1 are applicable	Non DRX Requirements in section 8.1.2.4.7.1.1are applicable
0.04 <drx cycle≤0.08<="" td=""><td>Note (45* N_{freq})</td><td>Note (95* N_{freq})</td></drx>	Note (45* N _{freq})	Note (95* N _{freq})
0.128	3.84* N _{freg} (30* N _{freg})	8.0* N _{freq} (62.5* N _{freq})
0.16	4.0* N _{freq} (25* N _{freq})	8.0* N _{freq} (50* N _{freq})
0.256	6.4* N _{freq} (25* N _{freq})	8.96* N _{freq} (35* N _{freq})
0.32	8* N _{freq} (25* N _{freq})	8.96* N _{freq} (28* N _{freq})
0.32 <drx cycle≤2.56<="" td=""><td>Note (25* N_{freq})</td><td>Note (25* N_{freq})</td></drx>	Note (25* N _{freq})	Note (25* N _{freq})
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.

Gap Pattern Id	S _{gap}
0	32/3
1	64/3

Table 8.1.2.4.9.1-1: Gap Pattern Specific Scale Factor

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.

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

DRX cycle length (s)	T _{identify, UTRA_TDD} (s) (DRX cycles)	
	Gap period = 40 ms	Gap period = 80 ms
≤0.16	Non DRX Requirements in section 8.1.2.4.3.1 are applicable	Non DRX Requirements in section 8.1.2.4.3.1 are applicable
0.16 <drx cycle≤0.256<="" td=""><td>Note (25* N_{freq})</td><td>Note (50* N_{freg})</td></drx>	Note (25* N _{freq})	Note (50* N _{freg})
0.256 <drx cycle≤0.32</drx 	Note (25* N _{freq})	Note (45* N _{freq})
0.32 <drx cycle≤2.56<="" td=""><td>Note (25* N_{freq})</td><td>Note (25* N_{freq})</td></drx>	Note (25* N _{freq})	Note (25* N _{freq})
Note: Time depends upon the DRX cycle in use		

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.

8.2 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.

Measurement category	E _{cat}	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.

 Table 8.2.2-1: Requirements for reporting criteria per measurement category

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 [24] 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 [24].

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 absolute accuracy of RSRP is defined as the RSRP measured from 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, 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,

 $RSRP|_{dBm} \ge -124 \text{ dBm}$ for Bands 3, 8, 12, 13, 14, 17.

Parameter	Unit	Accura	cy [dB]	Conditions ¹					
		Normal condition	Extreme condition	Bands 1, 4, 6, 10, 11, 33, 34, 35, 36, 37, 38, 39, 40	Bands 2, 5, 7	Bands 3, 8, 12, 13, 14, 17	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/		
				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}		
RSRP for Ês/lot ≥	dBm	±8	±11	-70dBm/	-70dBm/	-70dBm/	-70dBm/		
-6 dB				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}		
				50dBm/	50dBm/	50dBm/	50dBm/		
				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}		

Table 9.1.2.1-1: RSRP Intra frequency absolute accuracy

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.

 $RSRP1,2|_{dBm} \ge -127 dBm$ for Bands 1, 4, 6, 10, 11, 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,

 $RSRP1,2|_{dBm} \ge -124 \text{ dBm}$ for Bands 3, 8, 12, 13, 14, 17.

Table 9.1.2.2-1: RSRP Intra frequency relative accuracy

Parameter Unit Accurac		y [dB] Conditions ¹					
		Normal condition	Extreme condition	Bands 1, 4, 6, 10, 11, 33, 34, 35, 36, 37, 38, 39, 40	Bands 2, 5, 7	Bands 3, 8, 12, 13, 14, 17	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 _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}
RSRP for Ês/lot ≥	dBm	±3	±3	-	-	-	-
-6 dB				121dBm/15kHz	119dBm/15kHz	118dBm/15kHz	120dBm/15kHz
				50dBm/	50dBm/	50dBm/	50dBm/
				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}

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 absolute accuracy of RSRP is defined as the RSRP measured from 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, 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,

RSRP|dBm≥ -124 dBm for Bands 3, 8, 12, 13, 14, 17.

Table 9.1.3.1-1: RSRP Inter frequency absolute accuracy

Parameter	Parameter Unit Accurac		cy [dB]	Conditions ¹				
		Normal condition	Extreme condition	Bands 1, 4, 6, 10, 11, 33, 34, 35, 36, 37, 38, 39, 40	Bands 2, 5, 7	Bands 3, 8, 12, 13, 14, 17	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/	
				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}	
RSRP for Ês/lot ≥	dBm	<u>±8</u>	±11	-70dBm/	-70dBm/	-70dBm/	-70dBm/	
-6 dB				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}	
				50dBm/	50dBm/	50dBm/	50dBm/	
				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}	

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.

 $RSRP1|_{dBm} \ge -127 \text{ dBm if } RSRP1 \text{ is on Bands } 1, 4, 6, 10, 11, 33, 34, 35, 36, 37, 38, 39, 40,$

 $RSRP1|_{dBm} \ge -126 dBm$ if RSRP1 is on Band 9,

 $RSRP1|_{dBm} \ge -125 dBm$ if RSRP1 is on Bands 2, 5, 7,

 $RSRP1|_{dBm} \ge -124 \text{ dBm if } RSRP1 \text{ is on Bands } 3, 8, 12, 13, 14, 17,$

 $RSRP2_{dBm} \ge -127 dBm$ if RSRP2 is on Bands 1, 4, 6, 10, 11, 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,

 $RSRP2|_{dBm} \ge -124 \text{ dBm if } RSRP2 \text{ is on Bands 3, 8, 12, 13, 14, 17.}$

 $\left| RSRP1 \right|_{dBm} - RSRP2 \right|_{dBm} \le 27 dB$

| Channel 1_Io -Channel 2_Io | \leq 20 dB

Table 9.1.3.2-1: RSRP Inter frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions ¹				
		Normal condition	Extreme condition	RSRP is on Bands 1, 4, 6, 10, 11, 33, 34, 35, 36, 37, 38, 39 and 40	RSRP is on Bands 2, 5, 7	RSRP is on Bands 3, 8, 12, 13, 14, 17	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/	
				BW _{Channel}	BW Channel	BW _{Channel}	BW _{Channel}	

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 absolute accuracy of RSRQ is defined as the RSRQ measured from 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, 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,

 $RSRP|_{dBm} \ge -124 \text{ dBm}$ for Bands 3, 8, 12, 13, 14, 17,

Parameter	Parameter Unit Accu		cy [dB]	Conditions ¹				
		Normal condition	Extreme condition	Bands 1, 4, 6, 10, 11, 33, 34, 35, 36, 37, 38, 39, 40	Bands 2, 5, 7	Bands 3, 8, 12, 13, 14, 17	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/	
				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}	
RSRQ when RSRP	dBm	± 3.5	± 4	-	-	-	-	
Ês/lot ≥ -6 dB				121dBm/15kHz	119dBm/15kHz	118dBm/15kHz	120dBm/15kHz	
				50dBm/	50dBm/	50dBm/	50dBm/	
				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}	
Note 1. lo is assumed	d to have	constant EF	RE across t	he bandwidth.				

Table 9.1.5.1-1: RSRQ Intra frequency absolute accuracy

9.1.6 Inter-frequency RSRQ Accuracy Requirements

9.1.6.1 Absolute RSRQ Accuracy

The absolute accuracy of RSRQ is defined as the RSRQ measured from 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, 33, 34, 35, 36, 37, 38, 39, 40,

RSRP|dBm \ge -126 dBm for Bands 9,

 $RSRP|_{dBm} \ge -125 dBm$ for Bands 2, 5, 7,

 $RSRP|_{dBm} \ge -124 \text{ dBm}$ for Bands 3, 8, 12, 13, 14, 17.

Parameter	Unit	Accuracy [dB]		Conditions ¹				
		Normal condition	Extreme condition	Bands 1, 4, 6, 10, 11, 33, 34, 35, 36, 37, 38, 39, 40	Bands 2, 5, 7	Bands 3, 8, 12, 13, 14, 17	Bands 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/	
				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}	
RSRQ when RSRP	dBm	± 3.5	± 4	-	-	-	-	
Ês/lot ≥ -6 dB				121dBm/15kHz	119dBm/15kHz	118dBm/15kHz	120dBm/15kHz	
				50dBm/	50dBm/	50dBm/	50dBm/	
				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}	

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:

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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.

 $RSRP1|_{dBm} \ge -127 dBm$ if RSRP1 is on Band 1, 4, 6, 10, 11, 33, 34, 35, 36, 37, 38, 39, 40,

 $RSRP1|_{dBm} \ge -126 \text{ dBm if } RSRP1 \text{ is on Band 9},$

 $RSRP1|_{dBm} \ge -125 dBm \text{ if } RSRP1 \text{ is on Bands } 2, 5, 7,$

 $RSRP1|_{dBm} \ge -124 \ dBm \ if \ RSRP1$ is on Bands 3, 8, 12, 13, 14, 17,

 $RSRP2|_{dBm} \ge -127 dBm$ if RSRP2 is on Bands 1, 4, 6, 10, 11, 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,

 $RSRP2|_{dBm} \ge -124 \text{ dBm if } RSRP2 \text{ is on Bands 3, 8, 12, 13, 14, 17.}$

 $\left| RSRP1 \right|_{dBm} - RSRP2 \right|_{dBm} \le 27 dB$

| Channel 1_Io -Channel 2_Io | \leq 20 dB

Table 9.1.6.2-1: RSRQ Inter frequency relative accuracy

Parameter	Unit	Accura	cy [dB]		Cond	itions ¹	
		Normal condition	Extreme condition	RSRQ is on Bands 1, 4, 6, 10, 11, 33, 34, 35, 36, 37, 38, 39, 40	RSRQ is on Bands 2, 5, 7	RSRQ is on Bands 3, 8, 12, 13, 14, 17	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/
				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}
RSRQ when RSRP	dBm	± 4	± 4	-	-	-	-
Ês/lot ≥ -6 dB				121dBm/15kH	119dBm/15kHz	118dBm/15kHz	120dBm/15kHz
				z50dBm] /	50dBm/	50dBm/	50dBm/
				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}
Note 1. lo is assumed	to have	constant EF	RE across t	he bandwidth.			

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	$35 \le PH < 36$
POWER_HEADROOM_59	$36 \le PH < 37$
POWER_HEADROOM_60	37 ≤ PH < 38
POWER_HEADROOM_61	$38 \le PH < 39$
POWER_HEADROOM_62	$39 \le PH < 40$
POWER_HEADROOM_63	PH ≥ 40

Table 9.1.8.4-1: Power headroom 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 of UTRAN carrier								
Devenueter	11	N		Band I, IV, VI, X		Band III, VIII,	Band IX					
Parameter	Unit	Normal	Extreme	and XI	VII	XII, XIII and XIV						
		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].

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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.

Table 10.1.2-1: Received Interference Power relative accuracy

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.

Table 10.1.3-1: Received Interference Power measurement reporting 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

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 +/- 3.29σ 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

Parameter	Unit			Va	lue		
Reference channel		R.2			R.0	R.1	
		FDD			FDD	FDD	
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	
Allocated subframes per Radio Frame		10			10	10	
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	1736	
For Sub-Frame 0	Bits	32			1736	1736	
For Sub-Frame 1, 2, 3, 6, 7, 8	Bits	0			0	0	
Number of Code Blocks per Sub-Frame		1			1	1	
(Note 5)							
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, 2, 3, 6, 7, 8		0			0	0	
Binary Channel Bits Per Sub-Frame							
For Sub-Frames 4, 9	Bits	456			6624	6336	
For Sub-Frame 5	Bits	360			6336	6048	
For Sub-Frame 0	Bits	176			5784	5520	
For Sub-Frame 1, 2, 3, 6, 7, 8	Bits	0			0	0	
Max. Throughput averaged over 1 frame	kbps	37.6			800	765	
Note 1: 2 symbols allocated to PDCCH for	r 10 MHz char	nnel BW.	4 symbol	s allocate	ed to PDC	CCH for 1	.4 MHz
channel BW.							
Note 2: Reference signal, synchronization							
Note 3: If necessary the information bit pa			sted to fac	cilitate the	e test imp	plementat	ion.
The payload sizes are defined in 3		13 [3].					
Note 4: Allocation is located in the middle					0 4 D.		
Note 5: If more than one Code Block is pro		tional CR	C seque	nce of L =	= 24 Bits	is attache	ed to
each Code Block (otherwise L = 0	Bit)						

A.3.1.1.2 TDD

Parameter	Unit			Va	lue				
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				
Special Subframe Configuration (Note 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									
(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									
channel BW. For special subframe	e (1 & 6) only	2 OFDM :	symbols a	are alloca	ated to PE	DCCH for	all		
bandwidths.									
Note 2: Reference signal, synchronization									
Note 3: If necessary the information bit pa			sted to fa	cilitate the	e test imp	plementat	tion.		
The payload sizes are defined in 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 [tional CD	0.000		04 Dit-	in ottoch -	d to		
Note 7: If more than one Code Block is pro	esent, an add	tional CR	C seque	nce ot L =	= 24 Bits	is attache	ed to		

Table A.3.1.1.2-1: PDSCH Reference Measurement Channels for TDD

Note 7: 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.3.1.2 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	lue		
Reference channel		R.8			R.6	R.7	
		FDD			FDD	FDD	
Channel bandwidth	MHz	1.4			10	10	
Number of transmitter antennas		1			1	2	
Control region OFDM symbols ^{Note1}	symbols	4			2	2	
Aggregation level	CCE	2			8	8	
		(Note 6)					
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	FICH, PHICI	H and PDC	CH.				
Note 2: DCI formats are defined in 3GPP	TS 36.212.						
Note 3: DCI format shall depend upon the	e test configu	ration.					
Note 4: Cell ID shall depend upon the tes							
Note 5: Payload size shall depend upon t	he test confi	guration.					
Note 6: For PDCCH using SI/RA/P-RNTI,	Aggregation	n level 4 is i	used.				

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 TDD		R.6 TDD	R.7 TDD	
Channel bandwidth	MHz	1.4		10	10	
Number of transmitter antennas		1		1	2	
Control region OFDM symbols ^{Note1}	symbols	4 (Note 6)		2	2	
Aggregation level	CCE	2 (Note 7)		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 Note 5: Payload size shall depend upon t Note 6: Only 2 OFDM symbols for specia	TS 36.212. e test configu t configuration he test confi	uration. on. guration.	CH.			
Note 7: For PDCCH using SI/RA/P-RNTI,	Aggregation	n level 4 is	used.			

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 (γ) specifies the PDSCH EPRE-to-RS EPRE ratios in OFDM symbols without and with 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 γ_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 γ 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. The number of PDCCH OFDM symbols in the non-MBSFN subframes is the same as specified in the RMC used in the test. The number of PDCCH OFDM symbols in the MBSFN subframe is the maximal allowed according to 3GPP TS 36.213 [16]. For any aggregation and PHICH allocation, the PDCCH and any unused PHICH groups are padded with resource element groups with a power level given by PDCCH_RA/RB and PHICH_RA/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.

The system information is scheduled in the allocations reserved for the OCNG patterns, in the subframes not configured for MBSFN. For this purpose the number of the RB-s allocated with PDSCH defined in the OCNG pattern can be reduced as necessary.

A.3.2.1.1 OCNG FDD pattern 1: outer resource blocks allocation in 10 MHz

Allocation	PDSCH Data	PMCH Data									
n _{PRB}		Subframe									
	0	5	4,9	1-3, 6-8							

Table A.3.2.1.1-1: OP.1 FDD: OCNG FDD Pattern 1

0	12	0	0	0	N/A	Note 1	N/A				
37 -	- 49	0	0	0	N/A	Note 1					
0-4	19	N/A	N/A	N/A	Note 4	N/A	Note 2				
Note 1: Note 2:	one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated. The parameter γ_{PRB} is used to scale the power of PDSCH.										
Note 3:	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 4: N/A: Not	OdB for Applicable	1 transmit anter e	ina with CRS,	+3dB for 2 trai	ismit antennas	s with CRS					

A.3.2.1.2 OCNG FDD pattern 2: full bandwidth allocation in 10 MHz

Allocation	Relative power level γ_{PRB} [dB]										
n _{PRB}		Subfr	ame		Data	Data					
	0	5	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 N/A Note 4 N								
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											
used to Note 2: Each ph each PF measure	lated pseudo rai scale the power nysical resource RB shall be uncc ement. The MBS cell-specific Ref	of PDSCH. block (PRB) is prrelated with d SFN data shall	assigned to l ata in other P be QPSK mo	MBSFN transm PRBs over the p odulated. PMCH	ission. The eriod of an I subframes	e data in y s shall					
Note 3: If two or	ter ${\mathcal Y}_{PRB}$ is used more transmit a shall be transmit	antennas with (CRS are used	d in the test, the							
and according to the antenna transmission mode 2. The parameter γ_{PRB} applies to each antenna port separately, so the transmit power of the PDSCH part of OCNG is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213. Note 4: 0dB for 1 transmit antenna with CRS, +3dB for 2 transmit antennas with CRS											
N/A: Not Applicabl	е										

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				Re	lativ	e po	wer	lev	el γ	, PRB	,[dl	B]			PDSCH Data	PMCH Data
n_{PRB}						S	Subf	rar	ne							Data
			0			5			4,	,9		1-:	3, 6	6-8	-	
			С	ont	rol r			FDI	/I syi	mb	ols⁵	lote 2				
		1	2	3	1	2	3	1	2	2	3	1		2		
0 – 1	N		0			0			C)		N/A		- Note 1	N/A	
4 – 5	Ν		0			0			0			N/A	١			
0 – 5	Ν	N	I/A			N/A			N/	/A		N	ote	4	N/A	Note 2
Note 2: E	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 γ_{PRB} is used to scale the power of PDSCH.															
Note 3: If O a e e	Reference Signals only in the first symbol of the first time slot. The parameter γ_{PRB} is used to scale the power of PMCH. Note 3: If two or more transmit antennas with CRS are used in the test, the PDSCH part of OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The parameter γ_{PRB} applies to each antenna port separately, so the transmit power of the PDSCH part of OCNG is equal between all the transmit antennas with CRS used in the test. The antenna															
		sion me 1 trans													13. as with CR	S
N: Normal N/A: Not Ap	plicable	Э														

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

Alloca		Re	ative power l	evel $\gamma_{_{PRB}}$ [c	JB]	PDSCH Data	PMCH Data					
n_{Pl}	RB		Subfr	ame		Data	Data					
		0	0 5 4,9 1-3,6-8									
0 –	5	0	Note 1	N/A								
0 –		N/A	N/A N/A Note 4 N/A Note 2									
Note 1:	with one	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										
Note 2:	Each ph each PR measure	arameter γ_{PRB} is used to scale the power of PDSCH. ach physical resource block (PRB) is assigned to MBSFN transmission. The data in ach PRB shall be uncorrelated with data in other PRBs over the period of any neasurement. The MBSFN data shall be QPSK modulated. PMCH subframes shall bontain cell-specific Reference Signals only in the first symbol of the first time slot.										
Note 3:	If two or	The parameter γ_{PRB} is used to scale the power of PMCH. If two or more transmit antennas with CRS are used in the test, the PDSCH part of OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS										
	and according to the antenna transmission mode 2. The parameter $\gamma_{\scriptscriptstyle PRB}$ applies to											
Note 4:	each antenna port separately, so the transmit power of the PDSCH part of OCNG is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213. 0dB for 1 transmit antenna with CRS, +3dB for 2 transmit antennas with CRS											
N/A: Not /	Applicable	e										

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 (γ) specifies the PDSCH EPRE-to-RS EPRE ratios in OFDM symbols without and with 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 γ_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 γ 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. The number of PDCCH OFDM symbols in the non-MBSFN subframes is the same as specified in the RMC used in the test. The number of PDCCH OFDM symbols in the MBSFN subframe is the maximal allowed according to 3GPP TS 36.213 [16]. For any aggregation and PHICH allocation, the PDCCH and any unused PHICH groups are padded with resource element groups with a power level given by PDCCH_RA/RB and PHICH_RA/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.

The system information is scheduled in the allocations reserved for the OCNG patterns, in the subframes not configured for MBSFN. For this purpose the number of the RB-s allocated with PDSCH defined in the OCNG pattern can be reduced as necessary.

A.3.2.2.1 OCNG TDD pattern 1: outer resource blocks allocation in 10 MHz

All	ocation		Relative power level $\gamma_{_{PRB}}$ [dB]								
	n _{PRB}		Subfra								
		0	5	3 , 4, 8, 9 ^{Note 2}	1, 6						
-											
() – 12	0	0	0	0	Note 1					
3	7 – 49	0	0 0 0 0								
Note 1:	• •		are assigned to an arl over the OCNG PDSC	-		•					
	is QPSK mod	ulated The parame	eter ${\gamma}_{\scriptscriptstyle PRB}$ is used to sc	ale the power of PDS	CH.						
Note 2:	4.2-2 in 3GPF	es available for DL transmission depends on the Uplink-Downlink configuration defined in Table 3GPP TS 36.211 [16]. more transmit antennas with CRS are used in the test, the OCNG shall be transmitted to the sers by all the transmit antennas with CRS and according to the antenna transmission mode 2. Th									
Note 3:											
	parameter $\gamma_{\scriptscriptstyle P}$	_{RB} applies to each	n antenna port separat	ely, so the transmit p	ower is equal be	etween all the					
	transmit anter in 3GPP TS 3		ed in the test. The ante	enna transmission mo	des are specifie	ed in section 7.1					

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	ų			Relative power level $\gamma_{_{PRB}}$ [dB]															
n _{PRB}	length						S	oecia	l sub	fram	e cor	nfigur	atior	1					
			0	1 2 3 4 5 6 7 8									,						
	C D			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		0	()		0	\bigvee	$\sqrt{}$	\bigvee	$ \land $	
37 – 49	N										$ \ge $								
Note 1: Special su	ubframe o	config	juratic	ons ar	e defi	ned ir	n Tabl	e 4.2-	1 in 1	TS 36	6.211	[16].							

A.3.2.2.2 OCNG TDD pattern 2: full bandwidth allocation in 10 MHz

Allocation **PDSCH Data** Relative power level γ_{PRB} [dB] n_{PRB} Subframe 3, 4, 8, 9^{Note} 0 5 1,6 0-49 0 0 0 0 Note 1 These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual Note 1: UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated. The parameter $\gamma_{\it PRB}$ 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: If two or more transmit antennas with CRS are used in the test, the OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The parameter $\gamma_{_{PRB}}$ applies to each antenna port separately, so the transmit power is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213.

Table A.3.2.2.2-1: OP.2 TDD: OCNG TDD Pattern 2 for 5ms downlink-to-uplink switch-point periodicity

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		Relative power le	vel $\gamma_{_{PRB}}$ [dB]		PDSCH Data
n_{PRB}		Subfra	me		
	0	5	3 , 4, 8, 9 ^{Note 2}	1, 6	
0 – 1	0	0	0	0	
4 – 5	0	Note 1			
	data transmitted ov	e assigned to an arbitr ver the OCNG PDSCH er $\gamma_{_{PRB}}$ is used to scal	s shall be uncorrelate	ed pseudo rand	
Note 2: Subframes avail in 3GPP TS 36	.211 [16].				
		s with CRS are used ir antennas with CRS an	,		
• 1	nnas with CRS use	n antenna port separat ed in the test. The ante			

Table A.3.2.2.3-2: OP.1 TDD: OCNG TDD Pattern 1 for special subframe configuration with 5 ms downlink-to-uplink switch-point periodicity

Allocation	r.		Relative power level $\gamma_{_{PRB}}$ [dB]																
n _{PRB}	length			Special subframe configuration															
		()	1 2 3 4 5 6 7 8									3						
	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 – 1		(n		h		0		h		0		0	(h	()	()
0 - 1	Ν	, i	J		J		0		J		0		0	, i)	\land	<	\land	<
4 – 5)									
4 = 5	Ν	, t																	
Note 1: Special subframe configurations are defined in Table 4.2-1 in TS 36.211 [16].																			

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		Relative power le	vel $\gamma_{_{PRB}}$ [dB]		PDSCH Data				
n_{PRB}		Subframe							
	0	5	3 , 4, 8, 9 ^{Note 2}	1, 6					

	0-5	0	0	0	0	Note 1			
Note 1:	UE; the data tra	ansmitted over the	re assigned to an arbit OCNG PDSCHs shall	be uncorrelated pseud					
Note 2	modulated. The parameter γ_{PRB} is used to scale the power of PDSCH. Subframes available for DL transmission depends on the Uplink-Downlink configuration in Table 4.2-2 in 3GPP								
NOIC 2.		TS 36.211 [16].							
Note 3:	If two or more transmit antennas with CRS are used in the test, the OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The								
	parameter γ_{PRB} applies to each antenna port separately, so the transmit power is equal between all the transmit								
	antennas with CRS used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213.								

A.3.3 Reference DRX Configurations

Parameter	Va	lue	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.						

Table A.3.3-1: Reference DRX Configurations

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.

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 R	F Channel Number		1	Only one FDD carrier frequency is used.
Channel B	andwidth (BW _{channel})	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	onfiguration		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	>7	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	T3	T1	T2	Т3		
E-UTRA RF Channel Number			1			1			
BW _{channel}	MHz		10		10				
OCNG Patterns defined in A.3.2.1. 2 (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 ^{Note 1}	-								
OCNG_RB ^{Note 1}				1					
Qrxlevmin	dBm	-140	-140	-140	-140	-140	-140		
Pcompensation	dB	0	0	0	0	0	0		
Qhyst _s	dB	0	0	0	0	0	0		
Qoffset _{s, n}	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		
$N_{\scriptscriptstyle oc}$ Note2	dBm/15 kHz			I	-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 _{detect,EUTRAN_Intra}	See Table 4.2.2.3-1 in section 4.2.2.3
T _{evaluateFDD,intra}	See Table 4.2.2.3-1 in section 4.2.2.3
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 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 condition	Active cell		Cell2	
	Neighbour cells		Cell1	
Final condition	Visited cell		Cell1	
E-UTRA R	F Channel Number		1	Only one TDD carrier frequency is used.
Channel Ba	andwidth (BW _{channel})	MHz	10	
Time offset	t between cells	μs	3	Synchronous cells
Access Ba	rring Information	-	Not Sent	No additional delays in random access procedure.
Special sul	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	>7	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

Parameter	Unit		Cell 1		Cell 2			
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel			1			1		
Number								
BW _{channel}	MHz		10			10		
OCNG Pattern								
defined in A.3.2.2.2		OF	P.2 TDD		O	P.2 TDD		
(OP.2 TDD)								
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 ^{Note 1}								
OCNG_RB ^{Note 1}								
Qrxlevmin	dBm		-140		-140			
Pcompensation	dB		0		0			
Qhyst _s	dB		0		0			
Qoffset _{s, n}	dB		0		0			
Cell_selection_and_								
reselection_quality_		F	RSRP		RSRP			
measurement			1					
$\mathbf{\hat{E}}_{s}/\mathbf{I}_{ot}$	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	ot sent		Ν	lot sent		
Propagation				AV	VGN			
Condition								
Note 1: OCNG shall be						t 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	er subcarriers and	time and sh	all be mo	odelled a	is AWGN of	appropria	ate	
, N	<i>oc</i> to be fulfilled.							
power for	to be fulfilled.					-		
Note 3: RSRP levels ha			aramete	rs for info	ormation pui	rposes. T	ney are	
not settable	parameters thems	selves.						

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
Tevaluate, E-UTRAN_ int	ra See Table 4.2.2.3-1 in section 4.2.2.3
	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		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 offset between cells			3 ms	Asynchronous cells
PRACH configuration		CH configuration		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 cell re-selection reaction time is taken into account.
Τ2		S	>7	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			1			2		
number								
BW _{channel}	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		0			0		
PHICH_RB	dB		0		0			
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	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 _{x, high}	dB		48 44			48		
Thresh _{serving, low}					44			
Thresh _{x, low}	50			50				
	Propagation Condition AWGN							
Note 1: OCNG shall be used s				and a	constant to	tal 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	AWGN	of app	ropriate pov	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: $T_{higher_priority_search} + T_{evaluateFDD,inter} + T_{SI}$, and to lower priority cell can be expressed as: $T_{evaluateFDD,inter} + T_{SI}$,

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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_{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 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 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 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	Access 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 36.211		
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	>7	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	Unit Cell 1			Cell 2			
		T1	T2	T3	T1	T2	Т3	
E-UTRA RF Channel			1			2		
number								
BW _{channel}	MHz		10			10		
OCNG Pattern defined in								
A.3.2.2.2 (OP.2 TDD)		OF	.2 TDD		OP	.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 ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							

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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{E}_{s}/I_{ot}	dB	14	14	14	-4	-infinity	12
\hat{E}_s / N_{oc}	dB	14	14	14	-4	-infinity	12
Treselection _{EUTRAN}	S 0 0						
Snonintrasearch	dB	50 Not sent					
Thresh _{x, high}	dB	48 48					
Thresh _{serving, low}	dB	44 44					
Thresh _{x, low}	dB	50 50					
Propagation Condition							
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							
$N_{\scriptscriptstyle oc}$ to be fulfilled.							
Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.							

A.4.2.6.2 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: $T_{higher_priority_search} + T_{evaluate,E-}$ $UTRAN_{inter} + T_{SI-EUTRA}$, 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 _{SI-EUTRA}	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.4.3 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

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. E-UTRA cell 1 is 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		
Initial condition	Active cell		Cell 1	UE is on cell 1 in the initialisation phase, so that reselection to cell 2 occurs during T2		
T2 end	Active cell		Cell 2	UE shall perform reselection to cell 2 during T2		
condition	Neighbour cell		Cell 1			
T3 end	Active cell		Cell 1	UE shall perform reselection to cell 1 during T3		
condition	Neighbour cell		Cell 2			
E-UTRA P	RACH configuration		4	As specified in table 5.7.1-2 in TS 36.211		
	E_UTRA 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.		
Τ1		S	>20	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	85	T2 needs to be defined so that cell re-selection reaction time is taken into account.		
Т3		S	25	T3 needs to be defined so that cell re-selection reaction time is taken into account.		

Parameter	Unit					
		T1 T2		T3		
E-UTRA RF Channel			1			
number						
BW _{channel}	MHz		10			
OCNG Patterns defined in						
A.3.2.1.2 (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			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
Qqualmin for UTRA	dB	-20				
neighbour cell	uВ		-20			
Qrxlevmin for UTRA	dBm		-115			
neighbour cell	ubiii		-115			
Qrxlevmin	dBm		-140			
N_{oc}	dBm/15 kHz		-98			
RSRP	dBm/15 KHz	-84	-84	-84		
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$	dB	14	14	14		
\hat{E}_s/N_{oc}	dB	14	14	14		
Treselection	S		0			
Snonintrasearch	dB		50			
Thresh _{x, high} (Note 2)	dB	40				
Propagation Condition		AWGN				
Note 1: OCNG shall be use	ed such that both	cells are	fully alloc	ated		
and a constant tota	and a constant total transmitted power spectral density is					
achieved for all OF						
		n _{x, high} which is included in E-				
UTRA system infor	mation, and is a	threshold	for the U	TRA		
target cell						

Table A.4.3.1.1.1-3: Cell specific test parameters for cell 2(UTRA)

Parameter	Unit	Cell 2 (UTRA)				
		T1 T2 T		T3		
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	-Infinity	11	-5		
I _{oc}	dBm/3,84 MHz	-70				
CPICH_Ec/lo	dB	-Infinity	-10.33	-16.19		
CPICH_RSCP	dBm	-Infinity -69 -85				
Propagation Condition		AWGN				
Qqualmin	dB	-20				
Qrxlevmin	dBm	-115				
QrxlevminEUTRA	dBm		-140			

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UE_TXPWR_MAX_RACH	dBm	21		
Treselection	S	0		
Sprioritysearch1	dB	62		
Sprioritysearch2	dB	0		
Thresh _{serving, low}	dB	36		
Thresh _{x, low} (Note 1)	dB	50		
Note 1 : This refers to the value of Thresh _{x, low} which is included in UTRA system information, and is a threshold for the E-UTRA target cell				

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 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 higher priority shall be less than 81 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: $T_{higher_priority_search} + T_{evaluateUTRA_FDD} + T_{SI-UTRA}$

Where:

$T_{higher_priority_search}$	See section 4.2.2; 60s is assumed in this test case
$T_{evaluateUTRA-FDD}$	See Table 4.2.2.5.1-1
T _{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 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 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.4.3.1.2.1-1: 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		Cell1	E-UTRAN cell
T1 end condition	Active cells		Cell1	UE shall perform reselection to cell 1 during T for subsequent iterations of the test 1
	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	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	T2		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 _{channel}	MHz		10	
OCNG Patterns defined in				
A.3.2.1.2 (OP.2 FDD)		O	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	1		
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB]		
OCNG_RB ^{Note 1}	dB]		

Qqualmin for UTRA neighbour cell	dB		-20	
Qrxlevmin for UTRA neighbour cell	dBm	-115		
Qrxlevmin	dBm		-140	
N _{oc}	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 _{EUTRAN}	S	0		
Snonintrasearch	dB	N	lot sent	
Thresh _{serving, low}	dB		44	
Thresh _{x, low} (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_{x, low} which is included in E-UTRA system information, and is a threshold for the UTRA target cell. 				

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			
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 _{oc}	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 _{x, high} (Note 1)	dB	48			
Note 1 : This refers to the value of Thresh _x , high which is included in UTRA system information, and is a threshold for the 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 _{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 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 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.4.3.1.3.1-1: 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		Cell1	E-UTRAN cell
T1 end Active cells condition			Cell1	UE shall perform reselection to cell 1 during T1 for subsequent iterations of the test
	Neighbour cell		Cell2	
T3 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T3
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 Informatior	ccess Barring	-	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	<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
Τ3		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 2
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.4.3.1.3.1-2: Cell specific test parameters for cell 1 (E-UTRA)

Parameter	Unit	Cell 1				
		T1	T2	T3	T4	
E-UTRA RF Channel number		1				
BW _{channel}	MHz	10				
OCNG Patterns defined in A.3						
		OP.2 FD	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				
OCNG_RA ^{Note 1}	dB	0				
OCNG_RB ^{Note 1}	dB	0				
Qqualmin for UTRA neighbour		-20				
Qrxlevmin for UTRA neighbou		-115				
Qrxlevmin	dBm	-140				
N _{oc}	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	
TreselectionEUTRAN	S	0				
Snonintrasearch	dB	Not sent	t			
Thresh _{serving, low}	dB	44				
Thresh _{x, low} (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_x, low which is included in E-UTRA system inform

threshold for the UTRA target cell.

Parameter	Unit	Cell 2 (UTRA)					
		T1	T2	T3	T4		
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	13	13		
I _{oc}	dBm/3,84 MHz	-70					
CPICH_Ec/lo	dB	-10.21	-10.21	-10.21	-10.21		
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 _{x, high} (Note 1)	dB	44					
	Note 1 : This refers to the value of Thresh _{x, high} 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 (UTRA)
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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 _{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 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 (Cell 1), and 1 UTRA TDD cell (Cell 2) 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

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	E-UTRAN cell
T1 end condition	Active cell		Cell1	UE shall perform reselection to cell 1 during T1 for subsequent iterations of the test
	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 c	cell 1		normal	
E-UTRA PRA configuration	СН		4	As specified in table 5.7.1-2 in TS 36.211
Time offset be	etween cells		3 ms	Asynchronous cells
Access Barrin	g Information	-	Not sent	No additional delays in random access procedure.
Treselection		S	0	
DRX cycle ler	ngth	S	1,28	
HCS			Not used	
T1	T1		85	T1 need to be defined so that cell re-selection reaction time is taken into account.
T2		S	25	

Parameter		Unit	Cell 1		
			T1	T2	
E-UTRA	RF Channel			1	
Number					
BW _{channe}	el	MHz		10	
PBCH_R	A	dB			
PBCH_R	В	dB			
PSS_RB		dB			
SSS_RB		dB			
PCFICH_	_PA	dB			
PHICH_F	PA	dB			
PHICH_F		dB	0	0	
PDCCH_	PA	dB			
PDCCH_	PB	dB			
PDSCH_	PA	dB			
PDSCH_	PB	dB			
OCNG_F	RA ^{Note1}	dB			
OCNG_F	RB ^{Note1}	dB			
Qrxlevmi	n	dBm/15kHz	-140	-140	
N_{oc}		dBm/15kHz	-1	98	
RSRP		dBm/15kHz	-87	-101	
\hat{E}_{s}/I_{ot}		dB	11	-3	
Snonintrasea	arch	dB	Not	sent	
Thresh _{ser}	ving, low	dB	46 (-9	94dBm)	
Thresh _{x, low} (Note2)		dB	24 (-79dBm)		
Propagat	tion Condition		AV	VGN	
Note 1:	constant total transmitted power spectral density is achieved				
Note2:	for all OFDM symbols. This refers to the value of Threshx, low which is included in E-UTRA system information, and is a threshold for the UTRA TDD target cell				

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		0 DwPTS			PTS
		T1	T2	T1	T2
UTRA RF Channel Number (Note1)			Chan	inel 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			AW	GN	
Qrxlevmin	dBm		-1	03	
Qoffset1 _{s,n}	dB		C1, 0	C2: 0	
Qhyst1 _s	dB		()	
Thresh _{x, high} (Note2)	dB 46 (-94dBm)				
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 _{x, high} which is included in UTRA system information, and is a threshold for the E-					ded in
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 _{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.4.3.2.2.2.3 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.4.3.3.1-3. 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		Cell1	E-UTRAN cell
T1 end condition	Active cells		Cell1	UE shall perform reselection to cell 1 during T1 for subsequent iterations of the test
	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		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.4.3.3.1-2: Cell specific test parameters for cell 1(E-UTRA)

Parameter	Unit	Cell 1		
		T1	T2	
E-UTRA RF Channel			1	
number				
BW _{channel}	MHz		10	
OCNG Patterns defined in				
A.3.2.2.2 (OP.2 TDD)		OF	P.2 TDD	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB	0		
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			

Qqualmin for UTRA neighbour cell	dB		-20	
Qrxlevmin for UTRA neighbour cell	dBm		-115	
Qrxlevmin	dBm		-140	
N _{oc}	dBm/15 k	Hz	-98	
RSRP	dBm/15 k	(Hz -86	-102	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	12	-4	
\hat{E}_s/N_{oc}	dB	12	-4	
Treselection _{EUTRAN}	S		0	
Snonintrasearch	dB		Not sent	
Thresh _{serving, low}	dB		44	
Thresh _{x, low} (Note 2)	dB		42	
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 :This refers to the value of Thresh _{x, low} 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	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 _{oc}	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 _{x, high} (Note 1)					
Note 1 : This refers to the value of Thresh _{x, high} 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
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. E-UTRA cell 1 is 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.

Para	ameter	Unit	Value	Comment
Initial	Active cell		Cell 1	UE is on cell 1 in the initialisation phase, so that reselection to
condition				cell 2 occurs during T2
T2 end	Active cell		Cell 2	UE shall perform reselection to cell 2 during T2
condition	Neighbour cell		Cell 1	
T3 end	Active cell		Cell 1	UE shall perform reselection to cell 1 during T3
condition	Neighbour cell		Cell 2	
Uplink-dowr configuration			1	As specified in table 4.2.2 in TS 36.211
Special sub configuration			6	As specified in table 4.2.1 in TS 36.211
PRACH con cell 1	figuration of		53	As specified in table 4.7.1-3 in TS 36.211
CP length o	f cell 1		Normal	
Time offset	between cells		3 ms	Asynchronous cells
Access Barr	ring	-	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	>20	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	85	T2 needs to be defined so that cell re-selection reaction time is taken into account.
Т3		S	25	T3 needs 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 _{channel}	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 ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				

Q _{rxlevmin}	dBm/15kHz	-140	-140	-140	
N_{oc}	dBm/15kHz	-98			
RSRP	dBm/15kHz	-87 -87		-87	
\hat{E}_{s}/I_{ot}	dB	11 11		11	
Thresh _{x, high} (Note2)	dB	24(-79dBm)			
Snonintrasearch	dB	46			
Propagation Condition		AWGN			
Note1: OCNG shall be	used such that cel	l is fully allo	ocated and	а	
all OFDM symbol Note2: This refers to the	constant total transmitted power spectral density is achieved for all OFDM symbols. This refers to the value of Thresh _{x, high} 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)				Char	nel 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	-inf	11	-3	-inf	11	-3
I _{oc}	dBm/1.28 MHz	-80					
PCCPCH RSCP	dBm	-inf	-72	-86		n.a.	
Propagation Condition		AWGN					
Q _{rxlevmin}	dBm	-103					
Qoffset1 _{s,n}	dB	C1, C2: 0					
Qhyst1 _s	dB	0					
Snonintrasearch	dB	Not sent					
Thresh _{serving, low}	dB	24 (-79dBm)					
Thresh _{x, low} (Note2)	dB	46 (-94dBm)					
Note1: In the case of	In the case of multi-frequency cell, the UTRA RF Channel Number				mber		
Note2: This refers to	is the primary frequency's channel number. Note2: This refers to the value of Thresh _{x, low} 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
$T_{evaluateUTRA_TDD}$	19.2s, See Table 4.2.2.5.2-1
T _{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 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 (Cell 1), and 1 UTRA TDD cell (Cell 2) 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

Paran	neter	Unit	Value	Comment
Initial condition	Active cell		Cell 1	E-UTRAN cell
T1 end	Active cell		Cell1	UE shall perform reselection to cell 1 during T1 for
condition				subsequent iterations of the test
	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-downlink of cell 1	configuration of		1	As specified in table 4.2.2 in TS 36.211
Special subframe of cell 1	Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
PRACH configura	PRACH configuration of cell 1		53	As specified in table 4.7.1-3 in TS 36.211
CP length of cell	1		Normal	
Time offset betwe	een cells		3 ms	Asynchronous cells
Access Barring I	nformation	-	Not	No additional delays in random access procedure.
			sent	
Treselection	Treselection		0	
DRX cycle length		S	1,28	
HCS			Not	
			used	
T1	T1		85	
T2		S	25	

Parameter	Unit	Ce	ll 1	
		T1	T2	
E-UTRA RF Channel			1	
Number				
BW _{channel}	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 ^{Note1}	dB			
OCNG_RB ^{Note1}	dB			
Qrxlevmin	dBm/15kHz	-140	-140	
N _{oc}	dBm/15kHz	-9	98	
RSRP	dBm/15kHz	-87	-101	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	11	-3	
Snonintrasearch	dB	Not	sent	
Thresh _{serving, low}	dB		4dBm)	
Thresh _{x, low} (Note2)	dB	24 (-79dBm)		
Propagation Condition		AWGN		
constant total tra for all OFDM syn Note2: This refers to the UTRA system in	OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. This refers to the value of Thresh _{x, low} 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)

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)

Parameter	Unit		Cell 2	(UTRA)	
Timeslot Number		0		DwPTS	
		T1	T2	T1	T2
UTRA RF Channel Number (Note1)			Char	nel 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			AW	'GN	
Qrxlevmin	dBm	-103			
Qoffset1 _{s,n}	dB	C1, C2: 0			
Qhyst1 _s	dB	0			
Thresh _{x, high} (Note2)	dB	46 (-94dBm)			
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 _{x, high} which is included in UTRA system information, and is a threshold for the E-UTRA target cell					

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A.4.3.4.2.1.3	7.68 Mcps TDI	O option
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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: $T_{evaluateUTRA_TDD} + T_{SI_UTRA}$,

Where:

$T_{evaluateUTRA_TDD}$	19.2s, See Table 4.2.2.5.2-1
T_{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.4.3.4.3 EUTRA TDD-UTRA TDD cell reselection in fading propagation conditions: UTRA TDD is of lower priority

A.4.3.4.3.1 Test Purpose and Environment

This test is to verify the requirement for the EUTRA TDD- UTRA TDD inter-RAT cell reselection requirements specified in section 4.2.2.5.2 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 TDD and one E-UTRA TDD cells as given in tables A.4.3.4.3.1-1, A.4.3.4.3.1-2 and A.4.3.4.3.1-3. The test consists of four successive time periods, with time duration of T1 T2, T3 and T4 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.

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	E-UTRAN cell
T1 end Active cells condition			Cell1	UE shall perform reselection to cell 1 during T1 for subsequent iterations of the test
	Neighbour cell		Cell2	
T3 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T3
condition	Neighbour cell		Cell1	
E-UTRA P	RACH configuration		53	As specified in table 5.7.1-3 in TS 36.211
Uplink-dow cell 1	nlink configuration of		1	As specified in table 4.2.2 in TS 36.211
Special sul cell 1	Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
E_UTRA Access Barring		-	Not Sent	No additional delays in random access
Information				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. T1 is terminated when the UE starts to send preambles to cell 1
T2	T2		64	The start of T2 is defined as the time when the UE starts to send PRACH preambles to cell 1
Τ3		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 PRACH preambles to cell 2
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.4.3.4.3.1-1: General test parameters for EUTRA TDD- lower priority UTRA TDD inter RAT cell re-selection test case

Parameter	Unit		Ce	1		
		T1	T2	T3	T4	
E-UTRA RF Channel				1	•	
number						
BW _{channel}	MHz	10				
OCNG Patterns defined in			OP.2	TDD		
A.3.2.2.2 (OP.2 TDD)						
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB					
PDCCH_RA	dB		(C		
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
Qrxlevmin for UTRA	dBm		-1	03		
neighbour cell						
Qrxlevmin	dBm		-1	40		
N _{oc}	dBm/15 kHz		-1	04		
RSRP	dBm/15 KHz	-82 -82 -107 -107				
\hat{E}_{s}/I_{ot}	dB	22 22 -3 -3				
\hat{E}_s/N_{oc}	dB	22 22 -3 -3			-3	
TreselectionEUTRAN	S	0				
Snonintrasearch	dB	Not sent				

Thresh _{serving, low}	dB	44			
Thresh _{x, low} (Note 2)	dB	24			
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 : This refers to the value of Thresh _{x, low} which is included in E-UTRA system information, and is a threshold for the UTRA target cell.					

Table A.4.3. 4.3.1-3: Cell specific test parameters for cell 2 (UTRA)

Parameter	Unit	Cell 2 (UTRA)							
Timeslot Number		0			DwPTS				
		T1	T2	T3	T4	T1	T2	T3	T4
UTRA RF Channel Number (Note1)		Channel 2							
PCCPCH_Ec/lor	dB		-3						
DwPCH_Ec/lor	dB						(0	
OCNS_Ec/lor	dB		-;	3				-	
\hat{I}_{or}/I_{oc}	dB	13	13	13	13	13	13	13	13
I _{oc}	dBm/1.28 MHz	-80							
PCCPCH RSCP	dBm	-70	-70	-70	-70	n.a.	n.a.	n.a.	n.a.
Propagation Condition		AWGN							
Qrxlevmin	dBm	-103							
Qrxlevmin _{EUTRA}	dBm	-140							
UE_TXPWR_MAX_RACH	dBm				2	1			
Treselection	S				()			
Thresh _{x, high} (Note2)	dB				4	4			
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 _{x, high} which is included in UTRA system information, and is a threshold for the E-UTRA target cell									

A.4.3. 4.3.2 Test Requirements

The probability of reselection from cell 1 to 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 the SYNCH-UL sequene in the UpPTS 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: $T_{evaluateUTRA_TDD} + T_{SI-UTRA}$

Where:

$T_{evaluateUTRA_TDD}$	19.2s, See Table 4.2.2.5.2-1
T _{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 for lower priority cell reselection, allow 21 s.

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 ARF0	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	, ,		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 _{channel}	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 ^{Note 1}	dB]	
	dB		

Qrxlevmin	dBm		-140				
N _{oc}	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				
T _{reselectionEUTRAN}	S	0					
Snonintrasearch dB Not sent							
Thresh _{serving, low}	dB		44				
Thresh _{x, low} (Note 2)							
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 _{x, low} 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 1		
RXLEV	dBm	-90	-75	
RXLEV_ACCESS_MIN	dBm	-105		
MS_TXPWR_MAX_CCH	dBm	24		

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 _{measureGSM}	See Table 4.2.2.5.3-1 in section 4.2.2.5.3.
T _{BCCH}	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.
-	F Channel Number		1	1 E-UTRA TDD carrier frequency
GSM ARFCN Uplink-downlink configuration of cell 1			1	12 GSM BCCH carriers are usedAs 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 CP length of cell 1			53 Normal	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 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	on channel		AWGN	

Table A.4.4.2-1: General test parameters for E-UTRA TDD GSM cell re-selection test case

Table A.4.4.2-2: Cell-specific test parameters for Cell 1 – E-UTRA TDD cell

Parameter	Unit	Cell 1		
		T1	T2	
E-UTRA RF Channel			1	
number				
BW _{channel}	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	1		
PHICH_RA	dB	1		
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			

Qrxlevmin	dBm		-140		
N _{oc}	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		
TreselectionEUTRAN	S	0			
Snonintrasearch	dB	Not sent			
Thresh _{serving, low}	dB	44			
Thresh _{x, low} (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 _{x, low} which is included in E-UTRA system					
information, and is a threshold for GSM target cell.					

Parameter	Unit	Cell 2 (GSM)	
Farameter	Onit	T1	T2
Absolute RF Channel Number		ARFCN ²	1
RXLEV	dBm	-90	-75
RXLEV_ACCESS_MIN	dBm	-105	
MS_TXPWR_MAX_CCH	dBm	24	

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 _{measureGSM}	See Table 4.2.2.5.3-1 in section 4.2.2.5.3.
T _{BCCH}	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

	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 Channel Bandwidth (BW _{channel})		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	Се	Cell 1		
		T1	T2		
E-UTRA RF Channel number		,	1		
BW _{channel}	MHz	1	0		
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 ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
N _{oc}	dBm/15 kHz	-98			
RSRP	dBm/15 KHz	-89	-102		
\hat{E}_{s}/I_{ot}	dB	9	-4		
\hat{E}_s/N_{oc}	dB	9	-4		
Treselection _{EUTRAN}	S	()		
Snonintrasearch	dB	Not sent			
cellReselectionPriority	-	1			
Qrxlevmin	dBm	-140			
Qrxlevminoffset	dB	0			
Pcompensation	dB	0			
S _{ServingCell}	dB	51	38		
Thresh _{serving, low}	dB	4	4		
Propagation Condition		AWGN			
Note 1: OCNG shall be used such that b	oth cells are fully	allocated and a constant	total transmitted power		
spectral density is achieved for all OFDI	V 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 _{oc}	dBm/ 1.2288 MHz	-55	
CDMA2000 HRPD Pilot Strength	dB	-3	-3
Propagation Condition		AWGN	J
S _{nonServingCell,x}		-6	
Treselection	S	0	
hrpd-CellReselectionPriority	-	0	
Thresh _{x, low}		-14	

Table A.4.5.1.1.1-3: Cell Specific	Test 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_{evaluateHRPD} + T_{SI-HRPD}

Where:

T_evaluatHRPDSee Table 4.2.2.5.4-1T_SI-HRPDMaximum repetition period of relevant system information blocks that need to be received
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			Comment
Initial condition	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	Cell 1			
		T1	T2		
E-UTRA RF Channel number		1			
BW _{channel}	MHz	10			
OCNG Patterns defined in A.3.2.1.1					
(OP.2 FDD)		OP.2 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 ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
N_{oc} Note 2	dBm/15 kHz	-98			
RSRP ^{Note 3}	dBm/15 KHz	-89	-102		
\hat{E}_{s}/I_{ot}	dB	9	-4		
\hat{E}_s/N_{oc}	dB	9	-4		
Treselection _{EUTRAN}	S	0			
Snonintrasearch	dB	Not se	ent		
cellReselectionPriority	-	1			
Qrxlevmin	dBm	-140			
Qrxlevminoffset	dB	0			
Pcompensation	dB	0			
S _{Serving} Cell	dB	51	38		
Thresh _{serving, low}	dB	44			
Propagation Condition		AWG	N		
Note 1: OCNG shall be used such that I	ooth cells are fully a				
spectral density is achieved for all OFD					
Note 2: Interference from other cells and		specified in the test is as	sumed to be constan		
		AWGN of appropriate po			

Table A.4.6.1.1.1-2: Cell Specific Test Parameters for E-UTRAN FDD (Cell # 1)

fulfilled. Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Parameter	Unit	Cel	12	
		T1	T2	
cdma2000 1X RF Channel Number		1		
$\frac{\text{Pilot } E_{c}}{I_{\text{or}}}$	dB	-7		
Sync E _c I _{or}	dB	-16		
$\frac{\text{Paging } E_c}{I_{\text{or}}} $ (4.8 kbps)	dB	-1	2	
\hat{I}_{or}/I_{oc}	dB	0	0	
I _{oc}	dBm/ 1.2288 MHz	-5	5	
CDMA2000 1xRTT Pilot Strength	dB	-10	-10	
Propagation Condition		AW	GN	
SnonServingCell,x		-20		
Treselection	S	C		
oneXRTT-CellReselectionPriority	-	0		
Thresh _{x, low}		-2	8	

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 _{SI-cdma2000 1X}	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 Channel Number			1	Only one FDD carrier frequency is used.
Channel Bandwidt	h (BW _{channel})	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 between cells			3 ms	Asynchronous cells
T1		S	5	
T2		S	≤5	
Т3		S	1	

Parameter	Unit	Cell 1			Cell 2		
		T1	T2	T3	T1	T2	Т3
E-UTRA RF Channel			1			1	
Number							
BW _{channel}	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						
PDCCH_RA	dB		0			0	
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	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		

Table A.5.1.1.1-2: Cell specific test parameters for E-UTRAN FDD-FDD 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.5.1.1.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 50ms 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.5.1.2 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.

Parameter		Unit	Value	Comment
			DL Reference Measurement	
PDSCH parameter	rs		Channel R.0 TDD	As specified in section A.3.1.1.2
•			DL Reference Measurement	
PCFICH/PDCCHP	HICH parameters		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		1	Only one TDD carrier frequency is used.
Channel Bandwidt	h (BW _{channel})	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 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		
		T1	T2	Т3	T1	T2	T3
E-UTRA RF Channel			1			1	
Number							
BW _{channel}	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 ^{Note 1}	dB						
OCNG_RB ^{Note 1}	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: OCNG shall be use for all OFDM symb		lls are fully al	located and a	constant total	transmitted powe	er spectral densi	y 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_{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 5.2.2.4.2.

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	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 _{channel})	MHz	10	
A3-Offset		dB	-4	
Hysteresis		dB	0	
TimeToTrigger		dB	0	
Filter coefficient			0	L3 filtering is not used
DRX	DRX		DRX_L	As specified in section A.3.3
PRACH configurat	ion		4	As specified in table 5.7.1-2 in
				3GPP TS 36.211
Access Barring Inf	ormation	-	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	
T3		S	1	

Parameter	Unit	Cell 1			Cell 2			
		T1	T2	T3	T1	T2	Т3	
E-UTRA RF Channel			1			2		
number								
BW _{channel}	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 ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB		I			r		
\hat{E}_{s}/I_{ot}	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 used	d such that both cells	s are fully all	ocated and a d	constant total trai	nsmitted powe	er spectral density	/ 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 $\,N_{oc}\,$ 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 inter frequency handover requirements 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 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.

Para	meter	Unit	Value	Comment
PDSCH paramete	ers		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/	/PHICH		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.
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
E-UTRA RF chan	E-UTRA RF channel number		1, 2	Two TDD carriers are used
Channel Bandwic	lth (BW _{channel})	MHz	10	
A3-Offset		dB	-4	
Hysteresis	Hysteresis		0	
Time to Trigger	Time to Trigger		0	
Filter coefficient			0	
DRX			DRX_L	As specified in section A.3.3
CP length			Normal	
Access Barring Ir	formation	-	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 c	onfiguration		1	As specified in table 4.2-2 in 3GPP TS 36.211
PRACH configura	ation		53	As specified in table 5.7.1-3 in 3GPP TS 36.211
Time offset betwe	en cells		3 μs	Synchronous cells
T1		s	5	
T2		S	≤5	
Т3		s	1	

Table A.5.1.4.1-1: General test parameters for E-UTRAN TDD-TDD Inter frequency handover test case

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	Т3	T1	T2	Т3
E-UTRA RF Channel			1			2	·
number							
BW _{channel}	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 ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB			•			
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{oc}$	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		lls 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

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_{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 5.2.2.4.2.

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 parameter	rs		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	E-UTRA RF channel number		1, 2	Two FDD carriers are used
Channel Bandwidt	h (BW _{channel})	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 Inf	ormation	-	Not sent	No additional delays in random
				access procedure
Time offset betwee	en cells		3 ms	Asynchronous cells
T1		S	≤5	
T2		S	1	

Parameter	Unit	Cel	1	Cel	12
		T1	T2	T1	T2
E-UTRA RF Channel		1		2	
number					
BW _{channel}	MHz	10)	10	0
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				
PHICH_RB	dB	0		0)
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	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	1			AWGN	
	e used such that be	oth cells are fully al	located and a con	stant total transmitted	power spectral
	ieved for all OFDM				•
			•	st is assumed to be con	
subcarriers an Note 3: RSRP levels h parameters th	have been derived	e modelled as AWG from other paramet	N of appropriate ers for informatior	power for N_{oc} to be function purposes. They are n	lfilled. ot settable

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

Par	ameter	Unit	Value	Comment
PDSCH paramete	rs		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.2.2.1
PCFICH/PDCCH/I	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 channel number			1, 2	Two TDD carriers
DRX	DRX		OFF	Non-DRX test
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 co	onfiguration		1	As specified in table 4.2-2 in
				3GPP TS 36.211
PRACH configurat	tion		53	As specified in table 5.7.1-3 in
_				3GPP TS 36.211
Time offset betwee	en cells		3 μs	Synchronous cells
Gap pattern config	juration		-	No gap pattern configured
T1		S	≤5	
T2		s	1	

E-UTRA RF Channel		T4			Cell 2		
E LITDA DE Channel		T1	T2	T1	T2		
E-UTRA RE Channel		1			2		
Number							
BW _{channel}	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	C	,		0		
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						
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 Note 4	dBm/15 kHz	-94	-94	-Infinity	-93		
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	5		
Propagation Condition			A	WGN			
Note 1: OCNG shall be	used such that bo	th cells are fully	allocated and a	constant total tra	insmitted power		
spectral density	is achieved for all	OFDM symbols					
	for uplink transmiss						
Note 3: Interference from	m other cells and r	noise sources no	t specified in the	e test is assumed	d to be constant		
over subcarriers	s and time and sha	II be modelled a	s AWGN of app	ropriate power fo	or $N_{\scriptscriptstyle oc}$ to be		
fulfilled.							
	I_RP levels have b attable parameters		m other paramet	ters for information	on purposes.		

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

Paran	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	ICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Initial conditions A	Active cell		Cell 1	E-UTRAN cell
	leighbouring cell		Cell 2	UTRAN cell
	Active cell		Cell 2	UTRAN cell
Channel Bandwidth (BW _{channel})	MHz	10	
Gap Pattern Id			0	As specified in Table 8.1.2.1-1 started before T2 starts
E-UTRAN FDD meas	surement quantity		RSRP	
Inter-RAT (UTRAN F	DD) measurement		CPICH Ec/N0	
quantity				
b2-Threshold1		dBm	-90	Absolute E-UTRAN RSRP
				threshold for event B2
b2-Threshold2-UTRA	N N	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 Inform	mation	-	Not sent	No additional delays in random access procedure
E-UTRA RF Channe	Number		1	One E-UTRA FDD carrier
				frequency is used.
E-UTRA Channel Ba (BWchannel)	ndwidth	MHz	10	
UTRA RF Channel N	umber		1	One UTRA FDD carrier frequency is used.
Monitored UTRA FDI	D cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell before T2.
Post-verification period	bd		False	
T1		s	5	
T2		s	≤5	
Т3		s	1	

Parameter	Unit	C	ell 1 (E-UTI	RA)		
		T1	T2	Т3		
E-UTRA RF Channel			1			
number						
BW _{channel}	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 ^{Note 1}	dB					
OCNG_RB ^{Note 1}	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 Note 2	dBm/15 KHz	-98	-98	-98		
lo Note 2	dBm/9 MHz	-67.21	-67.21	-67.21		
Propagation Condition			AWGN			
	e used such that b					
constant total	transmitted power	spectral de	nsity is achie	eved for all		
OFDM symbo						
	levels have been o					
information pu	rposes. They are	not settable	parameters	themselves.		

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	Ce	ell 2 (UTR	RA)
		T1	T2	T3
CPICH_Ec/lor	dB	-10		
PCCPCH_Ec/lor	dB	-12		
SCH_Ec/lor	dB	-12		
PICH_Ec/lor	dB	-15		
DCH_Ec/Ior	dB	N/A	N/A	Note 1
OCNS_Ec/Ior	dB	-0.941	0.941	Note 2
\hat{I}_{or}/I_{oc}	dB	-infinity	-1.8	-1.8
I _{oc}	dBm/3,84 MHz	-70	-70	-70
CPICH_Ec/lo	dB	-infinity	-14	-14
Propagation			AWGN	
Condition				
Note 1: The DPCH le	evel is controlled	d by the po	wer cont	rol loop
	f the OCNS cha			
make the tot	al power from th	ne cell to b	e equal to	I _{or} .

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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%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, 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.

Para	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
(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 co	Uplink-downlink configuration		1	As specified in table 4.2-2 in 3GPP TS 36.211. Applicable to cell 1
	easurement quantity		RSRP	
Inter-RAT (UTRA quantity	FDD) measurement		CPICH Ec/lo	
b2-Threshold1		dBm	-90	Absolute E-UTRAN RSRP threshold for event B2
b2-Threshold2-UT	ſRA	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 config	guration Id		0	As specified in Table 8.1.2.1-1; to start before T2 starts
E-UTRA RF Chan	nel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel (BW _{channel})	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 p	eriod		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

E-UTRA RF Channel Number BW _{channel} OCNG Pattern defined in A.3.2.2.1 (OP.1 TDD) and in A.3.2.2.2 (OP.2	MHz	 OP.1	1 10	T3
Number BW _{channel} OCNG Pattern defined in A.3.2.2.1 (OP.1 TDD)	MHz	OP.1	10	
BW _{channel} OCNG Pattern defined in A.3.2.2.1 (OP.1 TDD)	MHz	OP.1		 [
OCNG Pattern defined in A.3.2.2.1 (OP.1 TDD)	MHz	OP.1		
in A.3.2.2.1 (OP.1 TDD)		OP.1		
		OP.1	TOD	
and in A 3 2 2 2 (OP 2		0111		OP.2 TDD
				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 ^{Note 1}				
RSRP ^{Note 2}	dBm/15 kHz	-98	-98	-98
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	0	0	0
-s/ ot				
\hat{E}_s/N_{oc}	dB	0	0	0
L_s/Iv_{oc}				
N _{oc}	dBm/15 kHz		-98	
NIGHA 1	dBm/9 MHz	-67.21	-67.21	-67.21
Propagation Condition		01.21	AWGN	01.21
	sed such that t	he cell is fully alloca	ated and a constant	total transmitted
		ed for all OFDM syr		
			parameters for inform	nation purposes.
They are not setta				and purpoood

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	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	Note 2			
\hat{I}_{or}/I_{oc}	dB	-infinity -1.8		-1.8		
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						

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_{interrupt}, 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	meter	Unit	Value	Comment
PDSCH paramete	ers		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/ parameters	PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
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	

Table A.5.2.3.1 -1: General test parameters for E-UTRAN FDD-GSM handover

Table A. A.5.2.3.1 - 2: Cell Specific Parameters for Handover from E- UTRAN FDD to GSM cell case (cell 1)

Parameter	Unit	Cell 1		
		T1, T2	T3	
BW _{channel}	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 OCNG_RA ^{Note1}	dB			
OCNG_RA	dB dB			
	uБ			
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4		
N_{oc} Note 2	dBm/15 kHz	-98 (AWGN)		
\hat{E}_{s}/N_{oc}	dB	4		
RSRP ^{Note 3}	dBm/15kH z	-94		
Propagation Condition		AWGN		

Note 1:	OCNG shall be used such that cell 1 is 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_{\scriptscriptstyle 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.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)			
Parameter	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:

 $T_{Handover delay} = 90 \text{ ms} (Table 5.3.3.2.1-1) + T_{offset} + T_{UL}$

 T_{offset} : 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 paramet	PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH parameters	I/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	configuration of		1	As specified in table 4.2.2 in TS 36.211
Special subfram of cell 1	C C		6	As specified in table 4.2.1 in TS 36.211
CP length of cell			Normal	
Time offset betw	een cells		3 ms	Asynchronous cells
Access Barring I	nformation		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		dB	0	
Hys		dB	0	
Thresh1		dBm	-93	E-UTRA event B2 threshold
Thresh2		dBm	-80	UTRA event B2 threshold
T1		S	5	
T2		S	≤10	
T3		S	1	

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

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	T3
E-UTRA RF Channel			1	
Number				
BW _{channel}	MHz		10	-
OCNG Pattern 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
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 ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			

\hat{E}_{s}/I_{ot}		dB	13	-3	-3	
\hat{E}_s/N_{oc}		dB	13	-3	-3	
N _{oc}		dBm/15kHz		-98		
RSRP Not	e 2	dBm/15kHz	-85	-101	-101	
SCH_RP	Note 2	dBm/15 kHz	-85	-101	-101	
lo Note 2		dBm/9MHz	-57.01	-68.45	-68.45	
Propagat	opagation Condition AWGN					
Note 1: Note 2:	total transmitted power spectral density is achieved for all OFDM symbols.					

Table A.5.2.4.1.2-3: Cell specific test parameters for cell search E-UTRA to UTRA case (cell 2)

Parameter	Unit	Cell 2 (UTRA)					
Timeslot Number			0		DwPTS		5
		T1	T2	T3	T1	T2	T3
UTRA RF Channel Number Note 1		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 _{oc}	dBm/1.28 MHz	-80					
PCCPCH RSCP Note 2	dBm	-86 -72 -72 n.a.					
IO Note 2	dBm/1.28 MHz	-78.24	-68.67	-68.67			
Propagation Condition				AWGN			
Note 1: In the case of	of multi-frequency c	ell, the U	FRA RF Cł	nannel Nu	imber is	s the pr	imary
frequency's channel number. Note 2: PCCPCH_RSCP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.							

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_{interrupt}, 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.

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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.

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.

Parameter		Unit	Value	Comment
PDSCH paramete	rs		DL Reference Measurement	As specified in section
			Channel R.0 FDD	A.3.1.1.1
PCFICH/PDCCH/I	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			1	As specified in 3GPP TS
				36.133 section 8.1.2.1.
E-UTRAN FDD m	easurement		RSRP	
quantity				
UTRAN TDD mea	surement		RSCP	
quantity				
CP length of cell 1			Normal	
Access Barring Inf	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		dB	0	
Hys		dB	0	
Thresh1		dBm	-93	Absolute E-UTRAN RSRP
				threshold for event B2
Thresh2		dBm	-80	Absolute UTRAN RSCP
				threshold for event B2
T1		S	5	
T2		S	≤ 10	
Т3		S	1	

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		Cell 1 (E-UTRA)				
		T1	T1 T2			Т3	
E-UTRA RF Channel				1			
number							
BW _{channel}	MHz			10			
OCNG Patterns		OP.1 FD	D	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 ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB			-			
\hat{E}_{s}/N_{oc}	dB	13		-3		-3	
N _{oc}	dBm/15 kHz			-98			
\hat{E}_s / I_{ot}	dB	13		-3		-3	
RSRP Note 2	dBm/15 KHz	-85		-101		-101	
lo Note 2	dBm/9MHz	-57.0	1	-68.45	5	-68.45	
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:RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves							
information pu	irposes. They are	not settabl	e par	ameters the	emse	eives	

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	Cell 2 (UTRA)					
Timeslot Number			DwPTS				
		T1	T2	T3	T1	T2	T3
UTRA RF Channel Number ^{Note 1}		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 oc	dBm/1.28 MHz			-80			
PCCPCH RSCP Note 2	dBm	-86	-72	-72	n.a.		
lo ^{Note 2}	dBm/1.28 MHz	-78.24	-68.67	-68.67			
Propagation Condition				AWGN			
Note 1: In the case of	f multi-frequency co	ell, the UT	RA RF Cha	annel Numl	oer is th	ne prim	ary
frequency's channel number. Note 2: PCCPCH_RSCP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.							

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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_{interrupt}, 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

Pa	rameter	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
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 o	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	
Inter-RAT measu	rement quantity		GSM Carrier RSSI	
E-UTRA RF Char	nnel Number		1	E-UTRA RF Channel Number
E-UTRA Channel (BW _{channel})	Bandwidth	MHz	10	E-UTRA Channel Bandwidth (BW _{channel})
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				
E-UTRA RF Channel Number			1				
BW _{channel}	MHz	1	0				
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	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	dB						
OCNG_RB ^{Note1}	dB						
\hat{E}_{s}/N_{oc}	dB	2	4				
$N_{_{oc}}$ Note 2	dBm/15 kHz	-98 (AWGN)					
\hat{E}_{s}/I_{ot}	dB	4					
RSRP ^{Note 3}	dBm/15kHz	-9)4				
Propagation Condition		AW	GN				
NOTE 1: OCNG shall be used s			al transmitted power spectral				
	density is achieved for all OFDM symbols.						
Note 2: Interference from othe	Interference from other cells and noise sources not specified in the test is assumed to be constant						
over subcarriers and t	over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{_{oc}}$ to be						
fulfilled.							
	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)		
Falametei	Unit	T1	T2, T3	
Absolute RF Channel Number		ARFCN 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_{offset}: 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

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	HICH 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 Bandwidth	(BW _{channel})	MHz	10	
E-UTRAN FDD me	asurement quantity		RSRP	
Inter-RAT (UTRAN quantity	FDD) measurement		CPICH Ec/N0	
DRX			OFF	Non-DRX test
Access Barring Info	Access Barring Information		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 E (BWchannel)	Bandwidth	MHz	10	
UTRA RF Channel 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 before T2.
Post-verification pe	Post-verification period		False	
T1		s	≤5	
T2		s	1	

	Parameter	Unit	Cell 1 (E-UTRA)	
			T1	T2	
E-UTRA	RF Channel			1	
number					
BW _{channel}		MHz	1	10	
OCNG P	atterns defined in		OP.1 FDD	OP.2 FDD	
A.3.2.1.1	(OP.1 FDD) and in				
A.3.2.1.2	(OP.2 FDD)				
PBCH_R		dB			
PBCH_R	В	dB			
PSS_RA		dB			
SSS_RA		dB			
PCFICH_	RB	dB			
PHICH_F	RA	dB			
PHICH_F	RB	dB		0	
PDCCH_	RA	dB			
PDCCH_	RB	dB			
PDSCH_		dB			
PDSCH_		dB			
OCNG_R		dB			
OCNG_R	RB ^{Note 1}	dB			
\hat{E}_{s}/I_{ot}		dB	0	0	
N_{oc} Note:	2	dBm/15 kHz	-!	98	
\hat{E}_{s}/N_{oc}		dB	0	0	
RSRP ^{Not}	e 3	dBm/15 KHz	-98	-98	
Propagat	ion Condition		AW	/GN	
Note 1:	OCNG shall be use	d such that both	cells are fully	allocated and	
	a constant total tran for all OFDM symbo	nsmitted power s	spectral density	is achieved	
Note 2:					
	the test is assumed	to be constant of	over subcarrier	s and time	
Note 3:	 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.5.2.7.1-2: Cell specific test parameters for E-UTRAN FDD to UTRAN FDD handover test case (cell 1)

Parameter	Unit	Cell 2	(UTRA)	
		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	No	ote 1	
OCNS_Ec/lor	dB	Note 2		
\hat{I}_{or}/I_{oc}	dB	-infinity	-1.8	
I _{oc}	dBm/3,84 MHz	-70	-70	
CPICH_Ec/lo	dB	-infinity	-14	
Propagation Condition				
Note 2: The power of	evel is controlled by the power control loop of 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		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	

Parameter	Unit	0	Cell 1			
		T1 T2				
BW _{channel}	MHz	10				
OCNG Patterns						
defined in A.3.2.1.1						
(OP.1 FDD) and in		OP.1 FDD	OP.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 ^{Note1}	dB					
OCNG_ RB ^{Note1}	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4				
$N_{_{oc}}$ Note 2	dBm/15 kHz	-98				
\hat{E}_s/N_{oc}	dB		4			
RSRP Note 3						
-	dBm/15 kHz		-94			
Propagation Condition		AWGN				
	l all ba usad such f	hat call 1 is fully allocate	d and a constant total			
Note 1: OCNG shall be used such that cell 1 is 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 ${}^{oldsymbol{N}_{oc}}$ to be fulfilled.						
	Note 3: RSRP levels have been derived from other parameters for information					
purposes. They are not settable parameters themselves.						

Table A.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)		
Falameter	Unit	T1	T2	
Absolute RF Channel Number		ARFCN 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_{UL}: 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 paramete	PDSCH parameters		DL Reference Measurement	As specified in section A.3.2.2.1
			Channel R.0 TDD	
PCFICH/PDCCH/	PHICH		DL Reference Measurement	As specified in section A.3.2.2.2
parameters			Channel R.6 TDD	
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
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 _{channel}	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	dD					
PBCH RB	dB dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB		0			
PDCCH_RA	dB		5			
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH RB	dB					
OCNG_RA ^{Note1}	dB					
OCNG_ RB Note1	dB					
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4				
$N_{_{oc}}$ Note 2	dBm/15 kHz	-98				
\hat{E}_s/N_{oc}	dB		4			
RSRP ^{Note 3}	dBm/15 kHz		-94			
Propagation		A	WGN			
Condition Note 1: OCNG sha	l all be used such t	hat call 1 is fully allocate	d and a constant total			
Note 1: OCNG shall be used such that cell 1 is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.						
	assumed to be constant over subcarriers and time and shall be modelled as					
AWGN of	AWGN of appropriate power for $ N_{\scriptscriptstyle oc} $ to be fulfilled.					
Note 3: RSRP leve	els have been dei	rived from other parameter	ers for information			
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)		
Falameter	Unit	T1	T2	
Absolute RF Channel Number		ARFCN 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_{UL} : 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

Parame	eter	Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH parameters	I/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
	Neighbour cell		Cell 2	UTRA 1.28Mcps TDD cell
Final conditions	Active cell		Cell 2	UTRA 1.28Mcps TDD cell
CP length of cell	1		Normal	
Uplink-downlink of cell 1	configuration		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of c			6	As specified in table 4.2.1 in TS 36.211
Time offset betw	een cells		3 ms	Asynchronous cells
Access Barring Information			Not Sent	No additional delays in random access procedure.
TimeToTrigger		dB	0	
Filter coefficient			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	Cell 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 _{oc}	dBm/15kHz	-98		
RSRP	dBm/15kHz	-95	-95	
SCH_RP	dBm/15 kHz	-95	-95	
Propagation Condition		AW	GN	
 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: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves. 				

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)

Pa	rameter	Unit	Cell 2 (UTRA)			
Timeslot Number			0		DwPTS	
			T1	T2	T1	T2
UTRA RF Number ^N	Channel		Channel 2			
PCCPCH	I_Ec/lor	dB	-3	3		
DwPCH_	Ec/lor	dB			0	
OCNS_Ec/lor		dB	-3			
\hat{I}_{or}/I_{oc}		dB	-infinity	13	-infinity	13
I _{oc} dBm/1.28 Мн			-80			
PCCPCH RSCP		dBm	-infinity -70		n.a.	
Propagat	ropagation Condition AWGN					
Note1:	Note1: In the case of multi-frequency cell, the UTRA RF Channel Number is the					
Note2:	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.

Parameter		Unit	Value	Comment	
PDSCH parameters			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 _{channel})	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)	neasurement		CDMA2000 HRPD Pilot		
quantity			Strength		
b2-Threshold1		dBm	-90	Absolute E-UTRAN RSRP	
				threshold for event B2	
b2-Threshold2-CDM	/A2000	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 ce	ell list size		8	HRPD cells on HRPD 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		
T3		S	1		

Table A.5.3.1.1-1: General test parameters for E-UTRAN FDD to HRPD handover test case

Pa	rameter	Unit	Cell 1 (E-UTRA)			
			T1	T2	Т3	
E-UTRA RF Channel				1		
number						
BW _{channel}		MHz		10	-	
	terns defined in		OP.1	FDD	OP.2	
	OP.1 FDD) and				FDD	
	2 (OP.2 FDD)					
PBCH_RA		dB				
PBCH_RB		dB				
PSS_RA		dB				
SSS_RA		dB				
PCFICH_R		dB				
PHICH_RA		dB				
PHICH_RE		dB		0		
PDCCH_R		dB				
PDCCH_R		dB				
PDSCH_R		dB	_			
PDSCH_R	B	dB				
OCNG_RA		dB				
OCNG_RB		dB				
$N_{oc}^{\rm Note 2}$		dBm/15		-98		
		kHz				
RSRP Note 3	•	dBm/15	-98	-98	-98	
		KHz				
\hat{E}_{s}/N_{oc} \hat{E}_{s}/I_{ot}		dB	0	0	0	
\hat{E}_{s}/I_{ot}		dB	0	0	0	
Propagatio	Propagation Condition			AWGN		
Note 1:	OCNG shall be us	ed such that	both cells are	e fully allocate	ed and a	
	constant total transmitted power spectral density is achieved for all					
	OFDM symbols.	DM symbols.				
Note 2: Interference from other cells and noise sources not specified in						
1	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.					
Nata 2	be modelled as A	VGN of appro	opriate power		be fulfilled.	
	RSRP levels have					
information purposes. They are not settable parameters themselve					nemseives.	

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 _{oc}	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.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 50 ms, which is specified in section 5.4.1.1.1.

 $T_{interrupt} = 76.66 \text{ ms}$ 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	;		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
	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 _{channel})	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	
	00 1X) measurement		CDMA2000 1xRTT Pilot Strength	
b2-Threshold1		dBm	-90	Absolute E-UTRAN RSRP threshold for event B2
b2-Threshold2-CDN	1A2000	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 (BWchannel)	andwidth	MHz	10	
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	C	ell 1 (E-UTR	4)			
		T1	T2	T3			
E-UTRA RF Channel			1				
number							
BW _{channel}	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 ^{Note 1}	dB						
OCNG_RB ^{Note 1}	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	e fully allocate	ed and a			
constant total tran							
OFDM symbols.							
	n other cells and noise sources not specified in the						
test is assumed to	be constant	over subcarri	ers and time	and shall			
			. N				
be modelled as A	NGN of appro	opriate power	for for to l	be fulfilled.			
Note 3: RSRP levels have							
information purpos	ses. They are	not settable	parameters t	hemselves.			

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	
Pilot E _c I _{or}	dB		-7		
Sync E _c I _{or}	dB		-16		
$\frac{\text{Paging } E_{c}}{I_{\text{or}}} $ (4.8 kbps)	dB		-12		
\hat{I}_{or}/I_{oc}	dB	-infinity	0	0	
I _{oc}	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 300 ms from the beginning of time period T3.

NOTE: The handover delay can be expressed as: RRC procedure delay + $T_{interrupt}$, where:

RRC procedure delay = 130 ms, which is specified in section 5.4.2.1.1.

 $T_{interrupt} = 170$ ms in the test; $T_{interrupt}$ is defined in section 5.4.2.1.2.

This gives a total of 300 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/I	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	th (BW _{channel})	MHz	10	
DRX			OFF	Non-DRX test
Access Barring Inf	formation	-	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 (BWchannel)	Bandwidth	MHz	10	
HRPD RF Channe	el 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-U	TRAN FDD)
		T1	T2
E-UTRA RF Channel			1
number			
BW _{channel}	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		0
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 ^{Note 3}	dBm/15 kHz	-98	-98
\hat{E}_s / N_{oc}	dB	0	0
\hat{E}_s/I_{ot}	dB	0	0
Propagation Condition		AM	/GN
	ed such that both cel	Is are fully allocated and a c	constant total transmitted
power spectral den	sity is achieved for a	all OFDM symbols.	
		sources not specified in the shall be modelled as AWG	
$N_{_{oc}}$ to be fulfilled.			
		ther parameters for informa	tion purposes. They are

Table A.5.3.3.1-2: Cell specific test parameters for E-UTRAN FDD cell#1 for handover to unknown HRPD cell # 2

Parameter	Unit	Cell 2 (HRPD)		
		T1	T2	
$\underline{\text{Control} \ E_{b}}$ (38.4	٩D	2	1	
N , kbps)	dB			
$\frac{\text{Control} E_{b}}{\text{N}} (76.8)$	i	1	8	
N , kbps)	dB			
\hat{I}_{or}/I_{oc}	dB	-infinity	0	
I _{oc}	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_{interrupt}, where:

T_{interrupt} 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 Bandwidt	th (BW _{channel})	MHz	10	
DRX			OFF	Non-DRX test
Access Barring Information		-	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 (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	

Parameter	Unit	Cell 1 (E-UTRAN FDD)					
		T1	T2				
E-UTRA RF Channel number			1				
BW _{channel}	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	(0				
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA Note 1	dB						
OCNG_RB Note 1	dB						
$N_{oc}^{\rm Note 2}$	dBm/15 kHz	-9	98				
RSRP ^{Note 3}	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	tant 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 of		ameters for information	purposes. They are				
not settable parameters t	hemselves.						

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 2 (cdn	na2000 1X)	
		T1	T2	
Pilot E _c I _{or}	dB	-	7	
Sync E _c I _{or}	dB	-16		
$\frac{\text{Paging} \text{E}_{c}}{\text{I}_{or}} \text{(4.8 kbps)}$	dB	-12		
\hat{I}_{or}/I_{oc}	dB	-infinity	0	
I _{oc}	dBm/1.22 88 MHz	-55		
CDMA2000 1xRTT Pilot Strength	dB	-infinity	-10	
Propagation Condition		AW	GN	

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)

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 300 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_{interrupt}, where:

T_{interrupt} also includes time to detect cdma2000 1X cell; see section 5.4.2.1.2

This gives a total of 300 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 paramete	ers		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/	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 Bandwid	th (BW _{channel})	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 In	formation	-	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 betwe	en cells	ms	3	Asynchronous cells
T1		S	5	-
T2		ms	200	
ТЗ		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 _{channel}	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		-			_	
PDCCH_RA	dB		0			0	
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						

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$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	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 have been derived from other parameters for information purposes. They are not settable parameters themselves.							

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.

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 Channel Number (cell 1)		1	
E-UTRA RF Channel Number (cell 2)		2	
E-UTRA FDD inter-frequency carrier list		1	2 E-UTRA FDD carrier
size			frequencies in total: 1 intra-
			frequency and 1 inter-frequency
Channel Bandwidth (BW _{channel})	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 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 between cells	ms	3	Asynchronous cells
T1	s	5	
T2	ms	200	
ТЗ	s	5	

Table A.6.1.2.1-1: General test parameters for E-UTRAN FDD inter-frequency RRC Re-establishment test case

Parameter	Unit		Cell 1			Cell 2		
	Γ	T1	T2	T3	T1	T2	Т3	
E-UTRA RF Channel			1	•		2		
Number								
BW _{channel}	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 ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	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 achie Note 2: Interference from	ved for all OFDM	symbols.	-			•	•	

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_{ac} 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.

 $T_{UE_re-establish_delay} = 50 \text{ ms} + N_{freq} * T_{search} + T_{SI} + T_{PRACH}$

$$N_{\text{freq}} = 2$$

 $T_{search} = 800 \text{ ms}$

 $T_{SI} = 1280$ 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

Para	ameter	Unit	Value	Comment
PDSCH parameter	S		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/P	HICH 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 _{channel})	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 of	configuration		6	As specified in table 4.2-1 in TS 36.211
Uplink-downlink co	nfiguration		1	As specified in table 4.2-2 in TS 36.211
PRACH configurati	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	T3	T1	T2	Т3
E-UTRA RF Channel			1	•		1	
Number							
BW _{channel}	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 ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
\hat{E}_{s}/I_{ot}	dB	1.54	-Infinity	-Infinity	-3.79	4	4
$N_{oc}^{\rm Note 2}$	dBm/15 KHz				-98	·	L.
\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_{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 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

Par	ameter	Unit	Value	Comment
PDSCH paramete	rs		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/I	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 Chan	nel 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 _{channel})	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 betwee	en cells	μs	3	Synchronous cells
T1		s	5	
T2		ms	200	
T3		S	5	
			+	4

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	Т3	T1	T2	Т3
E-UTRA RF Channel			1	•		2	
Number							
BW _{channel}	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		0			0	
PDCCH_RA	dB		0			0	
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	4	-Infinity	-Infinity	-Infinity	-Infinity	7
$N_{_{oc}}$ 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			-	d and a cons		mitted power s	pectral

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 $T_{UL_{grant}}$ 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.

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 $T_{PRACH} = 15$ 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 _{channel}	MHz	10	
OCNG Pattern Note 1		OP.1/2 FDD Note 1	As defined in A.3.2.1.1/2.
PDSCH parameters Note 4		DL Reference Measurement Channel R.0 FDD Note 4	As defined in A.3.1.1.1.
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		
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	3	
N_{oc}	dBm/15 KHz	-98	
\hat{E}_s/N_{oc}	dB	3	
lo Note 2	dBm/9 MHz	-65.5	
RSRP ^{Note 3}	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	

Table A.6.2.1.1-1: General test parameters for FDD 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. The OCNG pattern is chosen during the test according to the presence of a DL reference measurement channel.

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.

Note 4: The DL PDSCH reference measurement channel is used in the test only when a downlink transmission dedicated to the UE under test is required.

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	Note: For further information see Section 6.3.2 in 3GPP TS 36.331.				

Table A.6.2.1.1-2: RACH-Configuration parameters for FDD contention based random access test

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 _{channel}	MHz	10	
OCNG Pattern		OP.1 FDD	As defined in A.3.2.1.1.
PDSCH parameters		DL Reference Measurement	As defined in A.3.1.1.1.
		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		
	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 ^{Note 3}	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	-	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	
Note 1: OCNG shall be used su spectral density is achieved for	all OFDM symb	s fully allocated and a constant	-

Table A.6.2.2.1-1: General test parameters for FDD non-contention based random access test

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	
BWshappal	MHz	10	
OCNG Pattern Note 1	-	OP.1/2 TDD Note 1	As defined in A.3.2.2.1/2.
PDSCH parameters Note 4	-	DL Reference Measurement Channel R.0 TDD Note 4	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	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 ^{Note 3}	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	-	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. The OCNG pattern is chosen during the test according to the presence of a DL reference measurement channel.

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.

Note 4: The DL PDSCH reference measurement channel is used in the test only when a downlink transmission dedicated to the UE under test is required.

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 -22 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 -22 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 _{channel}	MHz	10	
OCNG Pattern	-	OP.1 TDD	As defined in A.3.2.2.1.
PDSCH parameters	-	DL Reference Measurement	As defined in A.3.1.1.2.
		Channel R.0 TDD	
PCFICH/PDCCH/PHICH	-	DL Reference Measurement	As defined in A.3.1.2.2.
parameters		Channel R.6 TDD	
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	1	
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		
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	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	
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	-	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	
	ich that the cell i	s fully allocated and a constant	total transmitted power

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.

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.					

Table A.6.2.4.1-2: RACH-Configuration parameters for TDD non-contention based random access test

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 -22 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 -22 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.

D		Value			
Parameter	Unit	Test 1	Test 2	Test 3	
E-UTRA RF Channel Number		1	1	1	
Channel Bandwidth (BW _{channel})	MHz	10	10	1.4	
DRX cycle	ms	OFF	80 ^{Note5}	OFF	
PDCCH/PCFICH/PHICH					
Reference measurement		R.6 FDD	R.6 FDD	R.8 FDD	
channel ^{Note1}					
OCNG Pattern ^{Note2}		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		Ū	Ŭ	Ũ	
PDCCH_RA					
PDCCH_RB					
OCNG_RA ^{Note3}	_				
OCNG_RB ^{Note3}					
N _{oc}	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	
Io ^{Note4}	dBm/9 MHz	-65.5	-65.5	N/A	
IU	dBm/1.08 MHz	N/A	N/A	-74.7	
Propagation condition	-	AWGN	AWGN	AWGN	
Note 1: For the reference measure	ement channels	s, see section A.	3.1.	-	
Note 2: For the OCNG pattern, see					
Note 3: OCNG shall be used such			ed and a consta	nt total	
transmitted power spectral density					

Table A.7.1.1.1-1: Test Parameters for UE Transmit Timing Accuracy Tests for E-UTRAN FDD

settable parameter. Note 5: DRX related parameters are defined in Table A.7.1.1.1-3.

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Note 4: lo level has been derived from other parameters for information purpose. It is not a

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 3GPP TS 36.331.						

Table A.7.1.1.1-3: drx-Configuration to be used in UE Transmit Timing Accuracy Test 2 for E-UTRANFDD

F ield	Test2	Comment
Field	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.

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 _{channel})	MHz	10	10	1.4	
Special subframe configuration ^{Note1}		6	6	6	
Uplink-downlink configuration ^{Note2}		1	1	1	
DRX cycle	ms	OFF	80 ^{Note7}	OFF	
PDCCH/PCFICH/PHICH					
Reference measurement channel ^{Note3}		R.6 TDD	R.6 TDD	R.8 TDD	
OCNG Pattern ^{Note4}		OP.2 TDD	OP.2 TDD	OP.4 TDD	
PBCH_RA	dB	0	0	0	
PBCH_RB					
PSS_RA					
SSS_RA					
PCFICH_RB					
PHICH_RA					
PHICH_RB		0	0	0	
PDCCH_RA					
PDCCH_RB					
OCNG_RA ^{Note5}					
OCNG_RB ^{Note5}					
N _{oc}	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	
Io ^{Note6}	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

F p urp settable parameter. Note 7: DRX related parameters are defined in Table A.7.1.2.1-3.

Field	Test 1	Test 2	Tset3	Commont	
Field	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.7.1.2.1-2: Sounding Reference Symbol Configuration to be used in UE Transmit Timing Accuracy Tests for E-UTRAN TDD

Table A.7.1.2.1-3: DRX Configuration to be used in UE Transmit Timing Accuracy Test 2 for E-UTRANTDD

Field	Test2	Comment
Field	Value	
onDurationTimer	psf1	
drx-InactivityTimer	psf1	
drx-RetransmissionTimer	sf1	
longDRX-CycleStartOffset	sf80	
shortDRX	disable	
Note: For further information see section	n 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):

- 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_A</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	<i>N</i> _{TA} = 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 _{channel}	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		<u> </u>	
PDCCH_RA	dB		0	
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note1}	dB			
OCNG_RB ^{Note1}	dB			
Timing Advance Command (T _A)		31	39	
\hat{E}_{s}/I_{ot}	dB		3	
N _{oc}	dBm/15 KHz		-98	
\hat{E}_s/N_{oc}	dB		3	
Io ^{Note2}	dBm/9 MHz	-65.5		
Propagation Condition			AWGN	
Note 1: OCNG shall be used such that spectral density is achieved for Note 2: lo level has been deri parameter.	or all OFDM sym	bols.	stant total transmitted power on 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 TS 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_A</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 _{TA} = 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 _{channel}	MHz		10			
Special subframe configuration ^{Note1}			6			
Uplink-downlink configuration Note2			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		2			
PDCCH_RA	dB	0				
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note3}	dB					
OCNG_RB ^{Note3}	dB					
Timing Advance Command (T _A)		31	39			
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB		3			
N _{oc}	dBm/15 KHz		-98			
\hat{E}_s/N_{oc}	dB		3			
Io ^{Note4}	dBm/9 MHz		-65.5			
Propagation Condition			AWGN			
Note 1: For the special subframe con Note 2: For the uplink-downlink config Note 3: OCNG shall be used such that spectral density is achieved for	uration see table 4 at both cells are fully	.2-2 in 3GPP TS 36.2 allocated and a cor	211.			
			on purpose. It is not a settable			

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

In the following section, any uplink signal transmitted by the UE is used for detecting the In-/Out-of-Sync state of the UE. In terms of measurement, the uplink signal is verified on the basis of the UE output power:

- UE output power higher than Transmit OFF power -50 dBm (as defined in TS 36.101 [5] clause 6.3.3.1) means uplink signal
- UE output power equal to or less than Transmit OFF power -50 dBm (as defined in TS 36.101 [5] clause 6.3.3.1) means no uplink signal

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.

Pa	arameter	Unit		Va	alue		Comment
			Test 1	Test 2	Test 3	Test 4	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. None of the PDCCH are intended for the UE under test
OCNG parame	eters		OP.2 FDD	OP.2 FDD	OP.2 FDD	OP.2 FDD	As specified in section A.3.2.1.2.
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	
E-UTRĂ RF C	hannel Number		1	1	1	1	One E-UTRA FDD carrier frequency is used.
E-UTRA Chan (BW _{channel})	nel Bandwidth	MHz	10	10	10	10	
	atrix and Antenna		1x2 Low	2x2 Low	1x2 Low	2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.10 ⁷ [5] Annex B.2.3.2
	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 _{out} and the
parameters	Aggregation level	CCE	8	8	8	8	corresponding
(Note 1)	ρ _A , ρ _B		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 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 7.2.2-1 in TS 36.213.
CQI reporting periodicity		ms	2	2	2	2	Minimum CQI reporting periodicity
Propagation c	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	1

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	Т3		
E-UTRA RF Channel		1				1		
Number								
BW _{channel}	MHz	10				10		
Correlation Matrix			1x2 Low			2x2 Low		
and Antenna								
Configuration								
OCNG Pattern								
defined in A.3.2.1		OP.2 FDD			OP.2 FDD			
(FDD)								
ρ _Α , ρ _Β			0			-3		
PCFICH_RB	dB		4			1		
PDCCH_RA	dB		4			1		
PDCCH_RB	dB		4			1		
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB		0		2			
PHICH_RA	dB		0		-3			
PHICH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB					I		
SNR ^{Note 6}	dB	-4.7	-9.5	-13.5	-4.7	-9.5	-13.5	
N _{oc}	dBm/15		-98			-98		
	kHz							
Propagation condition			AWGN			AWGN		
	be used such						constant	
	tted power spe							
	esources for Co	QI reporting	g are assig	ned to the	UE prior to	the start o	f time	
period T1.								
Note 3: The timers a period T1.	nd layer 3 filter	ring related	l parameter	rs are conf	igured prio	r to the sta	rt of time	
	Note 4: The signal contains PDCCI							
Note 5: SNR levels of REs.	correspond to t	he signal to	o noise rati	o over the	cell-specifi	c reference	signal	
	time periods T in figure A.7.3.		3 is denote	ed as SNR	1, SNR2 a	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 _{channel}	MHz		10			10		
Correlation Matrix			1x2 Low			2x2 Low		
and Antenna								
Configuration								
OCNG Pattern								
defined in A.3.2.1			OP.2 FDD			OP.2 FDD		
(FDD)								
ρ _A , ρ _B			0			-3		
PCFICH_RB	dB		4			1		
PDCCH_RA	dB		4			1		
PDCCH_RB	dB		4			1		
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB		-		-3			
PHICH_RA	dB		0					
PHICH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB						-	
SNR Note 6	dB	-1.4	-5.5	-11.5	-2.3	-6.2	-12.2	
N _{oc}	dBm/15		-98			-98		
1,00	kHz							
Propagation condition			ETU 70 Hz			ETU 70 Hz	2	
Note 1: OCNG shall	be used such t	that the res	sources in a	cell # 1 are	fully alloca	ated and a	constant	
total transmit	tted power spe	ctral densi	ty is achiev	ed for all C	OFDM sym	bols.		
Note 2: The uplink re	esources for CO	QI reporting	, g are assig	ned to the	UE prior to	the start o	f time	
period T1.		-			-			
Note 3: The timers a period T1.	nd layer 3 filter	ring related	paramete	rs are conf	igured prio	r to the sta	rt of time	
Note 4: The signal co	ontains PDCCI	H for UEs other than the device under test as part of OCNG.						
Note 5: SNR levels o REs.	correspond to t	he signal to	o noise rati	o over the	cell-specifi	c reference	e signal	
Note 6: The SNR in t	time periods T [,] in figure A.7.3.		3 is denote	ed as SNR	1, SNR2 a	nd SNR3		

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

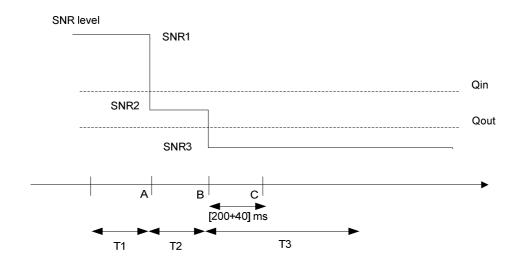


Figure A.7.3.1.1-4 SNR variation for out-of-sync testing

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 the period from time point A to time point B the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according the configured CQI reporting mode (PUCCH 1-0).

The UE shall stop transmitting uplink signal no later than time point C (240ms after the start of 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		
PCFICH/PDCCH/PHICH parameters			R.6 FDD	R.7 FDD	As specified in section A.3.1.2.1. None of the PDCCH are intended for the UE under test	
OCNG parameters			OP.2 FDD	OP.2 FDD	As specified in section A.3.2.1.2.	
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 FDD carrier frequency is used.	
E-UTRA Chan (BW _{channel})		MHz	10	10		
Correlation Ma Configuration	trix and Antenna		1x2 Low	2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2	
	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 _{in} and the corresponding	
parameters	Aggregation level	CCE	4	4	hypothetical	
(Note 1)	ρ _Α , ρ _Β		0	-3	PDCCH/PCFICH	
	Ratio of PDCCH to RS EPRE		0	-3	transmission parameters are as specified in sectior	
	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 Qou and the corresponding hypothetical PDCCH/PCFICH transmission parameters are as specified in sectio 7.6.1 and Table 7.6.1-1	
parameters	Aggregation level	CCE	8	8		
(Note 1)	ρ _A , ρ _B		0	-3		
	Ratio of PDCCH to RS EPRE	dB	4	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- in TS 36.213.	
CQI reporting periodicity		ms	2	2	Minimum CQI reporting periodicity	
Propagation ch	nannel		ETU 70 Hz	ETU 70 Hz		
<u>T1</u>		S	0.5	0.5		
T2		S	0.4	0.4		
T3		S	1.46	1.46		
T4		S S	0.4	0.4	-	
T5						

Table A.7.3.2.1-1: General test parameters for E-UTRAN FDD in-sync testing

Parameter	Unit			Test	1						Test	2		
		T1	T2	T3	T4		T5	T1	T2	Т	3	T4		T5
E-UTRA RF Channel		1				1								
Number														
BW _{channel}	MHz	10							10					
Correlation Matrix and				1x2 L	ow					2	2x2 L	ow		
Antenna Configuration														
OCNG Pattern defined														
in A.3.2.1 (FDD)			(<u> 2P.2 F</u>	DD					0	P.2 F	-DD		
ρ _A , ρ _B				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 ^{Note 1}	dB													
OCNG_RB ^{Note 1}	dB													
SNR Note 6	dB	-1.4	-5.5	-11.	5	-6.4	-1.4	-2.3	-6	.2	-12.	2	-7.3	-2.3
N _{oc}	dBm/15 kHz			-98							-98	}		
Propagation condition			E	TU 70) Hz					E	TU 70) Hz		
	e used such that I density is achie						allocate	ed and	a con	stant	tota	l trar	nsmitte	d
	ources for CQI re						orior to th	he star	t of tim	ne pe	eriod	T1.		
Note 3: The timers and	d layer 3 filtering	related	parame	ters ar	е со	nfigure	d prior t	the s	tart of	time	peri	od T	1.	
	ntains PDCCH fo													
	rrespond to the s										REs.			
	ne periods T1, T											d SN	IR5	
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

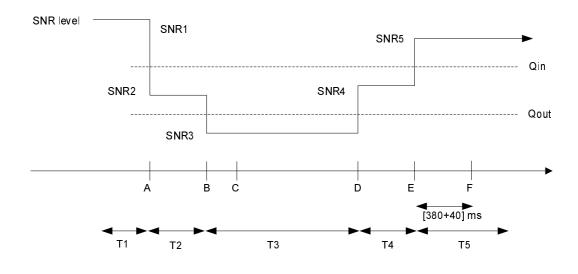


Figure A.7.3.2.1-3 SNR variation for in-sync testing

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 the period from time point A to time point F (420 ms after the start of time duration T5) the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

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	lue		Comment
			Test 1	Test 2	Test 3	Test 4	
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. None of the PDCCH are intended for the UE under test
OCNG parame	eters		OP.2 TDD	OP.2 TDD	OP.2 TDD	OP.2 TDD	As specified in section A.3.2.2.2.
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	
E-UTRA RF C	hannel Number		1	1	1	1	One E-UTRA TDD carrier frequency is used.
E-UTRA Chan (BW _{channel})		MHz	10	10	10	10	
Correlation Ma Configuration	atrix and Antenna		1x2 Low	2x2 Low	1x2 Low	2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2
	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 _{out} and the corresponding
parameters	Aggregation level	CCE	8	8	8	8	hypothetical
(Note 1)	ρ _Α , ρ _Β		0	-3	0	-3	PDCCH/PCFICH
	Ratio of PDCCH to RS EPRE	dB	4	1	4	1	transmission parameters are as specified in section
	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	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 r	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	1	1	1	1	Minimum CQI reporting periodicity
Propagation cl	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	
	DCCH/PCFICH corr eference Measurem			of sync transm	ission parame	eters need not	be included in the

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	Т3	
E-UTRA RF Channel			1			1		
Number								
BW _{channel}	MHz	10				10		
Correlation Matrix		1x2 Low				2x2 Low		
and Antenna								
Configuration								
Special subframe configuration Note1			6			6		
Uplink-downlink			1			1		
configuration ^{Note2}								
OCNG Pattern								
defined in A.3.2.2		OP.2 TDD				OP.2 TDD		
(TDD)								
ρ _A , ρ _B	15		0			-3		
PCFICH_RB	dB		4			1		
PDCCH_RA	dB		4			1		
PDCCH_RB	dB		4			1		
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB		0			-3		
PHICH_RA PHICH RB	dB dB		0					
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 3}	dB							
OCNG_RB ^{Note 3}	dB							
SNR ^{Note 8}	dB	-5.1	-9.1	-13.1	-5.2	-9.2	-13.2	
	dBm/15	-0.1	-98	-13.1	-0.2	-9.2	-10.2	
N_{oc}	kHz		-90			-90		
Propagation condition	INTZ		AWGN		AWGN			
	ial subframe co	onfiguratio		1 2 1 in 20				
	k-downlink cor							
	be used such						constant	
	tted power spe						constant	
	esources for C						f time	
period T1.			g		- F			
Note 5: The timers a period T1.	nd layer 3 filter	ring related	d paramete	rs are conf	igured prio	r to the sta	rt of time	
	ontains PDCCI	H for LIFs	other than t	he device i	under test	as part of (CNG	
	correspond to t							
Note 8: The SNR in	time periods T		T3 is denot	ed as SNR	1, SNR2 a	nd SNR3		
respectively	in figure A.7.3.	3.1-4.						

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

<u>T3</u>				
-3				
				11.0
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Table A.7.3.3.1-3: Cell specific test parameters for E-UTRAN TDD (cell # 1) for out-of-sync radio linkmonitoring tests # 3 and # 4

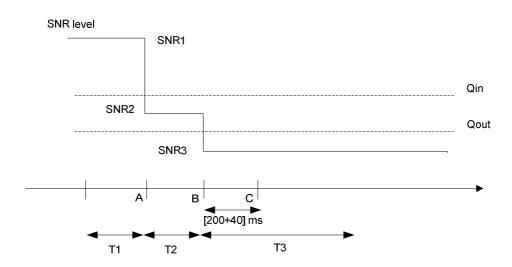


Figure A.7.3.3.1-4. SNR variation for out-of-sync testing

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 the period from time point A to time point B the UE shall transmit uplink signal at least in all uplink subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The UE shall stop transmitting uplink signal no later than time point C (240ms after 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 Value		Comment		
			Test 1	Test 2		
PCFICH/PDCCH/PHICH parameters			R.6 TDD	R.7 TDD	As specified in section A.3.1.2.2. None of the PDCCH are intended for the UE under test	
OCNG parameters			OP.2 TDD	OP.2 TDD	As specified in section A.3.2.2.2.	
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 FDD carrier frequency is used.	
E-UTRA Chan (BW _{channel})		MHz	10	10		
Correlation Ma Configuration	trix and Antenna		1x2 Low	2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2	
	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 _{in} and the corresponding	
parameters	Aggregation level	CCE	4	4	hypothetical	
(Note 1)	ρ _A , ρ _B		0	-3	PDCCH/PCFICH	
	Ratio of PDCCH to RS EPRE		0	-3	transmission parameters are as specified in sectior	
	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 _{ot} and the corresponding hypothetical PDCCH/PCFICH transmission parameters are as specified in section 7.6.1 and Table 7.6.1-1	
parameters	Aggregation level	CCE	8	8		
(Note 1)	ρ _Α , ρ _Β		0	-3		
	Ratio of PDCCH to RS EPRE	dB	4	1		
	Ratio of PCFICH to RS EPRE	dB	4	1	respectively.	
DRX			OFF	OFF		
Layer 3 filtering	9		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- in TS 36.213.	
CQI reporting periodicity		ms	1	1	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		
Τ.4		S	0.4	0.4		
T4 T5		S	1	1		

Table A.7.3.4.1-1: General test parameters for E-UTRAN TDD in-sync testing

Parameter	Unit	Test 1					Test 2						
		T1	T1 T2 T3 T4 T5			T1	T2	Т3	T4		T5		
E-UTRA RF Channel Number			1						1				
BW _{channel}	MHz			1	0			10					
Correlation Matrix				1x2	Low					2x	2 Low		
and Antenna													
Configuration													
Special subframe					6						6		
configuration ^{Note1}													
Uplink-downlink					1						1		
configuration ^{Note2} OCNG Pattern													
defined in A.3.2.2											.2 TDD	`	
(TDD)				UF.2		,				UP.	.Z TUL)	
ρ _A , ρ _B					0						-3		
PCFICH_RB	dB				4						1		
PDCCH_RA	dB				0			-3					
PDCCH_RB	dB				0						-3		
PBCH_RA	dB				`								
PBCH_RB	dB	-						-3					
PSS_RA	dB	-											
SSS_RA	dB	-			~								
PHICH_RA	dB				0								
PHICH_RB	dB												
PDSCH_RA	dB	-											
PDSCH_RB	dB	-											
OCNG_RA ^{Note 3}	dB	-											
OCNG_RB ^{Note 3} SNR ^{Note 8}	dB	4.4	5.0		4.0	0.4	4.4	0.0	-		44.0	7.0	0.0
SNR	dB	-1.4	-5.3		1.3	-6.4	-1.4	-2.3	-5		11.9	-7.3	-2.3
N_{oc}	dBm/15			-6	98						-98		
Propagation condition	kHz			ETU	70 Hz	7		ETU 70 Hz					
	ial subframe c	opfiqure	tion oo				י פד ממי	26 211			7011	2	
	k-downlink cor												
	be used such								and a d	constan	nt total	transm	itted
											. ioiui	anon	
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 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.													
	in figure A.7.3.				<u> </u>					-			

Table A.7.3.4.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for in-sync radio linkmonitoring tests # 1 and # 2

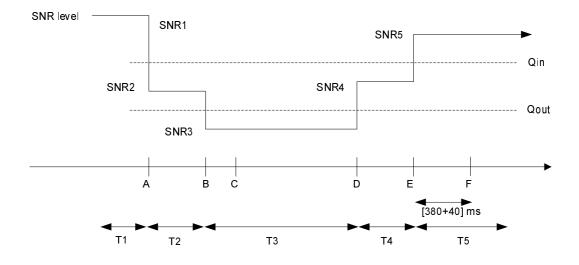


Figure A.7.3.4.1-3. SNR variation for in-sync testing

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 the period from time point A to time point F (420 ms after the start of time duration T5) the UE shall transmit uplink signal at least in all uplink subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

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	
PCFICH/PDCCH/PHICH			R.7 FDD	R.6 FDD	As specified in section
parameters					A.3.1.2.1. None of the PDCCH are
					intended for the UE under test
OCNG parame	otors		OP.2 FDD	OP.2 FDD	As specified in section
•				-	A.3.2.1.2.
Active cell			Cell 1	Cell 1	Cell 1 is on E-UTRA RF
CP length			Normal	Normal	channel number 1
•	have al Nhorahava				
E-UTRA RF C	hannel Number		1	1	One E-UTRA FDD carrier frequency is used.
E-UTRA Chan	nel Bandwidth	MHz	10	10	
(BW _{channel})					
Configuration Ma	atrix and Antenna		2x2 Low	1x2 Low	Correlation Matrix and
Configuration					Antenna Configuration are
					defined in TS 36.101 [5]
	DCI format		1A	1.0	Annex B.2.3.2 As defined in section 5.3.3.1.3
	DCI format		TA	1A	in TS 36.212
Out of sync	Number of		2	2	Out of sync threshold Qout and
transmission	Control OFDM				the corresponding hypothetical
parameters	symbols				PDCCH/PCFICH transmission
(Note 1)	Aggregation level	CCE	8	8	parameters are as specified in section 7.6.1 and Table 7.6.1-
	ρ _A , ρ _B		-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.7.3.5.1-3
Layer 3 filtering	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 r	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 channel			ETU 70 Hz	AWGN	
T1		s	4	32	
T2		S	1.6	12.8	
Т3		s	1.8	13	
	CCH/PCFICH con				nission parameters need not
De		elelenc		ni Ghannei.	

Parameter	Unit		Test 1		Test 2			
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel			1			1		
Number								
BW _{channel}	MHz		10			10		
Correlation Matrix			2x2 Low			1x2 Low		
and Antenna								
Configuration								
OCNG Pattern								
defined in A.3.2.1			OP.2 FDD			OP.2 FDD		
(FDD)								
ρ _A , ρ _B			-3			0		
PCFICH_RB	dB		1			4		
PDCCH_RA	dB		1			4		
PDCCH_RB	dB		1			4		
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 ^{Note1} OCNG RB ^{Note1}	dB							
SNR Note 6	dB	0.0	0.0	40.0	47	0.5	40 F	
	dB	-2.3	-6.2 -98	-12.2	-4.7	-9.5 -98	-13.5	
N _{oc}	dBm/15 kHz		-98			-98		
Propagation condition	KIIZ		ETU 70 Hz			AWGN		
					<i>f</i>			
	be used such t tted power spe						constant	
							ftimo	
period T1.								
period T1.								
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							signal	
REs.								
	time periods T		3 is denote	ed as SNR	1, SNR2 a	nd SNR3		
respectively in figure A.7.3.5.1-5.								

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 Test2		Comment	
Field	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.	

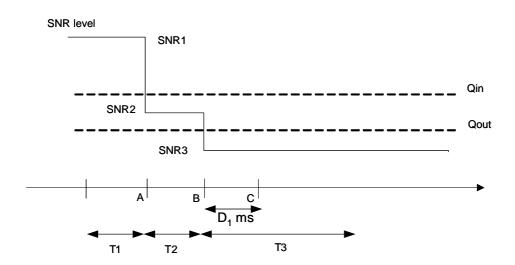


Figure A.7.3.5.1-5 SNR variation for out-of-sync testing in DRX

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 the period from time point A to time point B the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the subframe according the configured CQI reporting mode (PUCCH 1-0).

In test 1 the UE shall stop transmitting uplink signal no later than time point C (duration $D_1 = 900$ ms after the start of time duration T3).

In test 2 the UE shall stop transmitting uplink signal no later than time point C (duration $D_1 = 6500$ ms after the start of 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		
PCFICH/PDCCH/PHICH parameters			R.6 FDD	As specified in section A.3.1.2.1. None of the PDCCH are intended for the UE under test		
OCNG parameters			OP.2 FDD	As specified in section A.3.2.1.2.		
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 FDD carrier frequency is used.		
E-UTRA Channel Ban		MHz	10			
Correlation Matrix and Configuration	Antenna		1x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2		
	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 _{in} and the corresponding hypothetical		
(Note 1)	Aggregation level	CCE	4	PDCCH/PCFICH transmission		
	ρ _A , ρ _B		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 _{out} and the corresponding hypothetical		
parameters	Aggregation level	CCE	8	PDCCH/PCFICH transmission		
(Note 1)	ρ _Α , ρ _Β		0	parameters are as specified in section 7.6.1 and Table 7.6.1-1 respectively.		
	Ratio of PDCCH to RS EPRE	dB	4			
	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 periodic	ity	ms	2	Minimum CQI reporting periodicity		
Propagation channel			AWGN			
T1		S	4			
T2		S	1.6			
Т3		s	1.46			
T4		S	0.4			
T5		S	4			
				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 T3 T4 T5					
E-UTRA RF Channel Number		1					
BW _{channel}	MHz			10			
Correlation Matrix and				1x2 Low			
Antenna Configuration							
OCNG Pattern defined in							
A.3.2.1 (FDD)				OP.2 FDD			
ρα, ρβ				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						
	dB						
OCNG_R B ^{Note1}	dB						
SNR Note 8	dB	-4.7	-9.5	-13.5	-8.7	-4.7	
N _{oc}	dBm/15			-98			
	kHz						
Propagation condition				AWGN			
Note 1: OCNG shall be used	I such that the	resources in	cell # 1 are f	ully allocated	and a consta	ant total	
transmitted power sp							
Note 2: The uplink resources							
Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.							
Note 4: The signal contains	PDCCH for UE	Es other than	the device ur	nder test as p	art of OCNG		
Note 5: SNR levels correspo							
Note 6: The SNR in time per	iods T1, T2, T	3, T4 and T5	is denoted as	s SNR1, SNF	2, SNR3, SN	IR4 and	
SNR5 respectively in	n figure A.7.3.6	6.1-5.					

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	-Configuration 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.

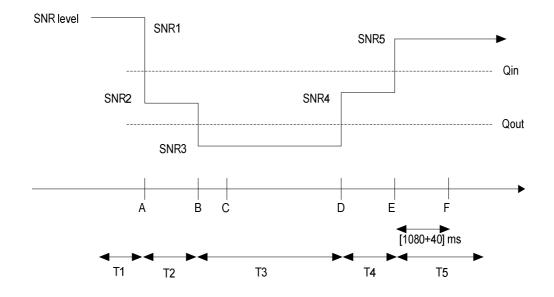


Figure A.7.3.6.1-5 SNR variation for in-sync testing in DRX

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 time duration T1 to T5 the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the subframe according the configured CQI reporting mode (PUCCH 1-0).

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.

Parameter		Unit	Va	lue	Comment
			Test 1	Test 2	1
PCFICH/PDC0 parameters	CH/PHICH		R.7 TDD	R.6 TDD	As specified in section A.3.1.2.2. None of the PDCCH are intended for the UE under test
OCNG parame	eters		OP.2 TDD	OP.2 TDD	As specified in section A.3.2.2.2.
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 _{channel})	nel Bandwidth	MHz	10	10	
Correlation Ma Configuration	atrix and Antenna		2x2 Low	1x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2
	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 _{out} and the corresponding hypothetical PDCCH/PCFICH transmission
(Note 1)	Aggregation level	CCE	8	8	parameters are as specified in section 7.6.1 and Table 7.6.1-
	ρ _Α , ρ _Β		-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
	eporting 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	AWGN	
T1		S	4	32	
T2		S	1.6	12.8	
Т3		S	1.8	13	
	CCH/PCFICH cor included in the R				nission parameters need not

Parameter	Unit		Test 1			Test 2	
		T1	T2	Т3	T1	T2	T3
E-UTRA RF Channel			1			1	
Number							
BW _{channel}	MHz	10			10		
Correlation Matrix			2x2 Low			1x2 Low	
and Antenna							
Configuration							
Special subframe configuration Note1			6			6	
Uplink-downlink			1			1	
configuration ^{Note2}							
OCNG Pattern							
defined in A.3.2.2			OP.2 TDD			OP.2 TDD)
(TDD)							
ρ _A , ρ _B			-3			0	
PCFICH_RB	dB		1			4	
PDCCH_RA	dB		1			4	
PDCCH_RB	dB		1			4	
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB				0		
SSS_RA	dB						
PHICH_RA	dB		-3				
PHICH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note3}	dB						
OCNG_RB ^{Note3}	dB						
SNR Note 8	dB	-2.3	-5.9	-11.9	-5.1	-9.1	-13.1
N_{oc}	dBm/15		-98			-98	
	kHz						
Propagation condition			ETU 70 Hz			AWGN	
Note 1: For the spec	ial subframe co	onfiguratio	n see table	4.2-1 in 30	GPP TS 36	.211.	
	k-downlink cor						
	be used such						constant
	tted power spe						
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.							
	•						
	correspond to t						
Note 8: The SNR in	time periods T in figure A.7.3.		T3 is denot	ed as SNR	1, SNR2 a	nd SNR3	

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	

Field	Test1 Value	Test2 Value	Comment
TimeAlignmentTimer	infinity	infinity	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	2	2	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

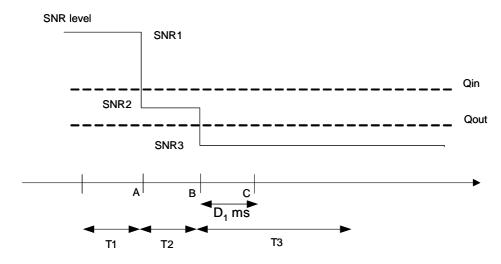


Figure A.7.3.7.1-5 SNR variation for out-of-sync testing in DRX

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 the period from time point A to time point B the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the uplink subframe according to the configured CQI reporting mode (PUCCH 1-0).

In test 1 the UE shall stop transmitting uplink signal no later than time point C (duration $D_1 = 900$ ms after the start of time duration T3).

In test 2 the UE shall stop transmitting uplink signal no later than time point C (duration $D_1 = 6500$ ms after the start of 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.

Param	neter	Unit	Value	Comment
PCFICH/PDCCH/PHICH parameters			R.6 TDD	As specified in section A.3.1.2.2. None of the PDCCH are intended for the UE under test
OCNG parameters			OP.2 TDD	As specified in section A.3.2.2.2
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		MHz	10	
Correlation Matrix and Configuration	Antenna		1x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2
	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 _{in} and the corresponding hypothetical
(Note 1)	Aggregation level	CCE	4	PDCCH/PCFICH transmission
	ρ _A , ρ _B		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 _{out} and the corresponding hypothetical
parameters	Aggregation level	CCE	8	PDCCH/PCFICH transmission
(Note 1)	ρ _A , ρ _B		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 periodic	ty	ms	1	Minimum CQI reporting periodicity
Propagation channel			AWGN	
T1		S	4	
T2		S	1.6	
T3		S	1.46	
T4		S	0.4	
T5	0	S	4	
				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	Т3	T4	T5
E-UTRA RF Channel Number				1		
BW _{channel}	MHz			10		
Correlation Matrix and				1x2 Low		
Antenna Configuration						
Special subframe				6		
configuration ^{Note1}						
Uplink-downlink				1		
configuration ^{Note2}						
OCNG Pattern defined in						
A.3.2.2 (TDD)				OP.2 TDD		
ρα, ρβ				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 ^{Note3}	dB					
OCNG_RB ^{Note3}	dB			-		
SNR Note 8	dB	-5.1	-9.1	-13.1	-9.1	-5.1
N _{oc}	dBm/15			-98	•	
1 voc	kHz					
Propagation condition				AWGN		
Note 1: For the special subfr	ame configura	tion see table	e 4.2-1 in 3G	PP TS 36.21	1.	
Note 2: For the uplink-downl						
Note 3: OCNG shall be used					and a consta	ant total
transmitted power sp	pectral density	is achieved f	or all OFDM	symbols.		
	4: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.					
T1.	T1.					
Note 6: The signal contains PDCCH for UEs other than the device under test as part of OCNG.						
Note 7: SNR levels correspondent						
Note 8: The SNR in time per			is denoted a	s SNR1, SNF	2, SNR3, SN	NR4 and
SNR5 respectively in	n figure A.7.3.8	3.1-5.				

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	2	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

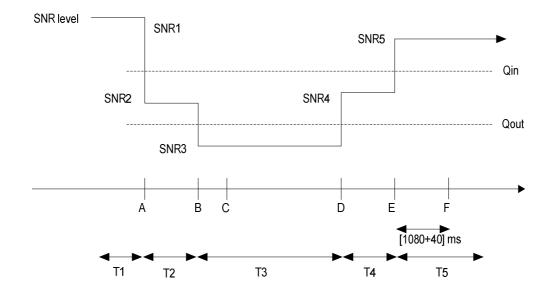


Figure A.7.3.8.1-5 SNR variation for in-sync testing in DRX

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 period from time point A to time point F (1120 ms after the start of time duration T5) the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the uplink subframe acc to ording the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.8 UE Measurements Procedures

The reference channels in this section assume transmission of PDSCH with a maximum number of 5 HARQ transmissions unless otherwise specified.

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	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	
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 _{channel})			
A3-Offset	dB	-6	
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	1	C	Cell 2			
		T1	T2	T1	T2			
E-UTRA RF Channel		,			1			
Number								
BW _{channel}	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							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	-1.46	-Infinity	-1.46			
N_{oc} Note 3	dBm/15 KHz			-98				
\hat{E}_{s}/N_{oc}	dB	4	4	-Infinity	4			
RSRP ^{Note 4}	dBm/15 KHz	-94	-94	-Infinity	-94			
SCH_RP Note 4	dBm/15 KHz	-94	-94	-Infinity	-94			
Propagation Condition				TU70				
Note 1: OCNG shall be used			ed and a constant	nt total transmitted	power spectral			
density is achieved								
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 tim	e and shall be mo	delled as AWGN o	of appropriate pov	wer for $N_{_{oc}}$ to be	fulfilled.			
Note 4: RSRP and SCH_RF settable parameters		derived from othe	r parameters for	information purpos	ses. They are not			

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 or retransmissions 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 _{channel})			
A3-Offset	dB	-6	
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	Cell 1 T1 T2		Ce	Cell 2		
				T1	T2		
E-UTRA RF Channel			1		1		
Number							
BW _{channel}	MHz	1	0	1	0		
OCNG Patterns							
defined in A.3.2.1.1		OP.1	FDD	OP.2	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	0			
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						
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	-1.46	-Infinity	-1.46		
$N_{oc}^{}$ Note 3	dBm/15 KHz			-98			
\hat{E}_s / N_{oc}	dB	4	4	-Infinity	4		
	dBm/15 KHz	-94	-94	-Infinity	-94		
SCH_RP Note 4	dBm/15 KHz	-94	-94	-Infinity	-94		
Propagation Condition			Ē	TU70			
Note 1: OCNG shall be used achieved for all OF Note 2: The resources for u Note 3: Interference from ot	DM symbols. olink transmission are a	ssigned to the U	E prior to the star	t of time period T2.			

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

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.8.1.2.2 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.

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	meter Unit Value		Comment	
		Test 1	Test 2	
PDSCH parameters		DL Reference Me		As specified in section A.3.1.1.1
		Channel R.0 FDI)	
PCFICH/PDCCH/PHICH		DL Reference Me	easurement	As specified in section A.3.1.2.1
parameters		Channel R.6 FDI)	
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 _{channel})				
A3-Offset	dB	-6		
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	ll 1	(Cell 2
		T1	T2	T1	T2
E-UTRA RF Channel			1	1	
Number					
BW _{channel}	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 0			
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				
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	-1.46	-Infinity	-1.46
$N_{_{oc}}$ Note 2	dBm/15 KHz			-98	
\hat{E}_s / N_{oc}	dB	4	4	-Infinity	4
RSRP Note 3	dBm/15 KHz	-94	-94	-Infinity	-94
SCH_RP ^{Note 3}	dBm/15 KHz	-94	-94	-Infinity	-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 and noise sources not specified in the test is assumed to be constant over subcarriers					
and time and shall	be modelled as AWG	N of appropriate po	ower for N_{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 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	1
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 or retransmissions 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	-6	
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	C	ell 1	0	Cell 2	
		T1	T1 T2		T2	
E-UTRA RF Channel			1		1	
Number						
BW _{channel}	MHz		10		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 ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{_{oc}}$ Note 3	dBm/15 kHz			-98		
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-94	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	-1.46	-Infinity	-1.46	
SCH_RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-94	
\hat{E}_{s}/N_{oc}	dB	4	4	-Infinity	4	
Propagation Condition				TU70	•	
Note 1: OCNG shall be used achieved for all OF Note 2: The resources for up Note 3: Interference from oth	DM symbols. plink transmission are a	issigned to the L	and a constant to JE prior to the star	tal transmitted pow t of time period T2.		
	be modelled as AWGN					
					-	

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

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.

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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	
		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 _{channel})	MHz	10		
A3-Offset	dB	-6		
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.8.2.2.1-1: General test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

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	(Cell 2	
		T1	T2	T1	T2	
E-UTRA RF Channel			1	1		
Number						
BW _{channel}	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	1				
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 Note 3	dBm/15 kHz	-94	-94	-Infinity	-94	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	-1.46	-Infinity	-1.46	
SCH_RP Note 3	dBm/15 kHz	-94	-94	-Infinity	-94	
\hat{E}_{s}/N_{oc}	dB	4	4	-Infinity	4	
Propagation Condition						
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_RF	and time and shall be modelled as AWGN of appropriate power for IV_{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.8.2.2.1-3: DRX-Configuration for E-UTRAN TDD-TDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Test1	Test2	Comment
Field	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.8.2.2.1-4: TimeAlignmentTimer -Configuration for E-UTRAN TDD-TDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Test1 Value	Test2 Value	Comment
TimeAlignmentTimer	sf500	sf500	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	2	2	For further information see section 6.3.2 in 3GPP TS 36.331 and section 10.1 in 3GPP TS 36.213.

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 FDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	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	

ETSI

Parameter	Unit	Ce	ell 1	C	ell 2		
		T1	T2	T1	T2		
E-UTRA RF Channel			1		2		
Number							
BW _{channel}	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		•				
PHICH_RB	dB		0		0		
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 3	dBm/15 kHz			-98			
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91		
\hat{E}_{s}/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 Note 2: The resources for up Note 3: Interference from ot	DM symbols. olink transmission are her cells and noise sou	assigned to the U urces not specified	E prior to the star d in the test is ass	rt of time period T2. sumed to be constan			
and time and shall	he modelled as AWGN	l of appropriate p	ower for N to	he fulfilled			

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

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

A.8.3.1.2 Test Requirements

parameters themselves.

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 Measurement		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	1	0	
(BW _{channel})				
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		0		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		ON		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

Parameter	Unit	Cell 1		C	ell 2	
		T1	T1 T2		T2	
E-UTRA RF Channel			1		2	
Number						
BW _{channel}	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	0 0				
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 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	ETU70					
Note 1: OCNG shall be used achieved for all OF Note 2: Interference from oth	DM symbols.	-	and a constant to	tal transmitted powe		
	be modelled as AWGN					
Note 3: RSRP and SCH_RF parameters themse	Plevels have been der				hey are not settable	

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

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

Test1	Test2	Comment	
Value	Value		
psf1	psf1		
psf1	psf1		
sf1	sf1		
sf40	sf1280		
disable	disable		
-	Value psf1 psf1 sf1 sf1 sf40	Value Value psf1 psf1 psf1 psf1 sf1 sf1 sf40 sf1280	

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 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

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 parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1, 2	Two FDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10	
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	9	

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	T1 T2		T2
E-UTRA RF Channel		1			2
Number					
BW _{channel}	MHz	1	0		10
OCNG Patterns					
defined in A.3.2.1.1			FDD		.2 FDD
(OP.1 FDD) and in		01.1	TDD		.2100
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			0
PDCCH_RA	dB				
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	4	4	4	24
N_{oc} Note 2	dBm/15 KHz			-98	
\hat{E}_{s}/N_{oc}	dB	4	4	4	24
RSRP Note 3	dBm/15 KHz	-94	-94	-94	-74
SCH_RP Note 3	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 AWGI	N of appropriate po	ower for $N_{\rm out}$ to	be fulfilled.	
Note 3: RSRP and SCH_RF			00		They are not settable
parameters themse		ived nom other pa		mation pulposes.	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 _{channel})	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	

Parameter	Unit	Cell 1		Ce	ll 2	
		T1	T2	T1	T2	
E-UTRA RF Channel		1			2	
Number						
BW _{channel}	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	1				
PHICH_RB	dB	C)			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	-Infinity	7	
$N_{_{oc}}$ 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			E	ETU70		
Note 1: OCNG shall be used achieved for all OF Note 2: The resources for u	DM symbols.	-			spectral density is	
Note 3: Interference from ot	her cells and noise sou	urces not specified	in the test is ass	sumed to be constant	over subcarriers	
and time and shall	be modelled as AWGN	N of appropriate po	wer for $N_{_{oc}}$ to	be fulfilled.		

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

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.4.1.2 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 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 _{channel})				
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	0		
CP length		Normal		
TimeToTrigger	S	()	
Filter coefficient		()	L3 filtering is not used
PRACH configuration		4	ļ	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	us	Synchronous cells
T1	S	Ę		
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

Parameter	Unit	Cell 1		0	Cell 2
		T1	T2	T1	T2
E-UTRA RF Channel			1		2
Number					
BW _{channel}	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 0			0
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 Note 3	dBm/15 kHz	-94	-94	-Infinity	-91
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	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	ETU70				
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 $N_{_{oc}}$ to I	pe fulfilled.	
Note 3: RSRP and SCH_RF parameters themse		ived from other pa	rameters for infor	mation purposes.	They are not settable

Table A.8.4.2.1-2: Cell specific test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

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
TimeAlignmentTimer	sf500	sf500	For further information see section 6.3.2 in 3GPP TS 36.331.
sr-ConfigIndex	2	2	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.8.4.3 E-UTRAN TDD-TDD inter-frequency event triggered reporting under AWGN propagation conditions in synchronous cells with DRX when L3 filtering is used

A.8.4.3.1 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 TDD-TDD inter-frequency cell search in DRX requirements in section 8.1.2.3.2.2 and the UE behaviour with the filterCoefficent defined in [2].

The test parameters are given in Tables A.8.4.3.1-1, A.8.4.3.1-2, A.8.4.3.1-3 and A.8.4.3.1-4. 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 alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

Table A.8.4.3.1-1: General test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference	As specified in section
		Measurement Channel R.0	A.3.1.1.2
		TDD	
PCFICH/PDCCH/PHICH		DL Reference	As specified in section
parameters		Measurement Channel R.6	A.3.1.2.2
		TDD	
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1, 2	Two TDD carrier frequencies
			are used.
Channel Bandwidth (BW _{channel})	MHz	10	
Time offset between cells	μs	3	synchronous cells
Gap Pattern Id		1	As specified in 3GPP TS
			36.133 section 8.1.2.1.
Uplink-downlink configuration		1	As specified in table 4.2.2 in TS
of cells			36.211
Special subframe		6	As specified in table 4.2.1 in TS
configuration of cells			36.211
Neighbour A3-Offset Ofn	dB	-14	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		9	L3 filtering is used
DRX		ON	DRX related parameters are
			defined in Table A.8.4.3.1-3
T1	S	30	
T2	S	9	

	Parameter	Unit	C	ell 1	С	ell 2
			T1	T2	T1	T2
E-UT	RA RF Channel Number			1		2
BW _{cha}	annel	MHz		10		10
	G Patterns defined in A.3.2.2.1 DP.1 TDD) and in A.3.2.2.2 (OP.2		OP.	.1 TDD	OP.	2 TDD
	DD)					
PBCH	1_ŔA	dB				
PBCH		dB				
PSS_	RA	dB				
SSS_	RA	dB				
PCFI	CH_RB	dB				
PHIC	H_RA	dB				
PHIC	H_RB	dB		0		0
PDCC	CH_RA	dB				
PDCC	CH_RB	dB				
PDSC	CH_RA	dB				
PDSC	CH_RB	dB				
OCNO	G_RA ^{Note 1}	dB				
OCNO	G_RB ^{Note 1}	dB				
\hat{E}_{s}/I	ot	dB	4	4	4	24
N_{oc}	Note 2	dBm/15 KHz			-98	
\hat{E}_s/\hat{E}_s		dB	4	4	4	24
RSRF	Note 3	dBm/15 KHz	-94	-94	-94	-74
SCH_	_RP ^{Note 3}	dBm/15 KHz	-94	-94	-94	-74
Propa	agation Condition				WGN	
Note 1:	OCNG shall be used such that bo		ocated and a	a constant to	tal transmitte	d power
Note 2:	spectral density is achieved for all Interference from other cells and r		pecified in the	he test is ass	sumed to be o	constant
	over subcarriers and time and sha					
Note 3:	fulfilled. RSRP and SCH_RP levels have b are not settable parameters thems	een derived from			00	

Table A.8.4.3.1-2: Cell specific test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used

Table A.8.4.3.1-3: DRX-Configuration for E-UTRAN TDD-TDD inter-frequency event triggered reporting in DRX under AWGN propagation conditions with DRX when L3 filtering is used

Field	Value	Comment
onDurationTimer	psf1	As specified in section 6.3.2 in 3GPP TS 36.331
drx-InactivityTimer	psf1	
drx-RetransmissionTimer	sf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table A.8.4.3.1-4: TimeAlignmentTimer -Configuration for E-UTRAN TDD-TDD inter-frequency event triggered reporting in DRX under AWGN propagation conditions 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	2	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

A.8.4.3.2 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.8.5 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 _{channel})			
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 _{channel}	MHz	10			
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 ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4		
\hat{E}_s/N_{oc}	dB	4	4		
N _{oc}	dBm/15 kHz	-98			
RSRP	dBm/15 kHz	-94	-94		
SCH_RP	dBm/15 kHz	-94 -94			
Propagation Condition		ETU7			
Note 1: OCNG shall be used	such that both ce	ells are fully allocated and a cons	tant 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		-0.94	1		
\hat{I}_{or}/I_{oc}	dB	-Infinity -1.8			
I _{oc}	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	2. The power of the OCNS channel that is added shall make the total power from the cell to be equal				
to I _{or} .					
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 _{channel})			
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 _{channel}	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 ^{Note 1}	dB					
OCNG_RB ^{NOTE 1}	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4			
$N_{oc}^{}$ Note 3	dBm/15 kHz	-98	3			
\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		AWC	GN			
Note 1: OCNG shall be used spectral density is acl Note 2: The resources for upl	 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. The resources for uplink transmission are assigned to the UE prior to the start of time period T2. 					
	carriers and time and shall be modelled as AWGN of appropriate power for N_{ac} 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 _{oc}	dBm/3.84 MHz	-70			
CPICH_Ec/lo	dB	-Infinity	-15		
Propagation Condition		AWGN			
Note 1: The DPCH level is co					
Note 2: The power of the OC	CNS channel that is added shall make the total power from the cell to be equal				
to I _{or} .					

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 Me	asurement	As specified in section A.3.1.1.1 Note that
UTRAN FDD)		Channel R.0 FDD		UE may only be allocated at On Duration
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 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	10		
(BW _{channel})				
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	(
Filter coefficient		()	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		
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

Parameter	Unit	Cell 1					
		T1	T2				
E-UTRA RF Channel Number		1					
BW _{channel}	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 ^{Note 1}	dB						
OCNG_RB ^{NOTE 1}	dB						
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4				
$N_{oc}^{\rm Note 2}$	dBm/15 kHz	-98	8				
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		ETU	70				
Note 1: OCNG shall be used	such that both c	ells are fully allocated and a con	stant 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.							
	te 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.						

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

Field	Test1 Value	Test2 Value	Comment		
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.8.5.3.1-4: *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	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.		

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		-0.941				
\hat{I}_{or}/I_{oc}	dB	-Infinity	-1.8			
I _{oc}	dBm/3.84 MHz	-70				
CPICH_Ec/lo	dB	-Infinity	-14			
Propagation Condition	Case 5 (Note 3)					
Note 1: The DPCH level is co						
Note 2: The power of the OC	The power of the OCNS channel that is added shall make the total power from the cell to be equal					
to I _{or} .	to I _{or} .					
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 _{channel})	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 _{channel}	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					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4			
\hat{E}_s/N_{oc}	dB	4	4			
N _{oc}	dBm/15 kHz	-98	3			
RSRP	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
Propagation Condition		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. 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		-0.941				
\hat{I}_{or}/I_{oc}	dB	-Infinity	-1.8			
I _{oc}	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	lote 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal					
to I _{or} .						
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 cell 1		1	As specified in table 4.2.2 in TS 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

Parameter	Unit	Ce	II 1		
		T1	T2		
E-UTRA RF Channel			1		
Number					
BW _{channel}	MHz		0		
OCNG Pattern defined in		OP.1 TDD			
A.3.2.2.1 (OP.1 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_RA ^{Note1}	dB				
OCNG_RB ^{Note1}	dB				
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	9	9		
\hat{E}_{s}/N_{oc}	dB	9	9		
N _{oc}	dBm/15kHz	-9	98		
RSRP	dBm/15kHz	-89	-89		
SCH_RP	dBm/15kHz	-89	-89		
Propagation Condition		ETU	J70		
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 uplink transmission are assigned to the UE prior to the start of time period T2.					

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)

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)

Parameter	Unit	Cell 2 (UTRA)			
Timeslot Number		0		Dwl	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 ^{NOTE2}	dB	-3	-3		
\hat{I}_{or}/I_{oc}	dB	-inf	5	-inf	5
I _{oc}	dBm/1.28 MHz	-80			
PCCPCH RSCP	dBm	-inf -78 n.a. n.a			
Propagation Condition		Case 3 ^{NOTE3}			
Note 1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.					
Number is the primary frequency's channel number. Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I _{or} . Note 3: Case 3 propagation conditions are defined in Annex B of 3GPP TS 25.102					

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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
		Value		
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		
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
				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	ll 1
			T1	T2
E-UTRA I	RF Channel			1
Number				
BWchan		MHz		0
	atterns defined		OP.1	TDD
	.1 (OP.1 TDD)			
PBCH_R		dB		
PBCH_R	В	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
\hat{E}_{s}/N_{oc}		dB	4	4
N _{oc} Note	2	dBm/15kHz	-98	
RSRP		dBm/15kHz	-94	-94
SCH_RP	Note 3	dBm/15kHz	-94	-94
Propagat	ion Condition			J70
Note 1:		used such that cel	I is fully allocat	ted and a
Note 2:	constant total transmitted power spectral density is achieved for all OFDM symbols.			
Note 3:	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)

Parameter		Unit		Cell 2 (UTRA)		
Timeslot	Number		0 DwPT			PTS
			T1	T2	T1	T2
UTRA RF Number I	Channel NOTE1		Channel 2			
PCCPCH	L_Ec/lor	dB	-3	-3		
DwPCH_		dB			0	0
OCNS_E	c/lor ^{NOTE2}	dB	-3	-3		
\hat{I}_{or}/I_{oc}		dB	-inf	9	-inf	9
I_{oc}		dBm/1.28 MHz	-80			
PCCPCH	I RSCP	dBm	-inf	-74	n.a.	n.a.
Propagat Condition			Case 3 ^{NOTE3}			
 Note 1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number. Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to lor. Note 3: Case 3 propagation conditions are defined in Annex B of 3GPP TS 25.102 						

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	2	2	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 _{channel})	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 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	14	

Parameter	Unit	Cel	ll 1		
		T1	T2		
E-UTRA RF Channel Number		1			
BW _{channel}	MHz	1	0		
OCNG Patterns defined in		OP.1	חחד		
A.3.2.2.1 (OP.1 TDD)		UF.1	עטו		
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 ^{Note 1}	dB				
OCNG_RB ^{Note 1}	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		
Note 1: OCNG shall be used total transmitted power Note 2: The resources for upl of time period T2. Note 3: Interference from other	total transmitted power spectral density is achieved for all OFDM symbols. The resources for uplink transmission are assigned to the UE prior to the start of time period T2.				
	AWGN of appropriate power for N_{oc} to be fulfilled.				
Note 4: RSRP levels have been 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		Ce	ll 2	
		Т	1	T2	
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	
PCCPCH RSCP Note1	dBm	-Infinity	n.a.	-73	n.a.
Io Note1	dBm/1.28MHz	-Infinity -70.88).88
loc	dBm/1.28MHz		-7	' 5	
Propagation condition			AW	'GN	
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 Ch				annel	
Number can be set for the	e primary frequenc	y in this te	st.		

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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 12800 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.8.8 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 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.
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 (BW _{channel})	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.8.8.1.1-1: 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 _{channel}	MHz	10			
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 ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4		
\hat{E}_s/N_{oc}	dB	4	4		
N _{oc}	dBm/15 kHz	-98	3		
RSRP	dBm/15 kHz	-94	-94		
SCH_RP	dBm/15 kHz	-94	-94		
Propagation Condition		AWC			
		ells are fully allocated and a cons	stant total transmitted power		
spectral density is ac					
Note 2: The resources for up	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 = $2*T_{Measurement Period, GSM} = 2*480ms = 960ms$.

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
		Va	lue	
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 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 _{channel})				
Inter-RAT (GSM)		GSM Car	rier RSSI	
measurement quantity				
B1-Threshold-GERAN	dBm		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	Į	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 Numb	ber	1				
BW _{channel}	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 ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4			
$N_{oc}^{ m Note 2}$	dBm/15 kHz	-9	8			
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		AW	GN			
Note 1: OCNG shall be u		d such that both cells are fully allocated and a constant total transmitted power				
Note 2: Interference from						
 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. 						

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 se	e section 6.3.2 ir	GOPP TS 36	6.331.

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 section 8.1.2.1. Measurement Gap Repetition Period = 80ms
Inter-RAT measurement quantity		UTRA TDD PCCPCH RSCP	
Threshold other system	dBm	-75	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 _{channel}	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 ^{Note 1}	dB		
OCNG_RB ^{Note 1}	dB		
N _{oc}	dBm/15KH	-98	
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		sion are assigned t	to the UE prior
to the start of time period T	2.		

Parameter	Unit	Cell 2			
		T1			Г2
Timeslot Number		0	DwPTS	0	DwPTS
UTRA RF Channel			Cha	nnel1	
Number (NOTE1)					-
PCCPCH_Ec/lor	dB	-Inf	inity	-3	
DwPCH_Ec/lor	dB	-Inf	inity		0
OCNS_Ec/lor		-Inf	inity	-3	
\hat{I}_{or}/I_{oc}	dB	-Infinity		9	
I _{oc}	dBm/1.28 MHz	-70			
PCCPCH_RSCP Note 3	dB	-Inf	inity	-64	
lo ^{Note 3}	dBm/1.28 MHz	-70.00		-60.49	
Propagation			Case 3	(NOTE2)	
Condition					
NOTE1: The DPCH o	of the cell is located in a timeslot other than 0.				
	agation conditions are specified in TS25.102 Annex B				
NOTE3: PCCPCH_RSRP and lo levels have been derived from other parameters for					
information p	urposes. They are	not settabl	e paramete	rs themselv	/es.

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	As specified in section A.3.1.1.2.
		Channel R.0 TDD	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in section A.3.1.2.2.
(E-UTRAN TDD)		Channel R.6 TDD	
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	MHz	10	
(BW _{channel})			
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.8.10.1.1-1: 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 _{channel}	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 ^{Note 1}	dB					
OCNG_RB ^{NOTE 1}	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 ^{Note 4}	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
Propagation Condition		AWG				
Note 1: OCNG shall be used spectral density is acl Note 2: The resources for upl	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. The resources for uplink transmission are assigned to the UE prior to the start of time period T2.					
	Interference from other cells and noise sources not specified in the test is assumed to be constant					
over subcarriers and	rs and time and shall be modelled as AWGN of appropriate power for $N_{_{oc}}$ to be					
fulfilled. Note 4: RSRP levels have be settable parameters t	been derived from other parameters for information purposes. They are not					

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	

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 Value		Comment
PDSCH parameters (E-		DL Reference Measurement		As specified in section A.3.1.1.2. Note that
UTRAN TDD)		Channel R.0 TDI)	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 TDI)	
Gap Pattern Id			0	As specified in 3GPP TS 36.133 section 8.1.2.1.
Active cell		Ce	·II 1	Cell 1 is on E-UTRA RF channel number
Neighbour cell		Ce	ell 2	Cell 2 is on Absolute RF Channel Number 1 (GSM cell)
Special subframe configuration			6	As specified in table 4.2-1 in TS 36.211.
Uplink-downlink			1	As specified in 3GPP TS 36.211 section
			1	4.2 Table 4.2-2
configuration		No	mal	
CP length E-UTRA RF Channel			mai 1	Applicable to cell 1
E-UTRA RF Channel Number			1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth	MHz	1	0	used.
		1	0	
(BW _{channel})			rier RSSI	
Inter-RAT (GSM)		GSIVICa	rier RSSI	
measurement quantity B1-Threshold-GERAN	dBm		30	GSM Carrier RSSI threshold for event B1.
	dB		0	GSIN Carrier RSSI threshold for event BT.
Hysteresis			-	
TimeToTrigger	S		0	
Filter coefficient			0	L3 filtering is not used
PRACH configuration			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.
DRX		ON		DRX related parameters are defined in Table A.8.10.2.1-3
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.8.10.2.1-1: 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 _{channel}	MHz	10		
OCNG Patterns 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 ^{Note 1}	dB			
OCNG_RB ^{NOTE 1}	dB			
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4	
N_{oc} Note 2	dBm/15 kHz	-98		
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		AWG	δN	
Note 1: OCNG shall be used		ells are fully allocated and a cons	tant total transmitted power	
spectral density is ac			-	
		e sources not specified in the test		
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 They are not settable		n derived from other parameters for mselves.	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
Field	Value	Value	
onDurationTimer	psf1	psf1	
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	sf1	sf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	Disable	Disable	

Table A.8.10.2.1-4: <i>TimeAlignmentTimer</i> and <i>sr-ConfigIndex</i> -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	2	2	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 _{channel})	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	Cell 1		Cel	2	Cell 3	
		T1 T2		T1	T2	T1	T2
E-UTRA RF			1	2		3	
Channel Number							
BW _{channel}	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	FDD	OP.2 FDD	
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB		0	0		0	
PHICH_RB	dB		-	Ŭ			
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note}	dB						
$N_{oc}^{}$ Note 3	dBm/15 kHz				-98		
RSRP Note 4	dBm/15 kHz	-98	-98	-Infinity	-95	-Infinity	-95
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	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		AWGN ETU70		70	ETU70	_	
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total							
Note 2: The resour time period Note 3: Interference	d power spectral density is achieved for all OFDM symbols. rces for uplink transmission are assigned to the UE prior to the start of d T2. ce 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 to be fulfilled							
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		DL Reference Measurement	As specified in section A.3.1.2.2
parameters		Channel R.6 TDD	
Special subframe		6	As specified in table 4.2-1 in TS 36.211.
configuration			The same configuration in both cells
Uplink-downlink		1	As specified in 3GPP TS 36.211 section
configuration			4.2 Table 4.2-2
E-UTRA RF Channel		1, 2, 3	Three TDD carrier frequencies are used.
Number			
Channel Bandwidth	MHz	10	
(BW _{channel})			
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	C	ell 1	Cel	2	Cel	3
		T1	T2	T1	T2	T1	T2
E-UTRA RF Channel Number		1		2		3	
BW _{channel}	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			0		0	
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						
$N_{oc}^{ m Note 3}$	dBm/15 kHz			-9	8		
RSRP ^{Note 4}	dBm/15 kHz	-98	-98	-inf	-95	-inf	-95
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	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	3
Propagation Condition		AWGN ETU70 ETU70					70
spectral densit Note 2: The resources Note 3: Interference fro	OCNG shall be used such that all cells are fully allocated and a constant total transmitted power pectral density is achieved for all OFDM symbols. The resources for uplink transmission are assigned to the UE prior to the start of time period T2. 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.							

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_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement repor

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 _{channel})			
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	-86	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	Ce	2	
		T1	T2	T1	T2	
E-UTRA RF Channel			1	2	2	
Number						
BW _{channel}	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	()	0		
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 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		AW	GN	ETI	J70	
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			r to the start of tim	e period T2.	
over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{\it oc}$ 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.8.11.3.1-2: Cell specific test parameters for Combined inter-frequency and UTRAN event triggered reporting in fading propagation conditions

Parameter	Unit	Cell 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		-0.941				
\hat{I}_{or}/I_{oc}	dB	-Infinity	-1.8			
I _{oc}	dBm/3.84 MHz	-70				
CPICH_Ec/lo	dB	-Infinity	-14			
Propagation Condition	Case 5 (Note 3)					
Note 1: The DPCH level is c						
Note 2: The power of the OC	CNS channel that is	added shall make the total powe	er from the cell to be equal			
to I _{or} .	to I _{or} .					
Note 3: Case 5 propagation	conditions are defin	ned in Annex A of 3GPP TS 25.1	01.			

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

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 $2xTTI_{DCCH}$ 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 number 1
Neighbour cell		Cell 2	E-UTRA TDD cell is on RF channel number 2
		Cell 3	1.28Mcps TDD cell
CP length of cell1 and cell2		Normal	
Uplink-downlink configuration		1	As specified in Table 4.2-2 in TS 36.211. The
of cell1 and cell2			same configuration in both cells
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			
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section
			8.1.2.1.
E-UTRAN TDD		RSRP	
measurement quantity			
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	-86	Absolute E-UTRAN RSRP threshold for event B2
Thresh2	dBm	-84	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. During the off time the physical layer cell identity of cell 2 shall be changed, and the primary scrambling code of cell 3 shall be 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	Ce	Cell 1		2		
		T1	T2	T1	T2		
E-UTRA RF Channel		1		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		_	0			
PHICH_RB	dB)				
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 _{oc}	dBm/15 kHz	-98					
RSRP	dBm/15 kHz	-94	-94	-Infinity	-91		
SCH_RP	dBm/15 kHz	-94	-94	-infinity	-91		
Propagation Condition		AWGN ETU70					
transmitted po Note 2: The resources period T2.	transmitted power spectral density is achieved for all OFDM symbols. Note 2: The resources for uplink transmission are assigned to the UE priori to the start of time						
	CH_RP levels hav			arameters for i	nformation		
purposes. They are not settable parameters themselves.							

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			0		DwF	PTS	
			T1	T2	T1	T2	
UTRA RE	- Channel			Char	nnel 3		
Number*					-		
PCCPCH	I_Ec/lor	dB	-3	3			
DwPCH_	Ec/lor	dB			()	
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		Case 3				
Note1:	Note1: The DPCH of all cells are located in a timeslot other than 0.						
Note2:	In the case of multi-frequency network, the UTRA RF Channel Number						
Note3:	P-CCPCH RS	for the primary frequency in this test. RSCP levels have been derived from other parameters for purposes. They are not settable parameters themselves.					

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.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.
- The reference channels assume transmission of PDSCH with a maximum number of 5 HARQ transmissions unless otherwise specified.

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.

D.	Boromotor			st 1	Test 2			st 3
Parameter		Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell
E-UTRA RF CI	hannel Number			1		1		1
3W _{channel}		MHz	1	0	1	0	1	0
leasurement l	bandwidth	n _{PRB}	22—27		22—27		22-27	
DSCH Refere	ence measurement	TKD	R.0		R.0		R.0	
hannel define			FDD	-	FDD	-	FDD	-
DSCH allocat	tion	n_{PRB}	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 DCNG Pattern	s 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.
DD)			FDD	FDD	FDD	FDD	FDD	FDI
BCH_RA								
BCH_RB								
PSS_RA								
SS_RA							0	0
PCFICH_RB		dB			0			
PHICH_RA						0		
PHICH_RB			0	0				
PDCCH_RA								
PDCCH_RB								
PDSCH_RA								
PDSCH_RB								
DCNG_RA ^{Note}	1							
CNG_RB ^{Note}	1							
	Bands 1, 4, 6, 10			-106			-1	16
N Note2	and 11						111	
$N_{oc}^{\rm Note2}$	Bands 2, 5 and 7	dBm/15 kHz	-106		-88	-88	-114 -113	
	Bands 3, 8, 12, 13,							
	14 and 17						1	15
ê /r	Band 9						-115	
$\hat{E}_{s}/\mathbf{I}_{ot}$	1	dB	2.5	-6	2.5	-6	0.46	-5.7
	Bands 1, 4, 6, 10 and 11					-87	-113	-117
RSRP ^{Note3}	Bands 2, 5 and 7		100				-111	-11
SKP	Bands 3, 8, 12, 13,	dBm/15 kHz	-100	-105	-82		-110	-114
	14 and 17 Band 9						-112	-110
	Bands 1, 4, 6, 10							.43
	and 11.							
0 ^{Note3}	Bands 2, 5 and 7 Bands 3, 8, 12, 13,	dBm/9 MHz	-70.27	-70.27	-52.27	-52.27		.43
	14 and 17						-79	.43
	Band 9						-81.43	
\hat{E}_s/N_{oc}		dB	6	1	6	1	3	-1
Propagation co	ondition	-	AW	'GN	AW	/GN	AW	'GN
	hall be used such that both d for all OFDM symbols.	n cells are fully allo						
achieve		ning gourges act -	posified in 4	ha taat in a-	ourmod to b		vor outcom	010 00-
achieve lote 2: Interfere	nce from other cells and no d shall be modelled as AW					e constant o	ver subcarri	ers and

Note 3. RSRP and to revers have been derived from other parameters for mitormation 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.

Parameter		Unit	Test 1		Test 2		Test 3	
		•	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell
	hannel Number	MHz		0	1 10		1 10	
BW _{channel} Special subfra	me	INIUZ	1	0	10		10	
configuration ^N	ote1		6		6		6	
Uplink/downlir	nk configuration ^{Note1}			1	1			1
Measurement		n _{PRB}	22-	-27	22-	-27	22-	-27
PDSCH Refer	ence measurement		R.0		R.0		R.0	
channel define	ed in A.3.1.1.2		TDD	-	TDD	-	TDD	-
PDSCH alloca	ation	n_{PRB}	13—36	-	13—36	-	13—36	-
PDCCH/PCFI	CH/PHICH					•		
	asurement channel		R.6	TDD	R.6	TDD	R.6	TDD
defined in A.3								
OCNG Patterr A.3.2.2.1 (OP.			OP.1	OP.2	OP.1	OP.2	OP.1	OP.2
A.3.2.2.1 (OP. A.3.2.2.2 (OP.			TDD	TDD	TDD	TDD	TDD	TDD
PBCH RA	.2 (00)							
PBCH_RB								
PSS_RA					0 0	0 0		0
SSS RA								
PCFICH_RB								
PHICH_RA								
PHICH_RB		dB	0	0			0	
PDCCH_RA								
PDCCH_RB								
PDSCH_RA								
PDSCH_RB	_							
OCNG_RA ^{Note}	92							
OCNG_RB ^{Note}								
$N_{_{oc}}$ Note3			-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 ^{Note4}	Bands 33, 34, 35, 36, 37, 38, 39 and 40	dBm/15 kHz	-100	-105	-82	-87	-113	-117
Io ^{Note4}	Bands 33, 34, 35		-70.27	-70.27	-52.27	-52.27	-82	2.43
\hat{E}_{s}/N_{oc}		dB	6	1	6	1	3	-1
Propagation c	ondition	-	AW	GN	AW	'GN	AW	/GN
	cial subframe and uplink-	downlink configurat	ions see Tab	oles 4.2-1 a	nd 4.2-2 in 3	GPP TS 36	.211.	

Note 2: 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 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 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.

	Demonstration Unit Test 1 Test 2							
Parameter		Unit	Cell 1	Cell 2	Cell 1	Cell 2		
E-UTRA RF Cha	nnel Number		1	2	1	2		
BW _{channel}		MHz	10	10	10	10		
Gap Pattern Id			0	-	0	-		
Measurement ba		n _{PRB}	22-	-27	22-	-27		
	PDSCH Reference measurement channel defined in A.3.1.1.1		R.0 FDD	-	R.0 FDD	-		
	PDSCH allocation		13—36	-	13—36	-		
PDCCH/PCFICH measurement cha A.3.1.2.1	/PHICH Reference annel defined in		R.6	FDD	R.6 FDD			
	defined in A.3.2.1.1		OP.1	OP.2	OP.1	OP.2		
<i>,</i>	A.3.2.1.2 (OP.2 FDD)		FDD	FDD	FDD	FDD		
PBCH_RA PBCH RB								
PSS_RA								
SSS RA								
PCFICH_RB								
PHICH_RA						0		
PHICH_RB		dB	0	0	0			
PDCCH_RA								
PDCCH_RB PDSCH RA								
PDSCH_RA								
OCNG_RANote1								
OCNG RBNote								
	Bands 1, 4, 6, 10 and 11.			-88.65	-109	-117		
$N_{_{oc}}$ Note2	Bands 2, 5 and 7	- ID /4 5 1-1 1			-107	-115		
OC	Bands 3, 8, 12, 13,	dBm/15 kHz	-88.65		-106	-114		
	14 and 17							
<u> </u>	Band 9				-108	-116		
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	10	10	13	-4		
	Bands 1, 4, 6, 10 and 11.			-78.65	-96	-121		
RSRP ^{Note3}	Bands 2, 5 and 7	dBm/15 kHz	-78.65		-94	-119		
	Bands 3, 8, 12, 13, 14 and 17				-93	-118		
	Band 9				-95	-120		
	Bands 1, 4, 6, 10 and 11.				-68.01	-87.76		
lo ^{Note3}	Bands 2, 5 and 7	dBm/9 MHz	-50.45	-50.45	-66.01	-85.76		
	Bands 3, 8, 12, 13, 14 and 17		00.10		-65.01	-84.76		
	Band 9		ļ		-67.01	-86.76		
\hat{E}_{s}/N_{oc}		dB	10	10	13	-4		
Propagation condition		-		/GN		'GN		
	IG shall be used such					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 Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.								
	P minimum requirem		assuming	independ	ent interfer	ence and		
noise at each receiver antenna port.								

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.

Parameter		Unit	Tes	st 1	Test 2		
	E-UTRA RF Channel Number		Cell 1	Cell 2	Cell 1	Cell 2	
	nnel Number		1	2	1	2	
BW _{channel}	Note1	MHz	10	10	10	10	
Special subframe	e configuration ^{Note1}			<u> </u>		6 I	
Gap Pattern Id	Uplink-downlink configuration ^{Note1}		0		0	-	
Measurement bandwidth		n	-	-27	-	-27	
PDSCH Reference		n _{PRB}	R.0	2.	R.0	2.	
	channel defined in A.3.1.1.2		TDD	-	TDD	-	
PDSCH allocation	-	n _{PRB}	13—36	-	13—36	-	
	PHICH Reference						
measurement cha	annel defined in		R.6	TDD	R.6	TDD	
A.3.1.2.2			05.4	0.0.0	05.4	0.5.0	
	defined in A.3.2.2.1		OP.1	OP.2	OP.1	OP.2	
PBCH_RA	A.3.2.2.2 (OP.2 TDD)		TDD	TDD	TDD	TDD	
PBCH_RA							
PSS RA							
SSS_RA							
PCFICH_RB		•		0	0		
PHICH_RA							
PHICH_RB		dB	0			0	
PDCCH_RA		uD	0			0	
PDCCH_RB							
PDSCH_RA							
PDSCH RB							
OCNG_RA ^{Note2}		•					
OCNG RB ^{Note2}							
	Danda 00, 04, 05						
N_{oc} Note3	Bands 33, 34, 35, 36, 37, 38, 39 and 40	dBm/15 kHz	-88.65	-88.65	-109	-117	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$		dB	10	10	13	-4	
RSRP ^{Note4}	Bands 33, 34, 35, 36, 37, 38, 39 and 40.	dBm/15 kHz	-78.65	-78.65	-96	-121	
lo ^{Note4}	Bands 33, 34, 35, 36, 37, 38, 39 and 40	dBm/9 MHz	-50.45	-50.45	-68.01	-87.76	
\hat{E}_s/N_{oc}		dB	10	10	13	-4	
Propagation conc	lition	-	AW	GN AWGN			
	special subframe and	l uplink-downlink o	configuratio	ons see Ta	bles 4.2-1	and 4.2-	
2 in 3GPP TS 36.211. Note 2: 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 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: RSR	P and lo levels have	been derived from			or informati	on	
Note 5: RSR	purposes. They are not settable parameters themselves. Note 5: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna 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.

D	arameter	Unit	Tes		les	st 2	Ies	st 3
		Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
E-UTRA RF Cha	annel Number			1		1		1
BW _{channel}		MHz	1	0	1	0	1	0
Measurement ba	andwidth	n_{PRB}	22-	-27	22-	-27	22-	-27
PDSCH Referer channel defined	ice measurement in A.3.1.1.1		R.0 FDD	-	R.0 FDD	-	R.0 FDD	-
PDSCH allocation	on	n _{PRB}	13—36	-	13—36	-	22 R.0 FDD 13-36 R.6 OP.1 FDD 0 0 0 0 -17.34 -17.34 -8 -8 -8 -4	-
	H/PHICH Reference nannel defined in	110	R.6	FDD	R.6	FDD	R.6	FDD
	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.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 ^{Note1}								
OCNG_RB ^{Note1}								
	Bands 1, 4, 6, 10 and 11.						-116	
$N_{_{oc}}$ Note2	Bands 2, 5 and 7						-1	14
1 · oc	Bands 3, 8, 12, 13,	dBm/15 kHz	-84.76	-84.76	-103.85	-103.85	-11 -11 -11 -5.46	
	14 and 17						-1	13
	Band 9						-1	15
\hat{E}_{s}/I_{ot}		dB	-1.76	-1.76	-4.7	-4.7	-5.46	-5.46
	Bands 1, 4, 6, 10 and 11.						-120	-120
	Bands 2, 5 and 7						110	-118
RSRP ^{Note3}	Bands 3, 8, 12, 13,	dBm/15 kHz	-81.76	-81.76	-106.75	-106.75	-110	-110
	14 and 17						1 22- R.0 FDD 13-36 R.6 OP.1 FDD 0 0 -1 -1 -1 -1 -1 -1 -1 -11 -120 -118 -117 -118 -117 -118 -117 -118 -117 -118 -117 -118 -117 -118 -117 -118 -117 -119 -17.34 -82 -82 -82 -82 -82 -82 -84 AW pectral den: ver subcarr	-117
	Band 9							-119
	Bands 1, 4, 6, 10		+				-113	-119
	and 11.							
Do Noto?	Bands 2, 5 and 7						, _ · ·	
RSRQ ^{Note3}	Bands 3, 8, 12, 13,	dB	-14.77	-14.77	-16.76	-16.76	-17.34	-17.34
	14 and 17							
	Band 9							
	Bands 1, 4, 6, 10		1				-85	.67
	and 11. Bands 2, 5 and 7						0.0	67
Io ^{Note3}		dBm/9 MHz	-50	-50	-73	-73	-83	.07
	Bands 3, 8, 12, 13, 14 and 17						-82	.67
	Band 9						-84	67
\hat{E}_s / N_{oc}	Dana o	dB	3	3	-2.9	-2.9		-4
		υD		-				
Propagation con		-	AW			'GN		'GN
achieve	hall be used such that be d for all OFDM symbols. nce from other cells and							
1	d shall be modelled as A	MON of granter int	o nouve - f	M Lake	fulfilled			

A.9.2.1.3 Test Requirements

antenna port.

The RSRQ measurement accuracy shall fulfil the requirements in Section 9.1.5.

parameters themselves. Note 4: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver

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.

D	arameter	Unit	Tes	st 1		st 2	Te	st 3
		Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
E-UTRA RF Cha	annel Number			1		1		1
BW _{channel}	Neted	MHz		0		0	10	
Special subfram	e configuration ^{Note1}			6		6	6	
Uplink-downlink	configuration ^{Note1}			1		1		1
Measurement bandwidth		n_{PRB}	22-	-27	22-	27	22-	-27
	nce measurement		R.0	-	R.0	-	R.0	-
channel defined	in A.3.1.1.2		TDD		TDD		TDD	
PDSCH allocation	on	n_{PRB}	13—36	-	13—36	-	13—36	-
	H/PHICH Reference		R.6	TDD	R.6	TDD	R.6	TDD
A.3.1.2.2			_		_		-	
OCNG Patterns	defined in A.3.2.2.1		OP.1	OP.2	OP.1	OP.2	OP.1	OP.2
(OP.1 TDD) and	A.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			Ĭ	Ť	Ĭ		, v	
PDCCH_RB								
PDSCH_RA								
DSCH_RB								
OCNG_RA ^{Note2}								
OCNG_RB ^{Note2}								
	Bands 33, 34, 35,							
$N_{_{oc}}$ Note3	36, 37, 38, 39 and 40	dBm/15 kHz	-84.76	-84.76	-103.85	-103.85	-1	16
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	-1.76	-1.76	-4.7	-4.7	-5.46	-5.46
s / ot	Bands 33, 34, 35,							
RSRP ^{Note4}	36, 37, 38, 39 and 40	dBm/15 kHz	-81.76	-81.76	-106.75	-106.75	-120	-120
RSRQ ^{Note4}	Bands 33, 34, 35, 36, 37, 38, 39 and 40	dB	-14.77	-14.77	-16.76	-16.76	-17.34	-17.3
Io ^{Note4}	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
Propagation cor	dition	-	AW	/GN	AW	/GN	AW	/GN
Note 2: OCNG s	cial subframe and uplink- hall be used such that be d for all OFDM symbols.							sity is
	nce from other cells and	noise sources not	specified in t	he test is as	sumed to be	e constant o	ver subcarri	ers and

Table A.9.2.2.2-1: RSRQ TDD Intra frequency test parameters

time and shall be modelled as AWGN of appropriate power for $\,N_{oc}\,$ to be fulfilled.

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.

E-UTRA RF Cha	rameter	Unit	0 11 4	0 " 0		0 1 0		1 ····
F-I ITPA PE Cha			Cell 1	Cell 2	Cell 1	Cell 2		Cell 2
	Innel Number		1	2	1	2	-	2
BW _{channel} Gap Pattern Id		MHz	10	10	10 0	10		10
Measurement ba	andwidth	11		_27	Ű	-27	-	.07
		n _{PRB}	22-	-21	22-	-21	d to be consta ^{oc} to be fulfille ion purposes.	21
channel defined	ce measurement in A.3.1.1.1		R.0 FDD	-	R.0 FDD	-	R.0 FDD	-
PDSCH allocatio		n _{PRB}	13—36	-	13—36	-	13—36	-
PDCCH/PCFICH measurement ch A.3.1.2.1	I/PHICH Reference annel defined in		R.6	FDD	R.6	FDD	R.6 F	DD
	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		1						
PHICH_RB		dB	0	0	0	0	0	0
PDCCH_RA			-	•	-	-		-
PDCCH_RB								
PDSCH_RA								
PDSCH_RB OCNG_RA ^{Note1}								
OCNG_RA								
OCNG_RB	Bands 1, 4, 6, 10,						-119.50	-119.50
$N_{\scriptscriptstyle oc}$ Note2	and 11. Bands 2, 5 and 7						-117 50	-117.50
I V oc	Bands 3, 8, 12, 13,	dBm/15 kHz	-80	-80	-104.70	-104.70		
	14 and 17						-116.50	-116.50
	Band 9						-118.50	-118.50
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	-1.75	-1.75	-4.0	-4.0	-4.0	-4.0
	Bands 1, 4, 6, 10, and 11.						-123.50	-123.50
RSRP ^{Note3}	Bands 2, 5 and 7	dBm/15 kHz	-81.75	-81.75	-108.70	-108.70	-121.50	-121.50
NONF	Bands 3, 8, 12, 13,		-01.75	-01.75	-100.70	-100.70	-120 50	-120.50
	14 and 17							
	Band 9 Bands 1, 4, 6, 10,						-122.50	-122.50
Noto?	and 11. Bands 2, 5 and 7	1						
RSRQ ^{Note3}	Bands 3, 8, 12, 13,	dB	-14.76	-14.76	-16.25	-16.25	-16.25	-16.25
	14 and 17]						
	Band 9							
	Bands 1, 4, 6, 10, and 11.						-90.26	-90.26
lo ^{Note3}	Bands 2, 5 and 7				75 10		-88.26	-88.26
10	Bands 3, 8, 12, 13,	dBm/9 MHz	-50	-50	-75.46	-75.46		-87.26
	14 and 17							
	Band 9						-89.26	-89.26
\hat{E}_{s}/N_{oc}		dB	-1.75	-1.75	-4.0	-4.0	-4.0	-4.0
Propagation con	dition	-	AW	GN	AW	GN	AWC	GN
	NG shall be used suc ctral density is achiev				and a consta	ant total tra	ansmitted pov	wer
Note 2: Inter	rference from other c	ells and noise :	sources no	t specified				
subr	carriers and time and	shall be mode	lled as AW	GN of app	ropriate po	wer for N_{a}	oc to be fulfill	ed.
5000		els have been (derived from	n other pa	rameters fo	or informati	on purposes	. Thev
Note 3: RSF								
Note 3: RSF							• •	,
Note 3: RSF are	not settable parameter	ers themselves	i.	-				-

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.

P	Parameter	Unit		st 1		st 2		est 3
		Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
E-UTRA RF Ch	nannel Number		1	2	1	2	1	2
BW _{channel}		MHz	10	10	10	10	10	10
Gap Pattern Id			0	-	0	-	0	-
Special subfran	ne configuration Note1		(5		6		6
Uplink-downlinl	k configuration Note1			1		1		1
Measurement b		n _{PRB}	22-	-27	22-	27	22	2—27
PDSCH Reference measurement			R.0 TDD	-	R.0 TDD	_	R.0	_
channel defined							TDD	
PDSCH allocat	ON CH/PHICH Reference	n _{PRB}	13—36	-	13—36	-	13—36	-
	channel defined in		R.6	TDD	R.6	TDD	R.6	6 TDD
	s defined in A.3.2.2.1 d A.3.2.2.2 (OP.2 TDD)		OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TD
PBCH RA	u A.J.Z.Z.Z (OI .Z TDD)			100		TDD	0	0
PBCH_RB								0
PSS_RA							1	
SSS_RA							1	
PCFICH_RB							1	
PHICH_RA								
PHICH_RB		dB	0	0	0	0		
PDCCH_RA		äb	Ũ	Ũ	Ũ	Ũ		
PDCCH RB								
_								
PDSCH_RA								
PDSCH_RB								
OCNG_RA ^{Note2}								
OCNG RB ^{Note2}								
—	Bands 33, 34, 35,		1		1		<u> </u>	1
$N_{_{oc}}$ Note3	36, 37, 38, 39 and 40	dBm/15 kHz	-80	-80	-104.70	-104.70	-119.50	-119.50
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$		dB	-1.75	-1.75	-4.0	-4.0	-4.0	-4.0
	Bands 33, 34, 35,		1				1	1
RSRP ^{Note4}	36, 37, 38, 39 and 40	dBm/15 kHz	-81.75	-81.75	-108.70	-108.70	-123.50	-123.50
RSRQ ^{Note4}	Bands 33, 34, 35, 36, 37, 38, 39 and 40	dB	-14.76	-14.76	-16.25	-16.25	-16.25	-16.25
Io ^{Note4}	Bands 33, 34, 35, 36, 37, 38, 39 and 40	dBm/9 MHz	-50	-50	-75.46	-75.46	-90.26	-90.26
\hat{E}_{s}/N_{oc}		dB	-1.75	-1.75	-4.0	-4.0	-4.0	-4.0
Propagation co	ndition	-	AW	GN	AM	/GN	A	NGN
Note 2: OC dei	r special subframe and CNG shall be used such nsity is achieved for all erference from other co	that both cells a OFDM symbols.	re fully allo	cated and	a constant	total transr	nitted pow	er spectra
sul Note 4: RS	bcarriers and time and SRQ, RSRP and Io leve	shall be modellec Is have been der	I as AWGN	of approp	riate power	for N_{oc} to	o be fulfille	ed.

Table A 9.2.4.2-1: RSRQ TDD—TDD Inter frequency test parameters

not settable parameters themselves. Note 5: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

A.9.2.4.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Section 9.1.6.

Annex B (informative): Change history:

Change H				_			
Date	TSG#	TSG Doc.	CR	Rev	Subject	Old	New
2007-12	RP#38	RP-071037			Approved version in TSG RAN#38	-	8.0.0
2008-03	RP#39	RP-080123			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	4	E-UTRAN TDD intra frequency measurements when DRX is	8.2.0	8.3.0
2008-09	RP#41	RP-080644	008	1	used E-UTRAN TDD - UTRAN TDD measurements	8.2.0	8.3.0
2008-09	RP#41	RP-080644			RSRQ reporting Range	8.2.0	8.3.0
2008-09	RP#41	RP-080644			Interfrequency and UTRA interRAT DRX peformance	8.2.0	8.3.0
2000 00		111 000044	010	1	requirements	0.2.0	0.0.0
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
2008.00	DD#44		044			8.2.0	8.3.0
2008-09 2008-09	RP#41 RP#41	RP-080644 RP-080644			Cell Synchronization requirement for E-UTRA TDD Power Headroom Requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080644			Event Triggering and Reporting Criteria Capability Requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080642			Correction of E-UTRAN to UTRAN TDD handover	8.2.0	8.3.0
2008-09	RP#41	RP-080642		1	Definition of Symbols	8.2.0	8.3.0
2008-09	RP#41	RP-080642		1	Idle mode requirements updates	8.2.0	8.3.0
2008-09	RP#41	RP-080642		1	General updates to 36.133	8.2.0	8.3.0
2008-09	RP#41	RP-080642		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	8.2.0	8.3.0
					measurement performance requirements		
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		1	Corrections to Handover requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713		•	Measurement reporting requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713		2	RRC re-establishment requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713		2	Correction to UE measurement requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713			Correction for the definition of interruption time	8.2.0	8.3.0
2008-09	RP#41	RP-080713		1	Correction to idle mode higher priority search requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713		1		8.2.0	8.3.0
2008-09	RP#41 RP#41	RP-080713 RP-080713			E-UTRAN TDD inter frequency measurement requirements Updates of the Measurement procedures in RRC_Connected	8.2.0	8.3.0
0000.40	DD#40	DD 000040	50		state from RAN 4#47bis and RAN 4#48	0.0.0	0.4.0
2008-12 2008-12	RP#42 RP#42	RP-080919 RP-080928		4	Introduction of 700MHz Bands 12, 14 and 17	8.3.0 8.3.0	8.4.0
2008-12				1	CR to 36.133 on Radio Link Failure Monitoring		8.4.0
	RP#42	RP-080929			Correction to idle mode requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080929			Definition of out of service area	8.3.0	8.4.0
2008-12	RP#42	RP-080929		0	Measurement requirements for UTRAN TDD cells in idle state	8.3.0	8.4.0
2008-12	RP#42	RP-080929		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			Random access requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080932			Cell phase synchronization error for large cell	8.3.0	8.4.0
2008-12	RP#42	RP-080932		4	Synchronization Requirements for E-UTRAN to 1xRTT and	8.3.0	8.4.0
2008-12	RP#42	RP-080933	49		HRPD Handovers E-UTRAN TDD-TDD intra/inter frequency measurement	8.3.0	8.4.0
2008-12	RP#42	RP-080933	50		reporting requirements E-UTRAN FDD – UTRAN FDD Measurement reporting	8.3.0	8.4.0
					requirements		
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			Alignement of DRX cycle dependent requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080933		1	Alignement of side conditions for mobility measurements	8.3.0	8.4.0
2008-12	RP#42 RP#42	RP-080933		1	Measurement models in RRC_CONNECTED	8.3.0	8.4.0
				1		8.3.0	
2008-12	RP#42	RP-080933		1	Limitation of maximum number of layers for multiple monitoring		8.4.0
2008-12	RP#42	RP-080933		1	GSM Cell identification requirements for parallel monitoring	8.3.0	8.4.0
2008-12	RP#42	RP-080933			UE transmit timing requirement	8.3.0	8.4.0
2008-12	RP#42	RP-080933	30		Correction of TS 36.133 section 8.1.2.1.1.	8.3.0	8.4.0

2008-12 2008-12 2008-12 2008-12	RP#42 RP#42	RP-080934			Correction to RSRQ Report Mapping	8.3.0	8.4.0
2008-12	RP#42		100				
	RP#42	DD 000005	86	4	Missing side conditions for RSRP and RSRQ	8.3.0	8.4.0
	RP#42 RP#42	RP-080935	80	1 1	Phase I RRM Test Cases Test Configuration for RRM Tests: Measurement Reference	8.3.0 8.3.0	8.4.0 8.4.0
2008-12	RP#42	RP-080936	75		Channels and OCNG Cdma200 1xRTT Measurement Requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080930	-	1	E-UTRA to UTRA cell search requirements for SON	8.3.0	8.4.0
2009-03	RP#43	RP-090182		1	Correction of A3-offset parameter in RRM test case	8.4.0	8.5.0
2009-03	RP#43	RP-090182		1	Some Editorial Corrections	8.4.0	8.5.0
2009-03	RP#43	RP-090182			Clarifications for the DRX state	8.4.0	8.5.0
	RP#43	RP-090183			Modification on measurements of UTRAN TDD cells	8.4.0	8.5.0
2009-03	RP#43	RP-090183			Clarification of the correct behavior when Treselection is not a multiple of idle mode reselection evaluation period	8.4.0	8.5.0
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			Radio link monitoring	8.4.0	8.5.0
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 transmission timing control requirement	8.4.0	8.5.0
2009-03	RP#43	RP-090186	90		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 Monitoring	8.4.0	8.5.0
2009-03	RP#43	RP-090186	117		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 DRX is used	8.4.0	8.5.0
2009-03	RP#43	RP-090186	139		Correction of E-UTRAN FDD – UTRAN FDD measurements when no DRX	8.4.0	8.5.0
2009-03	RP#43	RP-090186	146		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
2009-03	RP#43	RP-090370		1	E-UTRAN FDD - UTRAN TDD Cell Search Test Cases in Fading		8.5.0
2009-03	RP#43	RP-090370	106	1	E-UTRA FDD to UTRA FDD Handover Test Case	8.4.0	8.5.0
2009-03	RP#43	RP-090370		1	Correction of E-UTRA FDD-FDD Intra-frequency cell reselection test case	8.4.0	8.5.0
2009-03	RP#43	RP-090370		1	Correction of E-UTRA FDD-FDD priority based Inter-frequency cell reselection test case	8.4.0	8.5.0
2009-03	RP#43	RP-090370	111		E-UTRAN TDD - UTRAN FDD Handover Test Case	8.4.0	8.5.0
2009-03	RP#43	RP-090370		1	E-UTRAN FDD - GSM Cell Search Test Case in AWGN	8.4.0	8.5.0
2009-03	RP#43	RP-090370	113		E-UTRAN - UTRAN FDD Cell Search Test Cases in Fading	8.4.0	8.5.0
2009-03	RP#43	RP-090370		1	E-UTRAN UE Timing Accuracy Related Test Cases	8.4.0	8.5.0
2009-03	RP#43	RP-090370		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		1	E-UTRA TDD-UTRA TDD cell search (fading)	8.4.0	8.5.0
2009-03	RP#43	RP-090370		1	E-UTRA TDD-UTRA TDD handover	8.4.0	8.5.0
2009-03	RP#43	RP-090370		1	Addition of E-UTRA FDD to UTRA FDD reselection test cases	8.4.0	8.5.0
2009-03	RP#43	RP-090370		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	1	UTRA FDD-E-UTRA FDD/ TDD handover test cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546		1	SON ANR UTRAN FDD Cell Search Test Case	8.5.0	8.6.0
2009-05	RP#44	RP-090546	-		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	1	E-UTRAN FDD cdma2000 HO Test cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546		1	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	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 fading environment when DRX is used	8.5.0	8.6.0
2009-05	RP#44	RP-090546	201	1	Test case for E-UTRA FDD E-UTRA FDD inter frequency cell search when DRX is used in fading conditions	8.5.0	8.6.0
2009-05	RP#44	RP-090546	185	1	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 Case	8.5.0	8.6.0
2009-05	RP#44	RP-090546	177	1	Introduction of New Reference Channels and OCNG Patterns for 1.4MHz Bandwidth	8.5.0	8.6.0
2009-05	RP#44	RP-090546	200	2	Test case for E-UTRA TDD E-UTRA TDD inter frequency cell search when DRX is used in fading conditions	8.5.0	8.6.0
2009-05	RP#44	RP-090547	159		Alignment of inter frequency and inter RAT RRM reselection testcases with core requirements. (Technically Endorsed CR in	8.5.0	8.6.0
2009-05	RP#44	RP-090547	158 160		R4-50bis - R4-091094) 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			Correction to Inter-RAT HO Interruption Time Definition	8.5.0	8.6.0
2009-05	RP#44	RP-090548			CR c2k RRC delay	8.5.0	8.6.0
2009-05	RP#44	RP-090548	196		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			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
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	RP#44	RP-090549	161		E-UTRAN UTRAN HO Command Processing Delay. (Technically Endorsed CR in R4-50bis - R4-091291)	8.5.0	8.6.0
	RP#44	RP-090549		1	Corrections of Cell Reselection Requirements in Idle Mode	8.5.0	8.6.0

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2009-05	RP#44	RP-090549	181	2	Removal of [] from ranking criteria in Idle mode cell reselection	8.5.0	8.6.0
2009-05	RP#44	RP-090550			Correction on the TDD-TDD inter frequency measurements.	8.5.0	8.6.0
			156		(Technically Endorsed CR in R4-50bis - R4-091071)		
2009-05	RP#44	RP-090550			Correction to the Referenced Section Number for Tinter1.	8.5.0	8.6.0
0000.05	00///	DD 000554	159		(Technically Endorsed CR in R4-50bis - R4-091153)	0.5.0	
2009-05	RP#44	RP-090551	100		Further clarification of DRX/Non-DRX state. (Technically	8.5.0	8.6.0
0000.05		DD 000554	166		Endorsed CR in R4-50bis - R4-091389)	0.5.0	0.0.0
2009-05	RP#44	RP-090551	202		Correction on reference to 3GPP2 specification	8.5.0	8.6.0
2009-05	RP#44	RP-090551	169		OCNG simplification. (Technically Endorsed CR in R4-50bis -	8.5.0	8.6.0
2000.00		DD 000047	040		R4-091410)	0.0.0	070
2009-09	RP#45 RP#45	RP-090817 RP-090880	210		Correction to TDD RMC references in RLM test cases	8.6.0	8.7.0 8.7.0
					Introduction of Reference DRX configurations	8.6.0	8.7.0
2009-09	RP#45	RP-090880			Addition of DRX configurations into non DRX test cases	8.6.0	
2009-09	RP#45	RP-090880			Correction to HO Test Cases	8.6.0	8.7.0
2009-09	RP#45	RP-090880	226		Correction to E-UTRAN GSM BSIC Identification Requirements	8.6.0	8.7.0
0000.00		DD 000000	050		with DRX	0.0.0	070
2009-09	RP#45	RP-090880			Corrections of Test Cases	8.6.0	8.7.0
2009-09	RP#45	RP-090880	306		E-UTRA FDD - E-UTRA FDD and UTRA FDD cell search test	8.6.0	8.7.0
	00//15		0.07				070
2009-09	RP#45	RP-090880			E-UTRAN Radio Link Monitoring Test Cases in DRX	8.6.0	8.7.0
2009-09	RP#45	RP-090880	308	1	Inter-frequency E-UTRA - E-UTRA HO test cases: unknown	8.6.0	8.7.0
					target cell		
2009-09	RP#45	RP-090880	262	1	E-UTRA FDD UTRA FDD Blind Handover test case: unknown	8.6.0	8.7.0
0000.00	DD // / -		000		target cell	0.0.0	070
2009-09	RP#45	RP-090836	320		Small corrections to Measurements performance tests	8.6.0	8.7.0
			004		parameters		070
2009-09	RP#45	RP-090836		1	E-UTRAN GSM Cell Search in DRX Test Cases	8.6.0	8.7.0
2009-09	RP#45	RP-090836	266		Set 3.2. E-UTRA TDD to UTRA TDD cell search in DRX under	8.6.0	8.7.0
					fading		
2009-09	RP#45	RP-090836	268		Set 3.6. Test case of E-UTRA TDD to E-UTRA TDD and UTRA	8.6.0	8.7.0
	00//15		070		TDD combined cell search under fading		070
2009-09	RP#45	RP-090836			Set 3.12. E-UTRA TDD to UTRA TDD blind handover test	8.6.0	8.7.0
2009-09	RP#45	RP-090836			E-UTRAN FDD - UTRAN FDD Cell Search in DRX Test Cases	8.6.0	8.7.0
2009-09	RP#45	RP-090836	280		E-UTRAN TDD- E-UTRAN TDD and E-UTRAN TDD Inter-	8.6.0	8.7.0
					frequency Cell Search Test Case		
2009-09	RP#45	RP-090836			E-UTRAN GSM Blind Handover Test Cases	8.6.0	8.7.0
2009-09	RP#45	RP-090836			E-UTRAN FDD cdma2000 Blind HO Test cases	8.6.0	8.7.0
2009-09	RP#45	RP-090836	301		RRM Test case for multiple E-UTRAN FDD-FDD Inter-frequency	8.6.0	8.7.0
					event triggered reporting under fading propagation conditions		
2009-09	RP#45	RP-090836			Fading reselection test case between E-UTRA and UTRA	8.6.0	8.7.0
2009-09	RP#45	RP-090828			CR SI HRPD correction	8.6.0	8.7.0
2009-09	RP#45	RP-090879		1	Corrections to Measurements of HRPD cells and cdma2000 1X	8.6.0	8.7.0
2009-09	RP#45	RP-090879		1		8.6.0	8.7.0
2009-09	RP#45	RP-090879			CR reference correction	8.6.0	8.7.0
2009-09	RP#45	RP-090879	-	1	Corrections to Measurements of GSM cells in RRC_IDLE	8.6.0	8.7.0
2009-09	RP#45	RP-090879			Range of Idle Mode Es/lot side conditions	8.6.0	8.7.0
2009-09	RP#45	RP-090879			Removal of [] from Tdetect, Tmeasure and Tevaluate	8.6.0	8.7.0
2009-09	RP#45	RP-090879			CR Idle mode IF measurement condition	8.6.0	8.7.0
2009-09	RP#45	RP-090879			CR Idle mode IF measurement period	8.6.0	8.7.0
2009-09	RP#45	RP-090879		1	Clarification to applicability of RSRP side conditions in Idle mode	8.6.0	8.7.0
2009-09	RP#45	RP-090814		1	Correction to Random Access	8.6.0	8.7.0
2009-09	RP#45	RP-090816			Editorial correction on E-UTRAN inter frequency measurements	8.6.0	8.7.0
2009-09	RP#45	RP-090816	218		E-UTRAN FDD-FDD inter frequency measurements when DRX	8.6.0	8.7.0
					is used		
2009-09	RP#45	RP-090816	220		E-UTRAN TDD-TDD inter frequency cell search/measurement	8.6.0	8.7.0
					requirements when DRX is used		
2009-09	RP#45	RP-090816			E-UTRAN inter RAT measurement requirements	8.6.0	8.7.0
2009-09	RP#45	RP-090816			Correction to Monitoring of Multiple Layers Using Gaps	8.6.0	8.7.0
2009-09	RP#45	RP-090816	-		CR GSM measurement period	8.6.0	8.7.0
2009-09	RP#45	RP-090816			CR cdma2000 1x and HRPD number of carriers	8.6.0	8.7.0
2009-09	RP#45	RP-090816		1	E-UTRAN TDD intra frequency measurements	8.6.0	8.7.0
2009-09	RP#45	RP-090816	300	2	Clarification of the number of monitoring cells for intra frequency	8.6.0	8.7.0
					measurements		
2009-09	RP#45	RP-090815			Correction of timing advance adjustment accuracy test case	8.6.0	8.7.0
2009-09	RP#45	RP-090815	290		Correction to UE Transmit Timing Requirements	8.6.0	8.7.0
2009-12					Defining requirements for UTRA TDD measurements for SON	8.7.0	8.8.0
	RP#46	RP-091275	328		(Technically endorsed at RAN 4 52bis in R4-093511)		
2009-12		[_]			Modification of test case of E-UTRA TDD intra frequency cell	8.7.0	8.8.0
	RP#46	RP-091272	330		reselection (Technically endorsed at RAN 4 52bis in R4-093520)		
2009-12					Modification of test case of E-UTRA TDD inter frequency cell	8.7.0	8.8.0
	RP#46	RP-091272	331		reselection (Technically endorsed at RAN 4 52bis in R4-093521)		
2009-12					Addition of E-UTRA TDD to UTRA FDD reselection test cases	8.7.0	8.8.0
	RP#46	RP-091272			(Technically endorsed at RAN 4 52bis in R4-093686)		
2009-12	RP#46	RP-091271	337		Correction of missing accuracy requirements for UTRAN FDD	8.7.0	8.8.0

	(Technically endorsed at RAN 4 52bis in R4-093689)	

2009-12	RP#46	RP-091275	339		CR cdma2000 HRPD measurement period (Technically endorsed at RAN 4 52bis in R4-093720)	8.7.0	8.8.0
2009-12	RP#46	RP-091275			CR cdma2000 1x measurement period (Technically endorsed at RAN 4 52bis in R4-093721)	8.7.0	8.8.0
2009-12	KP#40	KF-091275	341		Correction for E-UTRAN FDD - UTRAN FDD Cell Search in DRX	8.7.0	8.8.0
	DD#46	RP-091272	242		Test Cases (Technically endorsed at RAN 4 52bis in R4- 093890)		
2009-12	RP#46 RP#46	RP-091272 RP-091272			Revise geometry factors for Intra freq Reselection Test Cases	8.7.0	8.8.0
2009-12	RP#46		343		Corrections on RRM parameters for Bands 12, 14, 17	8.7.0	8.8.0
2009-12	RP#46		350	1	Corrections to PDSCH RMC-s	8.7.0	8.8.0
2009-12	RP#46	RP-091271		1	Corrections of TS36.133	8.7.0	8.8.0
2009-12	RP#46	RP-091275			E-UTRAN TDD - UTRAN TDD cell search for SON	8.7.0	8.8.0
2009-12	RP#46		360		Cell Search Requirements for Intra-LTE Handover to Unknown Target Cell	8.7.0	8.8.0
2009-12	RP#46	RP-091271	366	1	Correction in UE UTRA TDD P-CCPCH RSCP measurement capability for R8	8.7.0	8.8.0
2009-12	RP#46	RP-091275			Cell Timing Change Requirements for Event Triggered Reporting	8.7.0	8.8.0
2009-12	RP#46		379		Correction to Power Headroom Requirements	8.7.0	8.8.0
2009-12	RP#46	RP-091271	381		Editorial corrections to 36.133	8.7.0	8.8.0
2009-12	RP#46	RP-091271			Editorial corrections to the time units for RRC Re-establishment test cases	8.7.0	8.8.0
2009-12	RP#46	RP-091272		1	Introduction of cell search test case in DRX to verify L3 filtering	8.7.0	8.8.0
2009-12	RP#46	RP-091271			Correction to ONCG Patterns	8.7.0	8.8.0
2009-12	RP#46	RP-091287		1	Correction of Band 11 requirements for TS36.133 Rel-8	8.7.0	8.8.0
2010-03	RP#47	RP-100254			Idle mode corrections	8.8.0	8.9.0
2010-03	RP#47	RP-100254		1	UE measurement capability requirements in Idle and Connected	8.8.0	8.9.0
2010-03		100204		<u> </u>	Correction to UE Measurement Capability Requirements in Idle	2.2.0	8.9.0
2010-03	RP#47	RP-100254	422		Mode Removal of activation time from interRAT handover	8.8.0	8.9.0
_0.0 00	RP#47	RP-100254	411		requirements	8.8.0	0.0.0
2010-03	RP#47	RP-100254		1	Correction to UE Transmit Timing Requirements	8.8.0	8.9.0
2010-03	RP#47	RP-100254			Correction of E-UTRAN FDD inter frequency measurements	8.8.0	8.9.0
2010-03	RP#47	RP-100254	401		Correction of E-UTRAN TDD inter frequency measurements_R8	8.8.0	8.9.0
2010-03	RP#47	RP-100255			Correction of RSRP value in E-UTRAN FDDFDD Inter frequency reselection test	8.8.0	8.9.0
2010-03	RP#47	RP-100255	396		Addition of missing Es/Noc parameters in RRM test cases	8.8.0	8.9.0
2010-03	RP#47	RP-100255	420		Correction to RRC Re-establishment Test Case	8.8.0	8.9.0
2010-03	RP#47	RP-100255	426		Correction of UE transmit timing test case	8.8.0	8.9.0
2010-03	RP#47	RP-100255	418	1	Correction to RLM Test Cases	8.8.0	8.9.0
2010-03	RP#47	RP-100262	406		Editorial Corrections in TS36.133(Rel-8)	8.8.0	8.9.0
2010-03	RP#47	RP-100264	394		Corrections for Extended UMTS1500 in TS36.133(Rel-8)	8.8.0	8.9.0
2010-06	RP-48	RP-100622	465	1	Correction to RRM Test Cases	8.9.0	8.10.0
2010-06	RP-48	RP-100622			Corrections of section numbering on the test case of E-UTRAN FDD-FDD inter-frequency cell search requirements for L3 fitering	8.9.0	8.10.0
2010-06	RP-48	RP-100622		1	Correction to RRM Requirements	8.9.0	8.10.0
2010-06	RP-48	RP-100622			UE Measurement Capability Requirements for CDMA2000	8.9.0	8.10.0
2010-06	RP-48	RP-100622			Clarification on radio link monitoring	8.9.0	8.10.0
2010-06	RP-48	RP-100622		1	Editorial corrections to 36.133(Rel-8)	8.9.0	8.10.0
2010-06	RP-48	RP-100622	446	ļ	Correction to TDD intrafrequency accuracy test case	8.9.0	8.10.0
2010-06	RP-48	RP-100622	440	1	Correction of lo value in E-UTRAN FDD and TDD Inter frequency RSRP tests	8.9.0	8.10.0
2010-06	RP-48	RP-100622	-	1	Correction of E-UTRAN Inter-frequency Cell Re-selection Requirements	8.9.0	8.10.0
2010-09	RP-49	RP-100914			Clarification of Radio link monitoring test cases	8.10.0	8.11.0
2010-09 2010-09	RP-49 RP-49	RP-100914 RP-100915		1	Cell identity change time in RRM Test cases Correction of Io value in RSRP FDD and TDD Intra frequency	8.10.0 8.10.0	8.11.0 8.11.0
2010.00		DD 40004 (500		test	0 40 0	0.44.0
2010-09	RP-49	RP-100914		<u> </u>	Alignment of REFSENS between 36.101 and 36.133(R8)	8.10.0	8.11.0
2010-09	RP-49	RP-100914		1	Introduction of CSG cell reselection requirements	8.10.0	8.11.0
2010-09 2010-09	RP-49	RP-100914		1	Scrambling code change time in RRM Test cases	8.10.0	8.11.0
2010-09	RP-49	RP-100915	404		Test case for E-UTRA TDD event triggered reporting when L3 filtering is used in R8 Corrections to 36.133(R8)	8.10.0 8.10.0	8.11.0
		DD 100015	504	1			8.11.0
2010-09	RP-49	RP-100915		1			8 11 0
2010-09 2010-09	RP-49 RP-49	RP-100915	493	1	PDCCH Aggregation level for RRM tests	8.10.0	8.11.0
2010-09	RP-49		493 500	1	PDCCH Aggregation level for RRM tests Correction of OCNG Correction of ES/lot value in E-UTRAN RSRQ FDD intra		8.11.0 8.11.0 8.11.0
2010-09 2010-09 2010-09 2010-09	RP-49 RP-49 RP-49 RP-49	RP-100915 RP-100915 RP-100915	493 500 502	1	PDCCH Aggregation level for RRM tests Correction of OCNG Correction of ES/lot value in E-UTRAN RSRQ FDD intra frequency test	8.10.0 8.10.0 8.10.0	8.11.0 8.11.0
2010-09 2010-09 2010-09	RP-49 RP-49 RP-49	RP-100915 RP-100915	493 500 502 495	1	PDCCH Aggregation level for RRM tests Correction of OCNG Correction of ES/lot value in E-UTRAN RSRQ FDD intra frequency test Corrections to RRM OCNG Patterns E-UTRA TDD - UTRA TDD cell reselection in fading propagation	8.10.0 8.10.0	8.11.0
2010-09 2010-09 2010-09 2010-09 2010-09 2010-09	RP-49 RP-49 RP-49 RP-49 RP-49 RP-49	RP-100915 RP-100915 RP-100915 RP-100915 RP-100915	493 500 502 495 486		PDCCH Aggregation level for RRM tests Correction of OCNG Correction of ES/lot value in E-UTRAN RSRQ FDD intra frequency test Corrections to RRM OCNG Patterns E-UTRA TDD - UTRA TDD cell reselection in fading propagation conditions: UTRA TDD is of lower priority in R8	8.10.0 8.10.0 8.10.0 8.10.0 8.10.0 8.10.0	8.11.0 8.11.0 8.11.0 8.11.0
2010-09 2010-09 2010-09 2010-09 2010-09	RP-49 RP-49 RP-49 RP-49 RP-49	RP-100915 RP-100915 RP-100915 RP-100915 RP-100915 RP-101331	493 500 502 495		PDCCH Aggregation level for RRM tests Correction of OCNG Correction of ES/lot value in E-UTRAN RSRQ FDD intra frequency test Corrections to RRM OCNG Patterns E-UTRA TDD - UTRA TDD cell reselection in fading propagation	8.10.0 8.10.0 8.10.0 8.10.0	8.11.0 8.11.0 8.11.0

2010-12	RP-50	RP-101331		1	Corrections and Clarifications to TS36.133	8.11.0	8.12.0
2010-12	RP-50	RP-101332			PDCCH Aggregation Level for RRM Tests	8.11.0	8.12.0
2010-12 2010-12	RP-50 RP-50	RP-101332 RP-101332			MIMO correlation scenario for RLM test cases Removal of [] from PDSCH and PCFICH/PDCCH/PHICH Measurement Channel references in Annex A.	8.11.0 8.11.0	8.12.0 8.12.0
2010-12	RP-50	RP-101332	583		Enabling HARQ for RRM Tests	8.11.0	8.12.0
2010-12	RP-50	RP-101335		1	Completion of CSG cell reselection requirements	8.11.0	8.12.0
2010-12	RP-50	RP-101386			Removal of square brackets from scope of TS36.133	8.11.0	8.12.0
2011-04	RP-51	RP-110340	0661	-	Correction to E-UTRAN TDD in-sync test requirements	8.12.0	8.13.0
2011-04	RP-51	RP-110339	0674	-	Modification on test case of E-UTRA TDD to UTRA TDD cell reselection(R8)	8.12.0	8.13.0
2011-04	RP-51	RP-110339		1	Value of MS_TXPWR_MAX_CCH for EUTRA-GSM reselection test cases A.4.4.x	8.12.0	8.13.0
2011-04	RP-51	RP-110339	0685	1	Rearrangement of Time periods for EUTRA-UTRA reselection test case A.4.3.1.1	8.12.0	8.13.0
2011-04	RP-51	RP-110339	0688	1	Removal of "Force to Cell 2" during initialisation for EUTRA- UTRA reselection test case A.4.3.1.2	8.12.0	8.13.0
2011-04	RP-51	RP-110340		1	SNR for RRM A.8.x test cases using ETU70	8.12.0	8.13.0
2011-04	RP-51	RP-110339		-	Correction to test cases of E-UTRA to UTRA cell reselection when UE is in idle state	8.12.0	8.13.0
2011-04	RP-51	RP-110339	0717	1	Modification on Test Requirements in E-UTRA - UTRA TDD SON Test Case (A.8.7.3) (R8)	8.12.0	8.13.0
2011-04	RP-51	RP-110340		-	Correction of RLM evaluation period in DRX	8.12.0	8.13.0
2011-04	RP-51	RP-110340		-	Correction of inter-frequency measurement accuracy test cases	8.12.0	8.13.0
2011-04	RP-51	RP-110339		-	Modification on Test Requirements in E-UTRA GSM cell reselection Test Case (A.4.4) (R8)	8.12.0	8.13.0
2011-06	RP-52	RP-110786			Rearrangement of Time periods for EUTRA-UTRA reselection test case A.4.3.4.1	8.13.0	8.14.0
2011-06	RP-52	RP-110786			Removal of "Force to Cell 2" during initialisation for EUTRA - UTRA reselection test cases	8.13.0	8.14.0
2011-06	RP-52	RP-110787			Clarification of Radio link monitoring test requirements	8.13.0	8.14.0
2011-06 2011-06	RP-52 RP-52	RP-110786 RP-110787			Correction to inter-RAT cell identificiation time in DRX for Rel-8 Correction to identification time of UTRA FDD cell for SON in	8.13.0 8.13.0	8.14.0 8.14.0
2011-06	RP-52	RP-110787	820		DRX for Rel-8 Correction to requirements of E-UTRAN TDDUTRAN TDD	8.13.0	8.14.0
2011-06	RP-52	RP-110787	826	1	Measurements for SON when DRX is used for Rel-8 Addition of missing EsNoc parameters in E-UTRAN TDD UTRAN TDD Measurements text assess for Rel 8	8.13.0	8.14.0
2011-09	RP-53	RP-111246	861		UTRAN TDD Measurements test cases for Rel-8 Thresholds and margins for reporting of neighbour cells in RRM test A.8.9.1	8.14.0	8.15.0
2011-09	RP-53	RP-111246	900		Thresholds and margins for RRM tests A.5.2.1 and A.5.2.2	8.14.0	8.15.0
2011-09	RP-53	RP-111246			Thresholds and margins for RRM tests A.5.2.4 and A.5.2.5	8.14.0	8.15.0
2011-09	RP-53	RP-111247			Adding condition of UTRA TDD measurement report delay requirements applied	8.14.0	8.15.0
2011-09	RP-53	RP-111247	887		Removing [] in section 8.1.2.2.2.2 for Rel-8	8.14.0	8.15.0
2011-09	RP-53	RP-111247			Clarify time points and time duration for RLM tests A.7.3.x	8.14.0	8.15.0
2011-09	RP-53	RP-111250		1	Correction of references	8.14.0	8.15.0
2011-09	RP-53	RP-111250			Missing RSRQ in Intra-frequency measurement requirements	8.14.0	8.15.0
2011-12	RP-54	RP-111681			Corrections of inter-frequency measurement accuracy RSRP test cases	8.15.0	8.16.0
2011-12	RP-54		1029		Correction for the identification time in DRX for UTRA TDD in R8		8.16.0
2011-12	RP-54	RP-111680		1	Thresholds and margins for RRM tests A.8.11.3 and A.8.11.4	8.15.0	8.16.0
2011-12	RP-54 RP-55	RP-111681		1	Correction of E-UTRAN TDD-TDD inter frequency handover test case in R8 Thresholds and margins for E-UTRAN to C2K RRM reselection	8.15.0	8.16.0
2012-03		RP-120291			test cases (Rel-8)	8.16.0	8.17.0
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2012-03	RP-55	RP-120292	1122	1	PDSCH and OCNG pattern in PRACH Test cases A.6.2.1 and A.6.2.3	8.16.0	8.17.0
2012-06	RP-56	RP-120767	1262	1	Editorial corrections	8.17.0	8.18.0
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2012-06	RP-56	RP-120764	1274	1	RRM: Clarifications to the OCNG patterns	8.17.0	8.18.0
2012-06	RP-56	RP-120764	1354	1	UL Transmit Timing Requirements	8.17.0	8.18.0
2012-06	RP-56	RP-120766	1357	2	Correction of a timer period in inter-frequency measurement tests	8.17.0	8.18.0
2012-09	RP-57	RP-121295	1424		Remove the brackets for Tq of Uplink Transmit Timing R8	8.18.0	8.19.0

2012-09	RP-57	RP-121294	1428	1	Correction to RSRQ accuracy test cases R8	8.18.0	8.19.0
2012-09	RP-57	RP-121295	1453		Modification of Handover Delay Requirement and Test Cases from E-UTRAN to cdma2000 1x (Rel-9)	8.18.0	8.19.0

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