RP-020479

TSG RAN Meeting #17 Biarritz, France, 3 - 6 September, 2002

TitleCRs (Rel-4 and Rel-5 Category A) to TS 25.123 (1)SourceTSG RAN WG4Agenda Item7.4.4

RAN4 Tdoc	Spec	CR	R	Cat	Rel	Curr Ver	Title	Work Item
R4-021356	25.123	251	1	F	Rel-4	4.5.0	1.28Mcps TDD/FDD cell reselection in idle mode	LCRTDD-RF
R4-021357	25.123	252	1	Α	Rel-5	5.1.0	1.28Mcps TDD/FDD cell reselection in idle mode	LCRTDD-RF
R4-021164	25.123	253		F	Rel-4	4.5.0	1.28Mcps TDD/GSM cell reselection test case in idle mode	LCRTDD-RF
R4-021165	25.123	254		Α	Rel-5	5.1.0	1.28Mcps TDD/GSM cell reselection test case in idle mode	LCRTDD-RF
R4-021358	25.123	255	1	F	Rel-4	4.5.0	Cell reselection from 3.84Mcps TDD towards 1.28Mcps TDD in idle mode	TEI4
R4-021359	25.123	256	1	A	Rel-5	5.1.0	Cell reselection from 3.84Mcps TDD towards 1.28Mcps TDD in idle mode	TEI4
R4-021168	25.123	257		F	Rel-4	4.5.0	Cell reselection in CELL_FACH state	LCRTDD-RF
R4-021169	25.123	258		Α	Rel-5	5.1.0	Cell reselection in CELL_FACH state	LCRTDD-RF
R4-021170	25.123	259		F	Rel-4	4.5.0	Handover for 1.28 Mcps TDD OPTION	LCRTDD-RF
R4-021171	25.123	260		Α	Rel-5	5.1.0	Handover for 1.28 Mcps TDD OPTION	LCRTDD-RF
R4-021172	25.123	261		F	Rel-4	4.5.0	Introduction of Inter-RAT cell change for 1.28 Mcps TDD	LCRTDD-RF
R4-021173	25.123	262		Α	Rel-5	5.1.0	Introduction of Inter-RAT cell change for 1.28 Mcps TDD	LCRTDD-RF
R4-021174	25.123	263		F	Rel-4	4.5.0	OCNS_Ec/lor and loc	LCRTDD-RF
R4-021175	25.123	264		Α	Rel-5	5.1.0	OCNS_Ec/lor and loc	LCRTDD-RF
R4-021176	25.123	265		F	Rel-4	4.5.0	RACH reporting for 1.28 Mcps TDD	LCRTDD-RF
R4-021177	25.123	266		Α	Rel-5	5.1.0	RACH reporting for 1.28 Mcps TDD	LCRTDD-RF
R4-021366	25.123	267	1	F	Rel-4	4.5.0	Correction to SFN-SFN type 2 measurement mapping for LCR TDD option	LCRTDD-RF
R4-021367	25.123	268	1	Α	Rel-5	5.1.0	Correction to SFN-SFN type 2 measurement mapping for LCR	LCRTDD-RF

RAN4 Tdoc	Spec	CR	R	Cat	Rel	Curr Ver	Title	Work Item
							TDD option	

3GPP TSR RAN WG4 Meeting #24

R4-021356

Helsinki, Finland 12 - 16 August 2002

		n-v7
æ	25.123 CR 251 # rev 1 ^{# Current version: 4.5.0 [#]}	
For <u>HELP</u> on u	sing this form, see bottom of this page or look at the pop-up text over the $#$ symbols.]
Proposed change	affects: UICC apps # ME X Radio Access Network Core Network	
Title: ¥	1.28Mcps TDD/FDD cell reselection in idle mode	
Source: ¥	RAN WG4	
Work item code: ₩	LCRTDD-RF Date: # 21/08/2002	
Category: ¥	FRelease: \$ Rel-4Use one of the following categories:Use one of the following releases:F (correction)2A (corresponds to a correction in an earlier release)R96B (addition of feature),R97C (functional modification of feature)R98D (editorial modification)R99D (editorial modification)R99D tetailed explanations of the above categories canRel-4be found in 3GPP TR 21.900.Rel-5Rel-6(Release 6)	
Reason for chang	 3 1. UE measurement rules and filtering for 1.28 Mcps TDD/FDD cell reselection idle mode is unclear. 2. Incomplete 1.28 Mcps TDD/FDD cell reselection in idle mode test case. 	in
Summary of chang	e: # 1. UE measure CPICH RSCP and CPICH Ec/lo according to the measurement rules and filter both parameter results. 2. Complete the 1.28 Mcps TDD/FDD cell reselection test case	t
Consequences if not approved:	 Ambiguities exist in 1.28 Mcps TDD/FDD cell reselection. Test case for 1.28 Mcps TDD/FDD cell reselection is incomplete. Isolated Impact Analysis: Specify clearly 1.28 Mcps TDD/FDD cell reselection and fill the test case. Would not affect the implementation behaving like indicate in the CR, would affect the test case not behaving like indicated in the CR. 	
Clauses affected:	¥ 4; A.4.2.3	
Other specs affected:	Y N X Other core specifications X Test specifications X O&M Specifications	
Other comments:	# The corresponding Rel-5 CR is R4-021163. Equivalent CRs in other Releases: CR252r1 cat. A to 25.123 v5.1.0	

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <u>http://www.3gpp.org/specs/CR.htm</u>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4 Idle Mode

4.1 Cell Selection

4.1.1 Introduction

After a UE has switched on and a PLMN has been selected, the Cell selection process takes place, as described in TS25.304[18]. 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

4.2.1.1 3.84 Mcps TDD option

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 TDD cell, the UE shall attempt to identify, synchronise and monitor intra-frequency, inter-frequency and inter-RAT cells indicated in the measurement control system information of the serving cell. UE measurement activity is also controlled by measurement rules defined in TS25.304[18], allowing the UE to limit its measurement activity if certain conditions are fullfilled.

4.2.1.2 1.28 Mcps TDD option

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 TDD cell, the UE shall attempt to identify, synchronise and monitor intra-frequency, inter-frequency and inter-RAT cells indicated in the measurement control system information of the serving cell. UE measurement activity is also controlled by measurement rules defined in TS25.304[18], allowing the UE to limit its measurement activity if certain conditions are fullfilled.

4.2.2 Requirements

4.2.2.1 Measurement and evaluation of cell selection criteria S of serving cell

4.2.2.1.1 3.84 Mcps TDD option

The UE shall measure the PCCPCH RSCP level of the serving cell and evaluate the cell selection criterion S_{rxlev} defined in TS25.304[18] for the serving cell at least every DRX cycle. The UE shall filter the PCCPCH RSCP measurement of the serving cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureTDD}/2$ (see table 4.1).

If the UE has evaluated in N_{serv} successive measurements that the serving cell does not fulfil the cell selection criterion S, the UE shall initiate the measurements of all neighbour cells indicated in the measurement control system information, regardless of the measurement rules currently limiting UE measurement activities.

If the UE has not found any new suitable cell based the on searches and measurements of the neighbour cells indicated in the measurement control system information for 12 s, the UE shall initiate cell selection procedures for the selected PLMN as defined in TS25.304[18].

4.2.2.1.2 1.28 Mcps TDD option

The UE shall measure the PCCPCH RSCP level of the serving cell and evaluate the cell selection criterion S defined in TS25.304[18] for the serving cell at least every DRX cycle. The UE shall filter the PCCPCH RSCP level of the serving cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureNTDD}/2$ (see table 4.1A).

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 in the measurement control system information, regardless of the measurement rules currently limiting UE measurement activities.

If the UE has not found any new suitable cell based the on searches and measurements of the neighbour cells indicated in the measurement control system information for 12 s, the UE shall initiate cell selection procedures for the selected PLMN as defined in TS25.304[18].

4.2.2.2 Measurement of intra-frequency cells

4.2.2.2.1 3.84 Mcps option

The UE shall measure PCCPCH RSCP at least every $T_{measureTDD}$ (see table 4.1) for intra-frequency cells that are identified and measured according to the measurement rules. $T_{measureTDD}$ is defined in Table 4.1. The UE shall filter PCCPCH RSCP measurements of each measured intra-frequency cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureTDD}/2$.

The filtering shall be such that the UE shall be capable of evaluating that an intra-frequency cell has become better ranked than the serving cell within $T_{evaluateTDD}$ (see table 4.1), from the moment the intra-frequency cell became at least 2 dB better ranked than the current serving cell, provided that Treselection timer is set to zero.

If Treselection 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 Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.2.2 1.28 Mcps option

The UE shall measure PCCPCH RSCP at least every $T_{measureNTDD}$ (see table 4.1A) for intra-frequency cells that are identified and measured according to the measurement rules. $T_{measureNTDD}$ is defined in Table 4.1A. The UE shall filter PCCPCH RSCP measurements of each measured intra-frequency cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureNTDD}/2$.

The filtering shall be such that the UE shall be capable of evaluating that an intra-frequency cell has become better ranked than the serving cell within $T_{evaluateNTDD}$ (see table 4.1A), from the moment the intra-frequency cell became at least 2 dB better ranked than the current serving cell, provided that Treselection timer is set to zero and PCCPCH RSCP is used as measurement quantity for cell reselection.

If Treselection 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 Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.3 Measurement of inter-frequency TDD cells

4.2.2.3.1 3.84 Mcps option

The UE shall measure PCCPCH RSCP at least every $(N_{carrier}-1) * T_{measureTDD}$ (see table 4.1) for inter-frequency cells that are identified and measured according to the measurement rules. The parameter $N_{carrier}$ is the number of carriers used for TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured inter-frequency cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureTDD}/2$.

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that an already identified interfrequency cell has become better ranked than the serving cell within $(N_{carrier}-1) * T_{evaluateTDD}$ from the moment the interfrequency cell became at least 3 dB better than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that interfrequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better than the current serving cell provided that Treselection timer is set to zero.

If Treselection 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 Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.3.2 1.28 Mcps option

The UE shall measure PCCPCH RSCP at least every $(N_{carrier}-1) * T_{measureNTDD}$ (see table 4.1A) for inter-frequency <u>1.28</u> <u>Mcps TDD OPTION</u> cells that are identified and measured according to the measurement rules. The parameter $N_{carrier}$ is the number of carriers used for 1.28 Mcps TDD OPTION cells. The UE shall filter PCCPCH RSCP measurements of each measured inter-frequency cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureNTDD}/2$.

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that an already identified interfrequency cell has become better ranked than the serving cell within $(N_{carrier}-1) * T_{evaluateNTDD}$ from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero.

If Treselection 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 Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.3A 1.28 Mcps TDD to 3.84 Mcps TDD cell re-selection

This requirement only applies to 1.28 Mcps UEs supporting this mode.

The ranking of the low and high chip rate TDD cells shall be made according to the cell reselection criteria specified in $\frac{TS25.304[18]}{TS25.304[18]}$.

The UE shall measure PCCPCH RSCP at least every $N_{TDDcarrier} * T_{measureTDD}$ (see table 4.1A) for inter-frequency cells that are identified and measured according to the measurement rules. The parameter $N_{carrier}$ is the number of carriers used for 3.84 Mcps TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured high chip rate TDD cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureTDD}/2$.

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that a high chip rate TDD cell has become better ranked than the serving cell within $N_{TDDcarrier} * T_{evaluateTDD}$ from the moment the inter-frequency cell became at least 3 better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency 3.84Mcps TDD cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency 3.84Mcps TDD cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.4 Measurement of inter-frequency FDD cells

4.2.2.4.1 3.84 Mcps option

The UE shall measure the CPICH RSCP and CPICH Ec/Io of each FDD neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in TS25.304[18], at least every $T_{measureFDD}$ (see table 4.1). The UE shall filter CPICH RSCP measurements of each measured inter-frequency cell using at least 2 measurements which are taken so that the time difference between the measurements is at least $T_{measureFDD}/2$..

The filtering of CPICH RSCP shall be such that the UE shall be capable of evaluating that an already identified interfrequency cell has become better ranked than the serving cell within $N_{carrierFDD} * T_{evaluateFDD}$ from the moment the interError! No text of specified style in document.

frequency cell became at least 5 dB better than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 5 dB better than the current serving cell provided that Treselection timer is set to zero. The parameter $N_{carrierFDD}$ is the number of carriers used for FDD cells.

If Treselection 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 Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304. If FDD cell has been ranked as the best cell and IE cell_selection_and_reselection-quality_measure is set to CPICH Ec/No, then UE shall perform a second ranking of the FDD cells using CPICH Ec/Io as the measurement quantity, before performing cell re-selection.

4.2.2.4.2 1.28 Mcps option

This requirement only applies to 1.28 Mcps UEs supporting this modeboth 1.28 Mcps TDD OPTION and FDD.

The UE shall measure the CPICH RSCP and CPICH Ec/Io <u>at least every N_{carrieFDD}</u> * $T_{measureFDD}$ (see table 4.1A) for inter-frequency FDD cells that are identified and measured according to the measurement rules. of each FDD neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in TS25.304, at least every $T_{measureFDD}$ (see table 4.1A). The UE shall filter CPICH RSCP measurements of each measured inter-frequency cell using at least 2 measurements which are taken so that the time difference between the measurements is at least $T_{measureFDD}/2$.

CPICH RSCP is used as basic measurement quantity for cell ranking, the filtering of CPICH RSCP shall be such that the UE shall be capable of evaluating that an already identified inter-frequency cell has become better ranked than the serving cell within $N_{carrierFDD} * T_{evaluateFDD}$ from the moment the inter-frequency cell became at least 5 dB better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 5 dB better ranked than the serving cell provided that Treselection timer is set to zero. The parameter $N_{carrierFDD}$ is the number of carriers used for FDD cells.

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

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304. If FDD cell has been ranked as the best cell and IE cell_selection_and_reselection-quality_measure is set to CPICH Ec/No, then UE shall perform a second ranking of the FDD cells using CPICH Ec/Io as the measurement quantity, before performing cell re-selection.

4.2.2.5 Measurement of inter-RAT GSM cells

4.2.2.5.1 3.84 Mcps option

The UE shall measure the signal level of the GSM BCCH carrier of each GSM neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in TS25.304[18], at least every $T_{measureGSM}$ (see table 4.1). The UE shall maintain a running average of 4 measurements for each cell. The measurement samples for each cell shall be as far as possible uniformly distributed over the averaging period.

If GSM measurements are required by the measurement rules in TS25.304[18], The UE shall attempt to verify the BSIC at least every 30 seconds for each of the 4 strongest GSM BCCH carriers and rank the verified GSM BCCH cells according to the cell re-selection criteria in TS25.304[18]. 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 a BSIC, which is not indicated in the measurement control system information, the UE shall not consider that GSM BCCH carrier in cell reselection. The UE also shall not consider the GSM BCCH carrier in cell reselection, if the UE can not demodulate the BSIC of that GSM BCCH carrier.

4.2.2.5.2 1.28 Mcps option

The UE shall measure the signal level of the GSM BCCH carrier of each GSM neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in TS25.304[18], at least every $T_{measureGSM}$ (see table 4.1A). The UE shall maintain a running average of 4 measurements for each cell. The measurement samples for each cell shall be as far as possible uniformly distributed over the averaging period.

If GSM measurements are required by the measurement rules in TS25.304[18], the UE shall attempt to verify the BSIC at least every 30 seconds for each of the 4 strongest GSM BCCH carriers and rank the verified GSM BCCH cells according to the cell re-selection criteria in TS25.304[18]. 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 a BSIC, which is not indicated in the measurement control system information, the UE shall not consider that GSM BCCH carrier in cell reselection. The UE also shall not consider the GSM BCCH carrier in cell reselection, if the UE can not demodulate the BSIC of that GSM BCCH carrier.

4.2.2.6 Evaluation of cell reselection criteria

4.2.2.6.1 3.84 Mcps option

The UE shall evaluate the cell re-selection criteria defined in $\frac{TS \cdot 25.304[18]}{TS \cdot 25.304[18]}$ for the cells, which have new measurement results available, at least once every DRX cycle.

UE shall perform cell reselection immediately after the UE has found a better ranked suitable cell unless less than 1 second has elapsed from the moment the UE started camping on the current serving cell.

4.2.2.6.2 1.28 Mcps option

The UE shall evaluate the cell re-selection criteria defined in $\frac{TS \cdot 25.304[18]}{TS \cdot 25.304[18]}$ for the cells, which have new measurement results available, at least every DRX cycle.

Cell reselection shall take place immediately after the UE has found a better ranked suitable cell unless the UE has made cell reselection within the last 1 second.

4.2.2.7 Maximum interruption time in paging reception

4.2.2.7.1 3.84 Mcps option

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

At intra-frequency cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels of the target intra-frequency cell for paging reception. The interruption time shall not exceed 50 ms.

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

 T_{SI} 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 TS25.334[16] for a UTRAN cell.

T_{BCCH} is the maximum time allowed to read BCCH data from a GSM cell as defined in TS45.008[21].

These requirements assume sufficient radio conditions, so that decoding of system information can be made without errors.

DRX cycle length [s]	N _{serv} (number of DRX cycles)	T _{measureTDD} [s] (number of DRX cycles)	T _{evaluateTDD} [s] (number of DRX cycles)	T _{measureFDD} [s] (number of DRX cycles)	T _{evaluateFDD} [s] (number of DRX cycles)	T _{measureGSM} [s] (number of DRX cycles)
0.08	4	0.64 (8 DRX	2.56 (32 DRX	0.64 (8 DRX	2.56 (32 DRX	2.56 (32 DRX
		cycles)	cycles)	cycles)	cycles)	cycles)
0.16	4	0.64 (4)	2.56 (16)	0.64 (4)	2.56 (16)	2.56 (16)
0.32	4	1.28 (4)	5.12 (16)	1.28 (4)	5.12 (16)	5.12 (16)
0.64	4	1.28 (2)	5.12 (8)	1.28 (2)	5.12 (8)	5.12 (8)
1.28	2	1.28 (1)	6.4 (5)	1.28 (1)	6.4 (5)	6.4 (5)
2.56	2	2.56 (1)	7.68 (3)	2.56 (1)	7.68 (3)	7.68 (3)
5.12	1	5.12 (1)	10.24 (2)	5.12 (1)	10.24 (2)	10.24 (2)

Table 4.1: $T_{measureTDD}$, $T_{evaluateTDD}$, $T_{measureFDD}$, $T_{evaluateFDD}$ and $T_{measureGSM}$

In idle mode, UE shall support DRX cycles lengths 0.64, 1.28, 2.56 and 5.12 s, according to [16].

4.2.2.7.2 1.28 Mcps option

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

At intra-frequency cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels of the target intra-frequency cell for paging reception. The interruption time shall not exceed 50 ms.

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

 T_{SI} 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 $\frac{25.331[16]}{16}$ for a UTRAN cell.

 T_{BCCH} is the maximum time allowed to read BCCH data from a GSM cell [210].

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.

DRX cycle length [s]	N _{serv} (<u>number of</u> DRX cycles)	T _{measureNTDD} [s] (number of DRX cycles)	T _{evaluateNTDD} [s] (number of DRX cycles)	T _{measureTD} _D [s] (number of DRX cycles)	T _{evaluateTDD} [s] (number of DRX cycles)	T _{measureFD} _D [S] (number of DRX cycles)	T _{evaluateFDD} [s] (number of DRX cycles)	T _{measureGSM} [s] (number of DRX cycles)
0.08	4	0.64 (8 DRX	2.56 (32	0.64 (8	2.56 (32	0.64 (8	2.56 (32	2.56 (32
		cycles)	DRX	DRX	DRX	DRX	DRX	DRX
			cycles)	cycles)	cycles)	cycles)	cycles)	cycles)
0.16	4	0.64 (4)	2.56 (16)	0.64 (4)	2.56 (16)	0.64 (4)	2.56 (16)	2.56 (16)
0.32	4	1.28 (4)	5.12 (16)	1.28 (4)	5.12 (16)	1.28 (4)	5.12 (16)	5.12 (16)
0.64	4	1.28 (2)	5.12 (8)	1.28 (2)	5.12 (8)	1.28 (2)	5.12 (8)	5.12 (8)
1.28	2	1.28 (1)	6.4 (5)	1.28 (1)	6.4 (5)	1.28 (1)	6.4 (5)	6.4 (5)
2.56	2	2.56 (1)	7.68 (3)	2.56 (1)	7.68 (3)	2.56 (1)	7.68 (3)	7.68 (3)
5.12	1	5.12 (1)	10.24 (2)	5.12 (1)	10.24 (2)	5.12 (1)	10.24 (2)	10.24 (2)

Table 4.1A: T_{measureNTDD}, T_{evaluateNTDD}, T_{measureTDD}, T_{evaluateTDD}, T_{measureFDD}, T_{evaluateFDD} and T_{measureGSM}

In idle mode, UE shall support DRX cycles lengths 0.64, 1.28, 2.56 and 5.12 s.

<Next Section>

A.4.2.3 Scenario 3: TDD/FDD cell re-selection

A.4.2.3.1 Test Purpose and Environment

A.4.2.3.1.1 3.84 Mcps TDD option

This test is to verify the requirement for the TDD/FDD cell re-selection delay reported in section 4.2.2.

This scenario implies the presence of 1 TDD and 1 FDD cell as given in Table A.4.5 and A.4.6.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304.

Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.5: General test parameters for the TDD/FDD cell re-selection

Par	Parameter		Value	Comment
Initial condition Active cell			Cell1	TDD cell
	Neighbour cells		Cell2	FDD cell
Final condition	Active cell		Cell2	
	HCS		Not used	
UE_TXPW	R_MAX_RACH	dBm	21	The value shall be used for all cells in the test.
	ce Class (ASC#0) tence value		1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
	T _{SI}	S	1.28	The value shall be used for all cells in the test.
DRX c	ycle length	S	1.28	The value shall be used for all cells in the test.
T1		S	30	During T1 cell 1 better ranked than cell 2
	T2	S	15	During T2 cell 2 better ranked than cell 1

Table A.4.6: TDD/FDD cell re-selection

Parameter	Unit		Cell 1			Cell 2		
Timeslot Number		()		8	n.a	n.a.	
		T1	T2	T 1	T 2	T 1	T 2	
UTRA RF Channel Number			Char	nel 1		Channel 2		
CPICH_Ec/lor	dB	n.	a.	n.	a.	-10	-10	
PCCPCH_Ec/lor	dB	-3	-3			-12	-12	
SCH_Ec/lor	dB	-9	-9	-9	-9	-12	-12	
SCH_t _{offset}		0	0	0	0	n.a.	n.a.	
PICH_Ec/lor	dB			-3	-3	-15	-15	
OCNS_Eclor	dB	-3,12	-3,12	-3,12	-3,12	-0,941	-0,941	
\hat{I}_{or}/I_{oc}	dB	3	-2	3	-2	-2	3	
I _{oc}	dBm/3.8 4 MHz				-7	70		
CPICH_RSCP	dBm	n.	a.	n.	a.	-82	-77	
PCCPCH_RSCP	dBm	-70	-75			n.a.	n.a.	
Cell_selection_and reselection_quality _measure			CPICH	_RSCP		CPICH_RSCP		
Qrxlevmin	dBm		-1	02		-1	15	
Qoffset1 _{s,n}	dB		C1, C2: -12			C2, C	1: +12	
Qhyst1 _s	dB	0				()	
Treselection	S	0				()	
Propagation Condition			AW	'GN		AW	'GN	

NOTE: The purpose of this test case is to evaluate the delay of the TDD/FDD re-selection process, it is not intended to give reasonable values for a TDD/FDD cell re-selection.

A.4.2.3.1.2 1.28 Mcps TDD option

This test is to verify the requirement for the 1.28 Mcps TDD OPTION/FDD cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 low chip rate<u>1.28Mps</u> TDD serving cell, and 1 FDD cell to be selected. The UE is requested to monitor neighbouring cells on 1 1.28Mcps TDD carrier and 1 FDD carrier. Test parameters are given in Table A.4.5A, A4.6A, and A.4.6A.1.as given in Table A.4.5A and A.4.6A.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304.

Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.5A: General test parameters for the TDD/FDD cell re-selection

Par	ameter	Unit	Value	Comment
Initial condition	Initial condition Active cell		Cell1	1.28 Mcps TDD OPTION cell
	Neighbour cells		Cell2	FDD cell
Final condition	Active cell		Cell2	FDD cell
	HCS		Not used	
UE_TXPW	R_MAX_RACH	dBm	21	The value shall be used for all cells in the test.
	ce Class (ASC#0) tence value		1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
	T _{SI}		1.28	The value shall be used for all cells in the test.
DRX cycle length		S	1.28	The value shall be used for all cells in the test.
	T1	S	30	
T2		S	15	

Table A.4.6A: Cell 1 specific test parameters for 1.28 Mcps TDD/FDD cell re-selection

Parameter	Unit		Cell	1	
Timeslot Number		<u>0</u>		Dw	PT <u>S</u>
		<u>T1</u>	<u>T2</u>	<u>T 1</u>	<u>T 2</u>
UTRA RF Channel Number		Channel 1			
PCCPCH_Ec/lor	<u>dB</u>	<u>-3</u>	-3		
DwPCH_Ec/lor	<u>dB</u>			<u>0</u>	<u>0</u>
OCNS_Ec/lor	<u>dB</u>	-	<u>3</u>		
\hat{I}_{or}/I_{oc}	<u>dB</u>	<u>8</u>	<u>2</u>	<u>8</u>	<u>2</u>
PCCPCH_RSCP	<u>dBm</u>	-65	-71		
Cell_selection_and_ reselection_guality_measure			<u>CPICH F</u>	RSCP	
Qoffset1 _{s,n}	<u>dB</u>		<u>C1, C2</u>	: -12	
<u>Qhyst1s</u>	<u>dB</u>		<u>0</u>		
Treselection	<u>s</u>		<u>0</u>		
Sintersearch	<u>dB</u>		<u>not se</u>	ent	
I _{oc}	<u>dBm/1.</u> <u>28 MHz</u>		-70	<u>)</u>	
Propagation Condition			AWG	<u>SN</u>	

Table A.4.6A.1: Cell 2 specific test parameters for 1.28 Mcps TDD/FDD cell re-selection

Parameter	Unit	Cell 2 (I	<mark>JTRA)</mark>
		<u>T1</u>	<u>T2</u>
UTRA RF Channel Number		Channel 1	
CPICH_Ec/lor	<u>dB</u>	<u>-10</u>	
PCCPCH_Ec/lor	dB	<u>-12</u>	
SCH_Ec/lor	dB	<u>-12</u>	
PICH_Ec/lor	dB	-15	
OCNS_Ec/lor	dB	<u>-0.941</u>	
\hat{I}_{or}/I_{oc}	<u>dB</u>	<u>-3</u>	<u>3</u>
CPICH_RSCP	<u>dBm</u>	<u>-83</u>	-77
Cell selection and reselection_quality_measure		CPICH RS	<u>CP</u>
Qrxlevmin	<u>dBm</u>	<u>-115</u>	
Qoffset1 _{s, n}	dB	<u>C2, C1: +1</u>	2
<u>Qhyst1</u>	dB	<u>0</u>	
Treselection	S	0	
Sintersearch	dB	not sent	

I _{oc}	<u>dBm/3.84</u> <u>MHz</u>	<u>-70</u>
Propagation Condition		AWGN

Table A.4.6A: Test parameters for the 1.28 Mcps TDD OPTION/FDD cell re-selection

Parameter	Unit		Ce	 1	Cel	12	
Timeslot Number		()	Đw	Pts	n. ;	з.
		T1	T2	T 1	T 2	T1	T2
UTRA RF Channel			Char	nel 1		Chan	nel 2
Number			onu		-	olui	
PCCPCH_Ec/lor	dB	-3	-3			-12	-12
DwPCH_Ec/lor	dB			0	0	n. ;	a.
CPICH_Ec/lor	dB	n.	a.	n.	a.	-10	-10
SCH_Ec/lor	dB	n.	a.	n.	a.	-12	-12
PICH_Ec/lor	dB					-15	-15
OCNS_Ec/lor	dB	n.	a.	n.	a.	-0,941	-0,941
$\frac{\hat{H}_{or}}{\hat{H}_{oc}}$	dB	H	H			H	H
-I _{oc}	dBm/1. 28 MHz				-70		
PCCPCH_RSCP	dBm	H	H			n.a.	n.a.
CPICH_RSCP			n .	a.		H	H
Cell_selection_and_r							
eselection quality			CPICH	<u>_RSCP</u>		CPICH	RSCP
_measure							
Qrxlevmin	dBm			03		-11	15
Qoffset1 _{s,n}	dB		C1, C	2: -12		C2, C	l : +12
Qhyst1 _s	dB	θθ					L L
Treselection	6	θθ					
Sintersearch	dB	not sent					
Propagation Condition					AWGN		

A.4.2.3.2 Test Requirements

A.4.2.3.2.1 3.84 Mcps TDD option

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 preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay 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 can be expressed as: $T_{evaluateFDD} + T_{SI}$, where:

T_{evaluateFDD} See Table 4.1 in section 4.2.2.

T_{SI} Maximum repetition rate 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 7.68 s, allow 8s in the test case.

A.4.2.3.2.2 1.28 Mcps TDD option

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 preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay 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 can be expressed as: $T_{evaluateFDD}$ + $T_{SI},$ where:

 $T_{evaluateFDD}$ <u>A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate FDD}$ of 6.4s according to See-Table 4.1A in section 4.2.</u>

T_{SI} 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 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

3GPP TSR RAN WG4 Meeting #24

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Helsinki, Finland 12 - 16 August 2002

ж	25.123 CR 252 # rev 1 ^{# Current version: 5.1.0 [#]}						
For <u>HELP</u> on us	sing this form, see bottom of this page or look at the pop-up text over the $#$ symbols.						
Proposed change a	affects: UICC apps # ME X Radio Access Network Core Network						
Title: ដ	1.28Mcps TDD/FDD cell reselection in idle mode						
Source: ೫	RAN WG4						
Work item code: #	LCRTDD-RF Date: # 21/08/2002						
Category: ₩	ARelease: #Rel-5Use one of the following categories:Use one of the following releases:F (correction)2(GSM Phase 2)A (corresponds to a correction in an earlier release)R96(Release 1996)B (addition of feature),R97(Release 1997)C (functional modification of feature)R98(Release 1998)D (editorial modification)R99(Release 1999)Detailed explanations of the above categories canRel-4(Release 4)be found in 3GPP TR 21.900.Rel-5(Release 5)Rel-6(Release 6)						
Reason for change	 # 1. UE measurement rules and filtering for 1.28 Mcps TDD/FDD cell reselection in idle mode is unclear. 2. Incomplete 1.28 Mcps TDD/FDD cell reselection in idle mode test case. 						
Summary of chang	 1. UE measure CPICH RSCP and CPICH Ec/lo according to the measurement rules and filter both parameter results. 2. Complete the 1.28 Mcps TDD/FDD cell reselection test case 						
Consequences if not approved:							
Clauses affected:	¥ 4; A.4.2.3						
Other specs affected:	Y N X Other core specifications % X Test specifications % X O&M Specifications						
Other comments:	# Equivalent CRs in other Releases: CR251r1 cat. F to 25.123 v4.5.0						

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <u>http://www.3gpp.org/specs/CR.htm</u>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4 Idle Mode

4.1 Cell Selection

4.1.1 Introduction

After a UE has switched on and a PLMN has been selected, the Cell selection process takes place, as described in TS25.304[18]. 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

4.2.1.1 3.84 Mcps TDD option

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 TDD cell, the UE shall attempt to identify, synchronise and monitor intra-frequency, inter-frequency and inter-RAT cells indicated in the measurement control system information of the serving cell. UE measurement activity is also controlled by measurement rules defined in TS25.304[18], allowing the UE to limit its measurement activity if certain conditions are fullfilled.

4.2.1.2 1.28 Mcps TDD option

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 TDD cell, the UE shall attempt to identify, synchronise and monitor intra-frequency, inter-frequency and inter-RAT cells indicated in the measurement control system information of the serving cell. UE measurement activity is also controlled by measurement rules defined in TS25.304[18], allowing the UE to limit its measurement activity if certain conditions are fullfilled.

4.2.2 Requirements

4.2.2.1 Measurement and evaluation of cell selection criteria S of serving cell

4.2.2.1.1 3.84 Mcps TDD option

The UE shall measure the PCCPCH RSCP level of the serving cell and evaluate the cell selection criterion S_{rxlev} defined in TS25.304[18] for the serving cell at least every DRX cycle. The UE shall filter the PCCPCH RSCP measurement of the serving cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureTDD}/2$ (see table 4.1).

If the UE has evaluated in N_{serv} successive measurements that the serving cell does not fulfil the cell selection criterion S, the UE shall initiate the measurements of all neighbour cells indicated in the measurement control system information, regardless of the measurement rules currently limiting UE measurement activities.

If the UE has not found any new suitable cell based the on searches and measurements of the neighbour cells indicated in the measurement control system information for 12 s, the UE shall initiate cell selection procedures for the selected PLMN as defined in TS25.304[18].

4.2.2.1.2 1.28 Mcps TDD option

The UE shall measure the PCCPCH RSCP level of the serving cell and evaluate the cell selection criterion S defined in TS25.304[18] for the serving cell at least every DRX cycle. The UE shall filter the PCCPCH RSCP level of the serving cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureNTDD}/2$ (see table 4.1A).

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 in the measurement control system information, regardless of the measurement rules currently limiting UE measurement activities.

If the UE has not found any new suitable cell based the on searches and measurements of the neighbour cells indicated in the measurement control system information for 12 s, the UE shall initiate cell selection procedures for the selected PLMN as defined in TS25.304[18].

4.2.2.2 Measurement of intra-frequency cells

4.2.2.2.1 3.84 Mcps option

The UE shall measure PCCPCH RSCP at least every $T_{measureTDD}$ (see table 4.1) for intra-frequency cells that are identified and measured according to the measurement rules. $T_{measureTDD}$ is defined in Table 4.1. The UE shall filter PCCPCH RSCP measurements of each measured intra-frequency cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureTDD}/2$.

The filtering shall be such that the UE shall be capable of evaluating that an intra-frequency cell has become better ranked than the serving cell within $T_{evaluateTDD}$ (see table 4.1), from the moment the intra-frequency cell became at least 2 dB better ranked than the current serving cell, provided that Treselection timer is set to zero.

If Treselection 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 Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.2.2 1.28 Mcps option

The UE shall measure PCCPCH RSCP at least every $T_{measureNTDD}$ (see table 4.1A) for intra-frequency cells that are identified and measured according to the measurement rules. $T_{measureNTDD}$ is defined in Table 4.1A. The UE shall filter PCCPCH RSCP measurements of each measured intra-frequency cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureNTDD}/2$.

The filtering shall be such that the UE shall be capable of evaluating that an intra-frequency cell has become better ranked than the serving cell within $T_{evaluateNTDD}$ (see table 4.1A), from the moment the intra-frequency cell became at least 2 dB better ranked than the current serving cell, provided that Treselection timer is set to zero and PCCPCH RSCP is used as measurement quantity for cell reselection.

If Treselection 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 Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.3 Measurement of inter-frequency TDD cells

4.2.2.3.1 3.84 Mcps option

The UE shall measure PCCPCH RSCP at least every $(N_{carrier}-1) * T_{measureTDD}$ (see table 4.1) for inter-frequency cells that are identified and measured according to the measurement rules. The parameter $N_{carrier}$ is the number of carriers used for TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured inter-frequency cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureTDD}/2$.

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that an already identified interfrequency cell has become better ranked than the serving cell within $(N_{carrier}-1) * T_{evaluateTDD}$ from the moment the interfrequency cell became at least 3 dB better than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that interfrequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better than the current serving cell provided that Treselection timer is set to zero.

If Treselection 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 Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.3.2 1.28 Mcps option

The UE shall measure PCCPCH RSCP at least every $(N_{carrier}-1) * T_{measureNTDD}$ (see table 4.1A) for inter-frequency <u>1.28</u> <u>Mcps TDD OPTION</u> cells that are identified and measured according to the measurement rules. The parameter $N_{carrier}$ is the number of carriers used for 1.28 Mcps TDD OPTION cells. The UE shall filter PCCPCH RSCP measurements of each measured inter-frequency cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureNTDD}/2$.

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that an already identified interfrequency cell has become better ranked than the serving cell within $(N_{carrier}-1) * T_{evaluateNTDD}$ from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero.

If Treselection 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 Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.3A 1.28 Mcps TDD to 3.84 Mcps TDD cell re-selection

This requirement only applies to 1.28 Mcps UEs supporting this mode.

The ranking of the low and high chip rate TDD cells shall be made according to the cell reselection criteria specified in $\frac{TS25.304[18]}{TS25.304[18]}$.

The UE shall measure PCCPCH RSCP at least every $N_{TDDcarrier} * T_{measureTDD}$ (see table 4.1A) for inter-frequency cells that are identified and measured according to the measurement rules. The parameter $N_{carrier}$ is the number of carriers used for 3.84 Mcps TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured high chip rate TDD cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureTDD}/2$.

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that a high chip rate TDD cell has become better ranked than the serving cell within $N_{TDDcarrier} * T_{evaluateTDD}$ from the moment the inter-frequency cell became at least 3 better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency 3.84Mcps TDD cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency 3.84Mcps TDD cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.4 Measurement of inter-frequency FDD cells

4.2.2.4.1 3.84 Mcps option

The UE shall measure the CPICH RSCP and CPICH Ec/Io of each FDD neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in TS25.304[18], at least every $T_{measureFDD}$ (see table 4.1). The UE shall filter CPICH RSCP measurements of each measured inter-frequency cell using at least 2 measurements which are taken so that the time difference between the measurements is at least $T_{measureFDD}/2$..

The filtering of CPICH RSCP shall be such that the UE shall be capable of evaluating that an already identified interfrequency cell has become better ranked than the serving cell within $N_{carrierFDD} * T_{evaluateFDD}$ from the moment the interError! No text of specified style in document.

frequency cell became at least 5 dB better than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 5 dB better than the current serving cell provided that Treselection timer is set to zero. The parameter $N_{carrierFDD}$ is the number of carriers used for FDD cells.

If Treselection 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 Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304. If FDD cell has been ranked as the best cell and IE cell_selection_and_reselection-quality_measure is set to CPICH Ec/No, then UE shall perform a second ranking of the FDD cells using CPICH Ec/Io as the measurement quantity, before performing cell re-selection.

4.2.2.4.2 1.28 Mcps option

This requirement only applies to 1.28 Mcps UEs supporting this modeboth 1.28 Mcps TDD OPTION and FDD.

The UE shall measure the CPICH RSCP and CPICH Ec/Io <u>at least every N_{carrieFDD}</u> * $T_{measureFDD}$ (see table 4.1A) for inter-frequency FDD cells that are identified and measured according to the measurement rules. of each FDD neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in TS25.304, at least every $T_{measureFDD}$ (see table 4.1A). The UE shall filter CPICH RSCP measurements of each measured inter-frequency cell using at least 2 measurements which are taken so that the time difference between the measurements is at least $T_{measureFDD}/2$.

CPICH RSCP is used as basic measurement quantity for cell ranking, the filtering of CPICH RSCP shall be such that the UE shall be capable of evaluating that an already identified inter-frequency cell has become better ranked than the serving cell within $N_{carrierFDD} * T_{evaluateFDD}$ from the moment the inter-frequency cell became at least 5 dB better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 5 dB better ranked than the serving cell provided that Treselection timer is set to zero. The parameter $N_{carrierFDD}$ is the number of carriers used for FDD cells.

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

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304. If FDD cell has been ranked as the best cell and IE cell_selection_and_reselection-quality_measure is set to CPICH Ec/No, then UE shall perform a second ranking of the FDD cells using CPICH Ec/Io as the measurement quantity, before performing cell re-selection.

4.2.2.5 Measurement of inter-RAT GSM cells

4.2.2.5.1 3.84 Mcps option

The UE shall measure the signal level of the GSM BCCH carrier of each GSM neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in TS25.304[18], at least every $T_{measureGSM}$ (see table 4.1). The UE shall maintain a running average of 4 measurements for each cell. The measurement samples for each cell shall be as far as possible uniformly distributed over the averaging period.

If GSM measurements are required by the measurement rules in TS25.304[18], The UE shall attempt to verify the BSIC at least every 30 seconds for each of the 4 strongest GSM BCCH carriers and rank the verified GSM BCCH cells according to the cell re-selection criteria in TS25.304[18]. 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 a BSIC, which is not indicated in the measurement control system information, the UE shall not consider that GSM BCCH carrier in cell reselection. The UE also shall not consider the GSM BCCH carrier in cell reselection, if the UE can not demodulate the BSIC of that GSM BCCH carrier.

4.2.2.5.2 1.28 Mcps option

The UE shall measure the signal level of the GSM BCCH carrier of each GSM neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in TS25.304[18], at least every $T_{measureGSM}$ (see table 4.1A). The UE shall maintain a running average of 4 measurements for each cell. The measurement samples for each cell shall be as far as possible uniformly distributed over the averaging period.

If GSM measurements are required by the measurement rules in TS25.304[18], the UE shall attempt to verify the BSIC at least every 30 seconds for each of the 4 strongest GSM BCCH carriers and rank the verified GSM BCCH cells according to the cell re-selection criteria in TS25.304[18]. 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 a BSIC, which is not indicated in the measurement control system information, the UE shall not consider that GSM BCCH carrier in cell reselection. The UE also shall not consider the GSM BCCH carrier in cell reselection, if the UE can not demodulate the BSIC of that GSM BCCH carrier.

4.2.2.6 Evaluation of cell reselection criteria

4.2.2.6.1 3.84 Mcps option

The UE shall evaluate the cell re-selection criteria defined in $\frac{TS \cdot 25.304[18]}{TS \cdot 25.304[18]}$ for the cells, which have new measurement results available, at least once every DRX cycle.

UE shall perform cell reselection immediately after the UE has found a better ranked suitable cell unless less than 1 second has elapsed from the moment the UE started camping on the current serving cell.

4.2.2.6.2 1.28 Mcps option

The UE shall evaluate the cell re-selection criteria defined in $\frac{TS \cdot 25.304[18]}{TS \cdot 25.304[18]}$ for the cells, which have new measurement results available, at least every DRX cycle.

Cell reselection shall take place immediately after the UE has found a better ranked suitable cell unless the UE has made cell reselection within the last 1 second.

4.2.2.7 Maximum interruption time in paging reception

4.2.2.7.1 3.84 Mcps option

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

At intra-frequency cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels of the target intra-frequency cell for paging reception. The interruption time shall not exceed 50 ms.

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

 T_{SI} 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 TS25.331[16] for a UTRAN cell.

T_{BCCH} is the maximum time allowed to read BCCH data from a GSM cell as defined in TS45.008[21].

These requirements assume sufficient radio conditions, so that decoding of system information can be made without errors.

DRX cycle length [s]	N _{serv} (number of DRX cycles)	T _{measureTDD} [s] (number of DRX cycles)	T _{evaluateTDD} [s] (number of DRX cycles)	T _{measureFDD} [s] (number of DRX cycles)	T _{evaluateFDD} [s] (number of DRX cycles)	T _{measureGSM} [s] (number of DRX cycles)
0.08	4	0.64 (8 DRX	2.56 (32 DRX	0.64 (8 DRX	2.56 (32 DRX	2.56 (32 DRX
		cycles)	cycles)	cycles)	cycles)	cycles)
0.16	4	0.64 (4)	2.56 (16)	0.64 (4)	2.56 (16)	2.56 (16)
0.32	4	1.28 (4)	5.12 (16)	1.28 (4)	5.12 (16)	5.12 (16)
0.64	4	1.28 (2)	5.12 (8)	1.28 (2)	5.12 (8)	5.12 (8)
1.28	2	1.28 (1)	6.4 (5)	1.28 (1)	6.4 (5)	6.4 (5)
2.56	2	2.56 (1)	7.68 (3)	2.56 (1)	7.68 (3)	7.68 (3)
5.12	1	5.12 (1)	10.24 (2)	5.12 (1)	10.24 (2)	10.24 (2)

Table 4.1: $T_{measureTDD}$, $T_{evaluateTDD}$, $T_{measureFDD}$, $T_{evaluateFDD}$ and $T_{measureGSM}$

In idle mode, UE shall support DRX cycles lengths 0.64, 1.28, 2.56 and 5.12 s, according to [16].

4.2.2.7.2 1.28 Mcps option

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

At intra-frequency cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels of the target intra-frequency cell for paging reception. The interruption time shall not exceed 50 ms.

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

 T_{SI} 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 $\frac{25.331[16]}{16}$ for a UTRAN cell.

 T_{BCCH} is the maximum time allowed to read BCCH data from a GSM cell [21 θ].

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.

DRX cycle length [s]	N _{serv} (<u>number of</u> DRX cycles)	T _{measureNTDD} [s] (number of DRX cycles)	T _{evaluateNTDD} [s] (number of DRX cycles)	T _{measureTD} _D [s] (number of DRX cycles)	T _{evaluateTDD} [s] (number of DRX cycles)	T _{measureFD} _D [S] (number of DRX cycles)	T _{evaluateFDD} [s] (number of DRX cycles)	T _{measureGSM} [s] (number of DRX cycles)
0.08	4	0.64 (8 DRX	2.56 (32	0.64 (8	2.56 (32	0.64 (8	2.56 (32	2.56 (32
		cycles)	DRX	DRX	DRX	DRX	DRX	DRX
			cycles)	cycles)	cycles)	cycles)	cycles)	cycles)
0.16	4	0.64 (4)	2.56 (16)	0.64 (4)	2.56 (16)	0.64 (4)	2.56 (16)	2.56 (16)
0.32	4	1.28 (4)	5.12 (16)	1.28 (4)	5.12 (16)	1.28 (4)	5.12 (16)	5.12 (16)
0.64	4	1.28 (2)	5.12 (8)	1.28 (2)	5.12 (8)	1.28 (2)	5.12 (8)	5.12 (8)
1.28	2	1.28 (1)	6.4 (5)	1.28 (1)	6.4 (5)	1.28 (1)	6.4 (5)	6.4 (5)
2.56	2	2.56 (1)	7.68 (3)	2.56 (1)	7.68 (3)	2.56 (1)	7.68 (3)	7.68 (3)
5.12	1	5.12 (1)	10.24 (2)	5.12 (1)	10.24 (2)	5.12 (1)	10.24 (2)	10.24 (2)

Table 4.1A: T_{measureNTDD}, T_{evaluateNTDD}, T_{measureTDD}, T_{evaluateTDD}, T_{measureFDD}, T_{evaluateFDD} and T_{measureGSM}

In idle mode, UE shall support DRX cycles lengths 0.64, 1.28, 2.56 and 5.12 s.

<Next Section>

A.4.2.3 Scenario 3: TDD/FDD cell re-selection

A.4.2.3.1 Test Purpose and Environment

A.4.2.3.1.1 3.84 Mcps TDD option

This test is to verify the requirement for the TDD/FDD cell re-selection delay reported in section 4.2.2.

This scenario implies the presence of 1 TDD and 1 FDD cell as given in Table A.4.5 and A.4.6.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304.

Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.5: General test parameters for the TDD/FDD cell re-selection

Par	Parameter		Value	Comment
Initial condition	Active cell		Cell1	TDD cell
	Neighbour cells		Cell2	FDD cell
Final condition	Active cell		Cell2	
	HCS		Not used	
UE_TXPW	R_MAX_RACH	dBm	21	The value shall be used for all cells in the test.
	ce Class (ASC#0) tence value		1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
	T _{SI}	S	1.28	The value shall be used for all cells in the test.
DRX c	ycle length	S	1.28	The value shall be used for all cells in the test.
	T1	S	30	During T1 cell 1 better ranked than cell 2
	T2	S	15	During T2 cell 2 better ranked than cell 1

Table A.4.6: TDD/FDD cell re-selection

Parameter	Unit		Ce	1		Ce	ll 2
Timeslot Number		()		8	n.a	n.a.
		T1	T2	T 1	T 2	T 1	T 2
UTRA RF Channel Number			Char	nel 1		Channel 2	
CPICH_Ec/lor	dB	n.	a.	n.	a.	-10	-10
PCCPCH_Ec/lor	dB	-3	-3			-12	-12
SCH_Ec/lor	dB	-9	-9	-9	-9	-12	-12
SCH_t _{offset}		0	0	0	0	n.a.	n.a.
PICH_Ec/lor	dB			-3	-3	-15	-15
OCNS_Eclor	dB	-3,12	-3,12	-3,12	-3,12	-0,941	-0,941
\hat{I}_{or}/I_{oc}	dB	3	-2	3	-2	-2	3
I _{oc}	dBm/3.8 4 MHz				-7	70	
CPICH_RSCP	dBm	n.	a.	n.	a.	-82	-77
PCCPCH_RSCP	dBm	-70	-75			n.a.	n.a.
Cell_selection_and reselection_quality _measure			CPICH	_RSCP		CPICH	_RSCP
Qrxlevmin	dBm	-102 -115					15
Qoffset1 _{s,n}	dB	C1, C2: -12 C2, C1:				1: +12	
Qhyst1 _s	dB	0 0)
Treselection	S	0 0					
Propagation Condition			AW	'GN		AW	'GN

NOTE: The purpose of this test case is to evaluate the delay of the TDD/FDD re-selection process, it is not intended to give reasonable values for a TDD/FDD cell re-selection.

A.4.2.3.1.2 1.28 Mcps TDD option

This test is to verify the requirement for the 1.28 Mcps TDD OPTION/FDD cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 low chip rate<u>1.28Mps</u> TDD serving cell, and 1 FDD cell to be selected. The UE is requested to monitor neighbouring cells on 1 1.28Mcps TDD carrier and 1 FDD carrier. Test parameters are given in Table A.4.5A, A4.6A, and A.4.6A.1.as given in Table A.4.5A and A.4.6A.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304.

Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.5A: General test parameters for the TDD/FDD cell re-selection

Par	Parameter		Value	Comment
Initial condition	Initial condition Active cell		Cell1	1.28 Mcps TDD OPTION cell
	Neighbour cells		Cell2	FDD cell
Final condition	Active cell		Cell2	FDD cell
l	HCS		Not used	
UE_TXPW	R_MAX_RACH	dBm	21	The value shall be used for all cells in the test.
	ce Class (ASC#0) tence value		1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
	T _{SI}	S	1.28	The value shall be used for all cells in the test.
DRX c	DRX cycle length		1.28	The value shall be used for all cells in the test.
	T1	S	30	
	T2	S	15	

Table A.4.6A: Cell 1 specific test parameters for 1.28 Mcps TDD/FDD cell re-selection

Parameter	Unit		Cell	1	
Timeslot Number		(<u>)</u>	<u>DwPTS</u>	
		<u>T1</u>	<u>T2</u>	<u>T 1</u>	<u>T 2</u>
UTRA RF Channel Number			<u>Chann</u>	<u>el 1</u>	
PCCPCH_Ec/lor	<u>dB</u>	-3	-3		
DwPCH_Ec/lor	<u>dB</u>			<u>0</u>	<u>0</u>
OCNS_Ec/lor	<u>dB</u>	-	<u>3</u>		
\hat{I}_{or}/I_{oc}	<u>dB</u>	<u>8</u>	<u>2</u>	<u>8</u>	<u>2</u>
PCCPCH_RSCP	<u>dBm</u>	<u>-65</u>	-71		
Cell_selection_and_ reselection_quality_measure			<u>CPICH F</u>	RSCP	
Qoffset1 _{s,n}	dB		<u>C1, C2</u>	: -12	
Qhyst1 _s	dB		<u>0</u>		
Treselection	<u>s</u>		<u>0</u>		
Sintersearch	<u>dB</u>		not se	ent	
I _{oc}	<u>dBm/1.</u> <u>28 MHz</u>		-7(<u>)</u>	
Propagation Condition			AWC	<u>SN</u>	

Table A.4.6A.1: Cell 2 specific test parameters for 1.28 Mcps TDD/FDD cell re-selection

Parameter	Unit	Cell 2 (l	JTRA)
		<u>T1</u>	<u>T2</u>
UTRA RF Channel Number		Channel 1	
CPICH_Ec/lor	<u>dB</u>	<u>-10</u>	
PCCPCH_Ec/lor	<u>dB</u>	<u>-12</u>	
SCH_Ec/lor	dB	<u>-12</u>	
PICH_Ec/lor	dB	-15	
OCNS_Ec/lor	<u>dB</u>	<u>-0.941</u>	
\hat{I}_{or}/I_{oc}	<u>dB</u>	<u>-3</u>	<u>3</u>
CPICH_RSCP	<u>dBm</u>	<u>-83</u>	-77
Cell selection and reselection_quality_measure		CPICH RS	<u>CP</u>
Qrxlevmin	<u>dBm</u>	<u>-115</u>	
Qoffset1 _{s, n}	dB	<u>C2, C1: +1</u>	2
Qhyst1	dB	0	
Treselection	S	<u>0</u>	
Sintersearch	dB	not sent	

I _{oc}	<u>dBm/3.84</u> <u>MHz</u>	<u>-70</u>
Propagation Condition		AWGN

Table A.4.6A: Test parameters for the 1.28 Mcps TDD OPTION/FDD cell re-selection

Parameter	Unit	Cell 1 Cell 2					12
Timeslot Number		θ		DwPts		n. ;	з.
		T1	T2	T 1	T 2	T1	T2
UTRA RF Channel			Char	nel 1		Chan	nel 2
Number				1	1	10	10
PCCPCH_Ec/lor	dB	-3	-3	-		-12	-12
DwPCH_Ec/lor	d₿			0	0	n. ;	
CPICH_Ec/lor	dB	n.	a.	n.	a.	-10	-10
SCH_Ec/lor	dB	n.	a.	n.	a.	-12	-12
PICH_Ec/lor	dB					-15	-15
OCNS_Ec/lor	dB	n.	a.	n.	a.	-0,941	-0,941
$\frac{\hat{I}_{or}}{I_{oc}}$	dB	H	H			H	H
-I _{oc}	dBm/1. 28 MHz	-70					
PCCPCH_RSCP	dBm	H	H			n.a.	n.a.
CPICH_RSCP			n .	a.		H	H
Cell_selection_and_r eselection quality _measure			CPICH	-RSCP		CPICH	_RSCP
Qrxlevmin	dBm		-1	03		-11	15
Qoffset1 _{s,n}	dB	C1, C2: -12 C2			C2, C 1	l: +12	
Qhyst1 _s	dB	θθ					
Treselection	S	θθ					
Sintersearch	dB	not sent					
Propagation Condition					AWGN		

A.4.2.3.2 Test Requirements

A.4.2.3.2.1 3.84 Mcps TDD option

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 preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay 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 can be expressed as: $T_{evaluateFDD} + T_{SI}$, where:

T_{evaluateFDD} See Table 4.1 in section 4.2.2.

T_{SI} Maximum repetition rate 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 7.68 s, allow 8s in the test case.

A.4.2.3.2.2 1.28 Mcps TDD option

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 preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay 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 can be expressed as: $T_{evaluateFDD}$ + $T_{SI},$ where:

 $T_{evaluateFDD}$ <u>A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate FDD}$ of 6.4s according to See-Table 4.1A in section 4.2.</u>

T_{SI} 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 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

3GPP TSR RAN WG4 Meeting #24

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How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <u>http://www.3gpp.org/specs/CR.htm</u>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

A.4.2.4 Scenario 4: inter RAT cell re-selection

A.4.2.4.1 Test Purpose and Environment

A.4.2.4.1.1 3.84 Mcps TDD option

This test is to verify the requirement for the UTRAN to GSM cell re-selection delay reported in section 4.3.2.1.

This scenario implies the presence of 1 UTRAN serving cell, and 1 GSM cell to be re-selected. Test parameters are given in Table, A.4.7, A.4.8, A.4.9.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304.

For this test environment the ranking/mapping function indicated in the broadcast of cell 1 shall be in such a way as to enable the UE to evaluate that the TDD cell 1 is better ranked as the GSM cell 2 during T1 and the GSM cell 2 is better ranked than the TDD cell 1 during T2.

Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.7: General test parameters for UTRAN to GSM Cell Re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell	cell Cell1		TDD Cell
	Neighbour cell		Cell2	GSM Cell
Final condition	Active cell		Cell2	
DRX cycl	DRX cycle length		1,28	UTRAN cell
BCCH repetition ce	•	S	1,87	In GSM the system information is scheduled according to an 8 x (51 x 8) cycle (i.e. a system information message is transmitted every 235 ms). The cell selection parameters in system info 3 and 4 are transmitted at least every second. (TS 45.002)
T	1	S	15	
T	2	S	15	

Parameter	Unit		Cell 1 (UTRA)	
Timeslot Number		0		8	
		T1	T2	T1	T2
UTRA RF Channel Number		Chan	nel 1	Channel 1	
PCCPCH_Ec/lor	dB	-3	-3		
SCH_Ec/lor	dB	-9	-9	-9	-9
SCH_t _{offset}		0	0	0	0
PICH_Ec/lor	dB			-3	-3
OCNS_Ec/lor	dB	-3,12	-3,12	-3,12	-3,12
\hat{I}_{or}/I_{oc}	dB	3	-2	3	-2
I _{oc}	dBm/3, 84 MHz	-70		-7	70
PCCPCH RSCP	dBm	-70	-75		
Propagation Condition		AWGN AWG		/GN	
Treselection	S	0			
Ssearch _{RAT}	dB		not	sent	

Parameter	Unit	Cell 2 (GSM)		
Farameter	Onit	T1	T2	
Absolute RF Channel Number		ARFCN 1		
RXLEV	dBm	-80 -70		
RXLEV_ACCESS_MIN	dBm	-100		
MS_TXPWR_MAX_CCH	dBm	30		

Table A.4.9: Cell re-selection UTRAN to GSM cell case (cell 2)

A.4.2.4.1.2 1.28 Mcps TDD option

This test is to verify the requirement for the UTRAN to GSM cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 UTRAN serving cell, and 1 GSM cell to be re-selected. Test parameters are given in Table A.4.7A, A.4.8A, A.4.9A.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304. Cell 1 and cell 2 shall belong to different location areas.

Table A.4.7A: General test parameters for UTRAN (1.28 Mcps TDD OPTION) to GSM Cell Re-selection

Pai	rameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	1.28 Mcps TDD OPTION cell
	Neighbour cell		Cell2	GSM cell
Final condition	Active cell		Cell2	GSM cell
DRX o	cycle length	S	1,28	
	<u>HCS</u>		Not Used	
	T1	S	15 45	
	T2	S	15	

Table A.4 8A: Cell re-selection	UTRAN to GSM cell case	(cell 1)
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Parameter	Unit		Cell 1	(UTRA)	
Timeslot Number		0		DwPTS	
		T1	T2	T1	T2
UTRA RF Channel Number		Chan	nel 1	Char	nnel 1
PCCPCH_Ec/lor	dB	-3	-3		
DwPCH_Ec/lor	dB			0	0
OCNS_Ec/lor	dB	-3	-3		
\hat{I}_{or}/I_{oc}	dB	13	-1	13	-1
I _{oc}	dBm/1. 28 MHz		-8	30	
PCCPCH RSCP	dBm	-70	-84		
Propagation Condition		AWGN AW		/GN	
Treselection	S	0			
Ssearch _{RAT}	dB	Not sent			
Qrxlevmin	dBm	-103			
Qoffset1 _{s,n}	dB		C1, (C2: 0	
Qhyst1₅	dB		()	

NOTE: The purpose of this test case is to evaluate the delay of the TDD/GSM re-selection process, it is not intended to give reasonable values for a TDD/GSM cell re-selection.

Parameter	Unit	Cell 2 (GSM)		
	Unit	T1	T2	
Absolute RF Channel Number		ARF	CN 1	
RXLEV	dBm	-75	-70	
RXLEV_ACCESS_MIN	dBm	-1	04	
MS_TXPWR_MAX_CCH	dBm	3	3	

Table A.4.9A: Cell re-selection UTRAN to GSM cell case (cell 2)

A.4.2.4.2 Test Requirements

A.4.2.4.2.1 3.84 Mpcs TDD option

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 LOCATION UPDATING REQUEST message to perform a Location update.

The cell re-selection delay shall be less than [8] s.

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

NOTE: The UE shall keep a running average of 4 measurements, thus gives 4*1280ms (T_{measureGSM} Table 4.1), means 5.12 seconds can elapse from the beginning of time period T2 before the UE has finished the measurements to evaluate that the GSM cell fulfils the re-selection criteria.

The cell selection parameters in the BCCH of the GSM cell in system info 3 and 4 are transmitted at least every second.

A.4.2.4.2.2 1.28 Mpcs TDD option

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 LOCATION UPDATING REQUEST message to perform a Location update.

The cell re-selection delay shall be less than 8 $_s + T_{BCCH}$ where T_{BCCH} is the maximum time allowed to read BCCH data from GSM cell [210].

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:

 $Max(3*T_{measure NTDD}, T_{measure GSM}+1DRX)+T_{BCCH}$

where:

T _{measure<u>N</u>TDD}	<u>A DRX cycle length of 1280ms is assumed for this test case, this leads to a T_{measureNTDD} of 1.28s according to Table 4.1A in section 4.2. Specified in 4.2.2.7.2 Table 4.1A.</u>
<u>T_measureGSM</u>	A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{\text{measureGSM}}$ of 6.4s according to Table 4.1A in section 4.2.
DRX cycle leng	th 1.28s <u>is assumed</u> , see Table A.4. <u>1A.</u> 7.A
T _{BCCH}	Maximum time allowed to read BCCH data from GSM cell $[2\underline{1}\theta]$.
	According to [21], 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 7.68s + T_{BCCH} , thus allow 8s + T_{BCCH} .

A.4.2.4.3 Scenario 4A Test Purpose and Environment

A.4.2.4.3.1 void

A.4.2.4.3.2 1.28 Mcps TDD option

This test is to verify the requirement for the UTRAN to GSM cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 UTRAN serving cell, and 1 GSM cell to be re-selected. Test parameters are given in Table A.4.10A, A.4.11A, A.4.12A.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304. Cell 1 and cell 2 shall belong to different location areas.

Table A.4.10A: General test parameters for UTRAN (1.28 Mcps TDD OPTION) to GSM Cell Reselection

Pa	rameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	1.28 Mcps TDD OPTION cell
	Neighbour cell		Cell2	GSM cell
Final condition	Active cell		Cell2	GSM cell
DRX o	cycle length	S	1 <u>.,</u> 28	
	HCS		Not Used	
	T1	S	25 45	
	T2	S	45	

Table A.4 11A: Cell re-selection UTRAN to GSM cell case (cell 1)

Parameter	Unit	Cell 1 (UTRA)			
Timeslot Number		0		Dw	PTS
		T1	T2	T1	T2
UTRA RF Channel Number		Chan	nel 1	Char	nnel 1
PCCPCH_Ec/lor	dB	-3	-3		
DwPCH_Ec/lor	dB			0	0
OCNS_Ec/lor	<u>dB</u>	<u>-3</u>	<u>-3</u>		
\hat{I}_{or}/I_{oc}	dB	6	6	6	6
I _{oc}	dBm/1. 28 MHz	-80			
PCCPCH RSCP	dBm	-77	-77		
Propagation Condition		AWGN AWG		/GN	
Treselection	S	0			
Ssearch _{RAT}	dB	Not sent			
Qrxlevmin	dBm	-103			
Qoffset1 _{s,n}	dB	C1, C2: 0			
Qhyst1 _s	dB		()	

Table A.4.12A: Cell re-selection UTRAN to GSM cell case (cell 2)

Parameter	Unit	Cell 2 (GSM)		
	Unit	T1	T2	
Absolute RF Channel Number		ARFCN 1		
RXLEV	dBm	-90	-70	
RXLEV_ACCESS_MIN	dBm	-104		
MS_TXPWR_MAX_CCH	dBm	33		

A.4.2.4.4 Scenario 4A Requirements

A.4.2.4.4.1 void

A.4.2.4.4.2 1.28 Mpcs TDD option

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 RR Channel Request message for location update to Cell 2.

The cell re-selection delay shall be less than 26 s+ T_{BCCH} , where T_{BCCH} is the maximum time allowed to read BCCH data from GSM cell [2021].

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

NOTE: The UE shall keep a running average of 4 measurements, thus gives $4 \text{ * } T_{\text{measureGSM}} + T_{\text{BCCH}}$, where:

T _{measureGSM}	<u>A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{measureGSM}$ of 6.4s according to Table 4.1A in section 4.2.Specified in 4.2.2.7.2 Table 4.1A.</u>
T _{BCCH}	Maximum time allowed to read BCCH data from GSM cell $[2\underline{10}]$.
	According to [21], 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 25.6s +T_{BCCH}, thus allow 26s $_+$ T_{BCCH}.

3GPP TSR RAN WG4 Meeting #24

R4-021165

Helsinki, Finland 12 - 16 August 2002

CHANGE REQUEST		
ж	25.123 CR 254 #rev	# Current version: 5.1.0 #
For HELP on using this form, see bottom of this page or look at the pop-up text over the # symbols.		
Proposed change affects: UICC apps# ME X Radio Access Network Core Network		
Title: # 1.28Mcps TDD/GSM cell reselection test case in idle mode		
Source: # RAN WG4		
Work item code: ℜ	LCRTDD-RF	Date:
Category: अ	Α	Release: # Rel-5
	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlied B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories of be found in 3GPP <u>TR 21.900</u> .	R97 (Release 1997) R98 (Release 1998) R99 (Release 1999)
Reason for change	 # 1. HCS parameter is missing. 2. OCNS_Ec/lor is missing. 3. T1 is not long enough for UE GSM 4. Clarifications for relevant parameter 	
Summary of chang	 e: # 1. HCS is introduced. 2. OCNS_Ec/lor is introduced. 3. T1 is extended to 45s. 4. Errors in description of parameters 	s are corrected.
Consequences if not approved:	Incorrect test cases for 1.28 Mcps TE Isolated Impact Analysis: Only test Would only affect the test cases not be added and a statement of the test cases of test cas	cases for 1.28 Mcps TDD/GSM changed.
Clauses affected:	¥ A.4.2.4	
Other specs affected:	YN	£
Other comments:	# Equivalent CRs in other Releases: C	R253 cat. F to 25.123 v4.5.0

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <u>http://www.3gpp.org/specs/CR.htm</u>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

A.4.2.4 Scenario 4: inter RAT cell re-selection

A.4.2.4.1 Test Purpose and Environment

A.4.2.4.1.1 3.84 Mcps TDD option

This test is to verify the requirement for the UTRAN to GSM cell re-selection delay reported in section 4.3.2.1.

This scenario implies the presence of 1 UTRAN serving cell, and 1 GSM cell to be re-selected. Test parameters are given in Table, A.4.7, A.4.8, A.4.9.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304.

For this test environment the ranking/mapping function indicated in the broadcast of cell 1 shall be in such a way as to enable the UE to evaluate that the TDD cell 1 is better ranked as the GSM cell 2 during T1 and the GSM cell 2 is better ranked than the TDD cell 1 during T2.

Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.7: General test parameters for UTRAN to GSM Cell Re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	TDD Cell
	Neighbour cell		Cell2	GSM Cell
Final condition	Active cell		Cell2	
DRX cycl	e length	S	1,28	UTRAN cell
BCCH repetition ce		S	1,87	In GSM the system information is scheduled according to an 8 x (51 x 8) cycle (i.e. a system information message is transmitted every 235 ms). The cell selection parameters in system info 3 and 4 are transmitted at least every second. (TS 45.002)
T	1	S	15	
Tź	2	S	15	

Table A.4.8: Cell re-selection UTRAN to GSM cell case (cell 1)
--

Parameter	Unit	Cell 1 (UTRA)			
Timeslot Number		C)	8	
		T1	T2	T1	T2
UTRA RF Channel Number		Chan	nel 1	Char	inel 1
PCCPCH_Ec/lor	dB	-3	-3		
SCH_Ec/lor	dB	-9	-9	-9	-9
SCH_t _{offset}		0	0	0	0
PICH_Ec/lor	dB			-3	-3
OCNS_Ec/lor	dB	-3,12	-3,12	-3,12	-3,12
\hat{I}_{or}/I_{oc}	dB	3	-2	3	-2
I _{oc}	dBm/3, 84 MHz	-70		-7	70
PCCPCH RSCP	dBm	-70	-75		
Propagation Condition		AWGN		AW	/GN
Treselection	S	Ó			
Ssearch _{RAT}	dB	not sent			

4

Parameter	Unit	Cell 2 (GSM)		
Farameter	Unit T1		T2	
Absolute RF Channel Number		ARFCN 1		
RXLEV	dBm	-80 -70		
RXLEV_ACCESS_MIN	dBm	-100		
MS_TXPWR_MAX_CCH	dBm	30		

Table A.4.9: Cell re-selection UTRAN to GSM cell case (cell 2)

A.4.2.4.1.2 1.28 Mcps TDD option

This test is to verify the requirement for the UTRAN to GSM cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 UTRAN serving cell, and 1 GSM cell to be re-selected. Test parameters are given in Table A.4.7A, A.4.8A, A.4.9A.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304. Cell 1 and cell 2 shall belong to different location areas.

Table A.4.7A: General test parameters for UTRAN (1.28 Mcps TDD OPTION) to GSM Cell Re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	1.28 Mcps TDD OPTION cell
	Neighbour cell		Cell2	GSM cell
Final condition	Active cell		Cell2	GSM cell
DRX o	cycle length	S	1,28	
	<u>HCS</u>		Not Used	
T1		S	15 45	
T2		S	15	

Table A.4 8A: Cell re-selection	UTRAN to GSM cell case	(cell 1)
---------------------------------	------------------------	----------

Parameter	Unit	Cell 1 (UTRA)			
Timeslot Number		C)	DwPTS	
		T1	T2	T1	T2
UTRA RF Channel Number		Chan	nel 1	Char	nnel 1
PCCPCH_Ec/lor	dB	-3	-3		
DwPCH_Ec/lor	dB			0	0
OCNS_Ec/lor	dB	-3	-3		
\hat{I}_{or}/I_{oc}	dB	13	-1	13	-1
I _{oc}	dBm/1. 28 MHz	-80			
PCCPCH RSCP	dBm	-70	-84		
Propagation Condition		AWGN AWGN		/GN	
Treselection	S	0			
Ssearch _{RAT}	dB	Not sent			
Qrxlevmin	dBm	-103			
Qoffset1 _{s,n}	dB	C1, C2: 0			
Qhyst1₅	dB		()	

NOTE: The purpose of this test case is to evaluate the delay of the TDD/GSM re-selection process, it is not intended to give reasonable values for a TDD/GSM cell re-selection.

Parameter	Unit	Cell 2 (GSM)		
	Unit	T1	T2	
Absolute RF Channel Number		ARFCN 1		
RXLEV	dBm	-75 -70		
RXLEV_ACCESS_MIN	dBm	-104		
MS_TXPWR_MAX_CCH	dBm	33		

Table A.4.9A: Cell re-selection UTRAN to GSM cell case (cell 2)

A.4.2.4.2 Test Requirements

A.4.2.4.2.1 3.84 Mpcs TDD option

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 LOCATION UPDATING REQUEST message to perform a Location update.

The cell re-selection delay shall be less than [8] s.

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

NOTE: The UE shall keep a running average of 4 measurements, thus gives 4*1280ms (T_{measureGSM} Table 4.1), means 5.12 seconds can elapse from the beginning of time period T2 before the UE has finished the measurements to evaluate that the GSM cell fulfils the re-selection criteria.

The cell selection parameters in the BCCH of the GSM cell in system info 3 and 4 are transmitted at least every second.

A.4.2.4.2.2 1.28 Mpcs TDD option

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 LOCATION UPDATING REQUEST message to perform a Location update.

The cell re-selection delay shall be less than 8 $_s + T_{BCCH}$ where T_{BCCH} is the maximum time allowed to read BCCH data from GSM cell [210].

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:

 $Max(3*T_{measure NTDD}, T_{measure GSM}+1DRX)+T_{BCCH}$

where:

T _{measure<u>N</u>TDD}	<u>A DRX cycle length of 1280ms is assumed for this test case, this leads to a T_{measureNTDD} of 1.28s according to Table 4.1A in section 4.2. Specified in 4.2.2.7.2 Table 4.1A.</u>
<u>T_measureGSM</u>	A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{\text{measureGSM}}$ of 6.4s according to Table 4.1A in section 4.2.
DRX cycle leng	th 1.28s <u>is assumed</u> , see Table A.4. <u>1A.</u> 7.A
T _{BCCH}	Maximum time allowed to read BCCH data from GSM cell $[2\underline{1}\theta]$.
	According to [21], 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 7.68s + T_{BCCH} , thus allow 8s + T_{BCCH} .

6

A.4.2.4.3 Scenario 4A Test Purpose and Environment

A.4.2.4.3.1 void

A.4.2.4.3.2 1.28 Mcps TDD option

This test is to verify the requirement for the UTRAN to GSM cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 UTRAN serving cell, and 1 GSM cell to be re-selected. Test parameters are given in Table A.4.10A, A.4.11A, A.4.12A.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304. Cell 1 and cell 2 shall belong to different location areas.

Table A.4.10A: General test parameters for UTRAN (1.28 Mcps TDD OPTION) to GSM Cell Reselection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	1.28 Mcps TDD OPTION cell
	Neighbour cell		Cell2	GSM cell
Final condition	Active cell		Cell2	GSM cell
DRX o	cycle length	S	1 <u>.,</u> 28	
	HCS		Not Used	
T1		S	25 45	
	T2		45	

Table A.4 11A: Cell re-selection UTRAN to GSM cell case (cell 1)

Parameter	Unit	Cell 1 (UTRA)			
Timeslot Number		C)	Dw	PTS
		T1	T2	T1	T2
UTRA RF Channel Number		Chan	nel 1	Char	nnel 1
PCCPCH_Ec/lor	dB	-3	-3		
DwPCH_Ec/lor	dB			0	0
OCNS_Ec/lor	<u>dB</u>	<u>-3</u>	<u>-3</u>		
\hat{I}_{or}/I_{oc}	dB	6	6	6	6
I _{oc}	dBm/1. 28 MHz	-80			
PCCPCH RSCP	dBm	-77	-77		
Propagation Condition		AWGN AWGN		/GN	
Treselection	S	0			
Ssearch _{RAT}	dB	Not sent			
Qrxlevmin	dBm	-103			
Qoffset1 _{s,n}	dB	C1, C2: 0			
Qhyst1 _s	dB		()	

Table A.4.12A: Cell re-selection UTRAN to GSM cell case (cell 2)

Parameter	Unit	Cell 2 (GSM)		
	Unit	T1	T2	
Absolute RF Channel Number		ARFCN 1		
RXLEV	dBm	-90 -70		
RXLEV_ACCESS_MIN	dBm	-104		
MS_TXPWR_MAX_CCH	dBm	33		

7

A.4.2.4.4 Scenario 4A Requirements

A.4.2.4.4.1 void

A.4.2.4.4.2 1.28 Mpcs TDD option

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 RR Channel Request message for location update to Cell 2.

The cell re-selection delay shall be less than 26 s+ T_{BCCH} , where T_{BCCH} is the maximum time allowed to read BCCH data from GSM cell [2021].

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

NOTE: The UE shall keep a running average of 4 measurements, thus gives $4 \text{ * } T_{\text{measureGSM}} + T_{\text{BCCH}}$, where:

T _{measureGSM}	<u>A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{measureGSM}$ of 6.4s according to Table 4.1A in section 4.2.Specified in 4.2.2.7.2 Table 4.1A.</u>
T _{BCCH}	Maximum time allowed to read BCCH data from GSM cell $[2\underline{10}]$.
	According to [21], 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 25.6s +T_{BCCH}, thus allow 26s $_+$ T_{BCCH}.

3GPP TSR RAN WG4 Meeting #24

R4-021358

Helsinki, Finland 12 - 16 August 2002

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Reason for change: њ	No 3.64Wicps/1.26Wicps/1DD cell reselection in Idle mode
Summary of change: #	Introduce 3.84Mcps/1.28Mcps TDD cell reselection and test case
Consequences if % not approved:	No 3.84Mcps/1.28Mcps TDD cell reselection in the specification. <u>Isolated Impact Analysis:</u> Would not affect the implementation behaving like indicated in the CR, no relevant specification for the implementation and test cases not behaving like indicated in the CR.

Clauses affected:	# 4.2.2.3B(new); 4.2.2.7.1; A.4.2.2B(new)
	YN
Other specs affected:	# X Other core specifications # X Test specifications 34.122 X O&M Specifications 34.122
Other comments:	The corresponding Rel-5 CR is R4-021167. Equivalent CRs in other Releases: CR256r1 cat. A to 25.123 v5.1.0

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- 1) Fill out the above form. The symbols above marked **#** contain pop-up help information about the field that they are closest to.
- Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.2.2.3A 1.28 Mcps TDD to 3.84 Mcps TDD cell re-selection

This requirement only applies to 1.28 Mcps UEs supporting this mode.

The ranking of the low and high chip rate TDD cells shall be made according to the cell reselection criteria specified in TS25.304.

The UE shall measure PCCPCH RSCP at least every $N_{TDDcarrier} * T_{measureTDD}$ (see table 4.1A) for inter-frequency cells that are identified and measured according to the measurement rules. The parameter $N_{carrier}$ is the number of carriers used for 3.84 Mcps TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured high chip rate TDD cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureTDD}/2$.

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that a high chip rate TDD cell has become better ranked than the serving cell within $N_{TDDcarrier} * T_{evaluateTDD}$ from the moment the inter-frequency cell became at least 3 better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency 3.84Mcps TDD cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency 3.84Mcps TDD cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.3B 3.84 Mcps TDD to 1.28 Mcps TDD cell re-selection

This requirement in this section only applies to UEs supporting both 3.84 Mcps TDD and 1.28Mcps TDD.

The UE shall measure PCCPCH RSCP at least every $N_{carrierNTDD}$ * $T_{measureNTDD}$ (see table 4.1A) for inter-frequency 1.28 Mcps TDD OPTION cells that are identified and measured according to the measurement rules. The parameter $N_{carrierNTDD}$ is the number of carriers used for 1.28 Mcps TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured 1.28 Mcps TDD cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureNTDD}/2$.

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that a 1.28 Mcps TDD cell has become better ranked than the serving cell within $N_{carrierNTDD} * T_{evaluateNTDD}$ from the moment the inter-frequency cell became at least 3 better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency 1.28 Mcps TDD cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency 1.28 Mcps TDD cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

<Next Section>

4.2.2.7 Maximum interruption time in paging reception

4.2.2.7.1 3.84 Mcps option

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

At intra-frequency cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels of the target intra-frequency cell for paging reception. The interruption time shall not exceed 50 ms.

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

 T_{SI} 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 TS25.331 for a UTRAN cell.

 T_{BCCH} is the maximum time allowed to read BCCH data from a GSM cell as defined in TS45.008.

These requirements assume sufficient radio conditions, so that decoding of system information can be made without errors.

 $\textbf{Table 4.1: } \textbf{T}_{measureTDD}, \textbf{T}_{evaluateTDD}, \textbf{\underline{T}}_{measureNTDD}, \textbf{\underline{T}}_{evaluateNTDD}, \textbf{T}_{evaluateFDD}, \textbf{T$

DRX cycle length [s]	N _{serv} (number of DRX cycles)	T _{measureTDD} [s] (number of DRX cycles)	T _{evaluateTDD} [s] (number of DRX cycles)	<u>T_{measureNTDD}</u> [s] (number of DRX cycles)	<u>T_{evaluateNTDD}</u> [s] (number of <u>DRX</u> cycles)	T _{measureFDD} [s] (number of DRX cycles)	T _{evaluateFDD} [s] (number of DRX cycles)	T _{measureGSM} [s] (number of DRX cycles)
0.08	4	0.64 (8 DRX	2.56 (32 DRX	0.64 (8 DRX cycles)	<u>2.56 (32</u> DRX	0.64 (8 DRX	2.56 (32 DRX	2.56 (32 DRX
		cycles)	cycles)		cycles)	cycles)	cycles)	cycles)
0.16	4	0.64 (4)	2.56 (16)	<u>0.64 (4)</u>	<u>2.56 (16)</u>	0.64 (4)	2.56 (16)	2.56 (16)
0.32	4	1.28 (4)	5.12 (16)	<u>1.28 (4)</u>	<u>5.12 (16)</u>	1.28 (4)	5.12 (16)	5.12 (16)
0.64	4	1.28 (2)	5.12 (8)	<u>1.28 (2)</u>	<u>5.12 (8)</u>	1.28 (2)	5.12 (8)	5.12 (8)
1.28	2	1.28 (1)	6.4 (5)	<u>1.28 (1)</u>	<u>6.4 (5)</u>	1.28 (1)	6.4 (5)	6.4 (5)
2.56	2	2.56 (1)	7.68 (3)	<u>2.56 (1)</u>	<u>7.68 (3)</u>	2.56 (1)	7.68 (3)	7.68 (3)
5.12	1	5.12 (1)	10.24 (2)	<u>5.12 (1)</u>	<u>10.24 (2)</u>	5.12 (1)	10.24 (2)	10.24 (2)

In idle mode, UE shall support DRX cycles lengths 0.64, 1.28, 2.56 and 5.12 s, according to [16].

<Next Section>

A.4.2.2B Scenario 2B: 3.84 Mcps/1.28 Mcps TDD cell re-selection

A.4.2.2B.1 Test Purpose and Environment

This test is to verify the requirement for the 3.84 Mcps/1.28 Mcps TDD cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 3.84 Mcps TDD serving cell, and 1 1.28 Mcps TDD cell to be re-selected. The UE is requested to monitor neighbouring cells on 1 3.84 Mcps TDD carrier and 1 1.28 Mcps TDD carrier. Test parameters are given in Table A.4.3C, A4.4C, and A.4.5C. Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.3C: General test parameters for 3.84 Mcps /1.28 Mcps TDD cell re-selection

P	arameter_	Unit	Value	Comment
Initial	Active cell		Cell 1	3.84 Mcps TDD OPTION cell
<u>condition</u>	ondition <u>Neighbour cell</u>		<u>Cell 2</u>	1.28 Mcps TDD OPTION cell
Final condition	Active cell		Cell 2	1.28 Mcps TDD OPTION cell
	HCS		Not used	
UE_TXP	WR_MAX_RACH	<u>dBm</u>	<u>21</u>	The value shall be used for all cells in the test.
	Qrxlevmin	<u>dBm</u>	<u>-103</u>	
Access Ser	vice Class (ASC#0)			Selected so that no additional
- Pers	istence value		<u>1</u>	delay is caused by the random
				access procedure. The value shall
				be used for all cells in the test.
	<u>T_{SI}</u>	<u>s</u>	<u>1,28</u>	The value shall be used for all cells in
				the test.
DRX cycle length		<u>s</u>	<u>1,28</u>	The value shall be used for all cells in
				the test.
	<u>T1</u>	<u>s</u>	<u>30</u>	
	<u>T2</u>	<u>S</u>	<u>15</u>	

Table A.4.4C: Cell 1 specific test parameters for 3.84 Mcps TDD/1.28 Mcps TDD cell re-selection

Parameter	<u>Unit</u>	<u>Cell 1</u>					
Timeslot Number		0			8		
		<u>T1</u>	<u>T2</u>	<u>T 1</u>	<u>T 2</u>		
UTRA RF Channel Number			<u>Cha</u>	nnel 1			
PCCPCH_Ec/lor	<u>dB</u>	<u>-3</u>	<u>-3</u>				
SCH_Ec/lor	<u>dB</u>	<u>-9</u>	-9	<u>-9</u>	<u>-9</u>		
<u>SCH_t_{offset}</u>				0			
PICH_Ec/lor	<u>dB</u>			-3	<u>-3</u>		
OCNS_Ec/lor	<u>dB</u>	<u>-3.12</u>					
\hat{I}_{or}/I_{oc}	<u>dB</u>	<u>10</u>	<u>7</u>	<u>10</u>	<u>7</u>		
PCCPCH_RSCP	dBm	-63	-66				
Qoffset1 _{s,n}	<u>dB</u>		<u>C1,</u>	C2: 0			
<u>Qhyst1</u> s	dB			0			
Treselection	S			<u>0</u>			
Sintersearch	dB		<u>not</u>	sent			
I _{oc}	<u>dBm/3.84</u> <u>MHz</u>		-70				
Propagation Condition			AV	<u>/GN</u>			

Table A.4.5C: Cell 2 specific test parameters for 3.84 Mcps TDD/1.28 Mcps TDD cell re-selection

Parameter	Unit		Ce	<mark>ll 2</mark>			
Timeslot Number		(<u>)</u>	Dw	PTS		
		<u>T1</u>	<u>T2</u>	<u>T 1</u>	<u>T 2</u>		
UTRA RF Channel			Char	nel 2			
Number					-		
PCCPCH_Ec/lor	<u>dB</u>	<u>-3</u>	<u>-3</u>				
DwPCH_Ec/lor	<u>dB</u>			<u>0</u>	<u>0</u>		
OCNS_Ec/lor	<u>dB</u>	-	<u>3</u>		-		
\hat{I}_{or}/I_{oc}	<u>dB</u>	<u>7</u>	<u>10</u>	<u>7</u>	<u>10</u>		
PCCPCH_RSCP	dBm	-66	-63				
<u>Qoffset1_{s,n}</u>	<u>dB</u>		<u>C2,</u> (C1: 0			
<u>Qhyst1</u> s	<u>dB</u>		(<u>)</u>			
Treselection	<u>S</u>		(<u>)</u>			
Sintersearch	dB		not	<u>sent</u>			
I _{oc}	<u>dBm/1.</u> 28 MHz			<u>70</u>			
Propagation Condition			AW	' <u>GN</u>			

A.4.2.2B.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 SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

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

NOTE:

<u>The cell re-selection delay can be expressed as: $T_{evaluateNTDD} + T_{SI}$, where:</u>

 $\frac{T_{evaluateNTDD}}{according to Table 4.1} in section 4.2.$

 $\frac{T_{SI}}{T_{SI}}$ 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 [16] for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

3GPP TSR RAN WG4 Meeting #24

R4-021359

Helsinki, Finland 12 - 16 August 2002

CHANGE REQUEST												CR-Form-v7
ж	25.	123 (CR <mark>2</mark>	56	жrev	1	ж	Current vers	sion:	5.1	.0	ж
For <u>HELP</u> on using this form, see bottom of this page or look at the pop-up text over the # symbols.												
Proposed change affects: UICC apps# ME X Radio Access Network Core Network												
Title:	₭ Cell	<mark>reselec</mark>	ction fro	om 3.84Mc	ps TDD to	wards	s 1.2	8Mcps TDD i	<mark>n idle</mark>	e mode	;	
Source:	₩ <mark>RAN</mark>	WG4										
Work item code:	₩ <mark>TEI4</mark>	ļ						Date: ೫	21	/08/20	02	
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Reason for chang Summary of chai								n in idle mode		250		

Consequences if	ж	No 3.84Mcps/1.28Mcps TDD cell reselection in the specification.
not approved:		Isolated Impact Analysis: Would not affect the implementation behaving like
		indicated in the CR, no relevant specification for the implementation and test
		cases not behaving like indicated in the CR.

Clauses affected:	# 4.2.2.3B(new); 4.2.2.7.1; A.4.2.2B(new)
Other specs	X Other core specifications
affected:	X Test specifications
	X O&M Specifications
Other comments:	ж
	Equivalent CRs in other Releases: CR255r1 cat. F to 25.123 v4.5.0

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- 1) Fill out the above form. The symbols above marked **#** contain pop-up help information about the field that they are closest to.
- Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.2.2.3A 1.28 Mcps TDD to 3.84 Mcps TDD cell re-selection

This requirement only applies to 1.28 Mcps UEs supporting this mode.

The ranking of the low and high chip rate TDD cells shall be made according to the cell reselection criteria specified in TS25.304.

The UE shall measure PCCPCH RSCP at least every $N_{TDDcarrier} * T_{measureTDD}$ (see table 4.1A) for inter-frequency cells that are identified and measured according to the measurement rules. The parameter $N_{carrier}$ is the number of carriers used for 3.84 Mcps TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured high chip rate TDD cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureTDD}/2$.

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that a high chip rate TDD cell has become better ranked than the serving cell within $N_{TDDcarrier} * T_{evaluateTDD}$ from the moment the inter-frequency cell became at least 3 better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency 3.84Mcps TDD cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency 3.84Mcps TDD cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

4.2.2.3B 3.84 Mcps TDD to 1.28 Mcps TDD cell re-selection

This requirement in this section only applies to UEs supporting both 3.84 Mcps TDD and 1.28Mcps TDD.

The UE shall measure PCCPCH RSCP at least every $N_{carrierNTDD}$ * $T_{measureNTDD}$ (see table 4.1A) for inter-frequency 1.28 Mcps TDD OPTION cells that are identified and measured according to the measurement rules. The parameter $N_{carrierNTDD}$ is the number of carriers used for 1.28 Mcps TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured 1.28 Mcps TDD cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureNTDD}/2$.

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that a 1.28 Mcps TDD cell has become better ranked than the serving cell within $N_{carrierNTDD} * T_{evaluateNTDD}$ from the moment the inter-frequency cell became at least 3 better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency 1.28 Mcps TDD cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency 1.28 Mcps TDD cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

<Next Section>

4.2.2.7 Maximum interruption time in paging reception

4.2.2.7.1 3.84 Mcps option

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

At intra-frequency cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels of the target intra-frequency cell for paging reception. The interruption time shall not exceed 50 ms.

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

 T_{SI} 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 TS25.331 for a UTRAN cell.

 T_{BCCH} is the maximum time allowed to read BCCH data from a GSM cell as defined in TS45.008.

These requirements assume sufficient radio conditions, so that decoding of system information can be made without errors.

 $\textbf{Table 4.1: } \textbf{T}_{measureTDD}, \textbf{T}_{evaluateTDD}, \textbf{\underline{T}}_{measureNTDD}, \textbf{\underline{T}}_{evaluateNTDD}, \textbf{T}_{evaluateFDD}, \textbf{T$

DRX cycle length [s]	N _{serv} (number of DRX cycles)	T _{measureTDD} [s] (number of DRX cycles)	T _{evaluateTDD} [s] (number of DRX cycles)	<u>T_{measureNTDD}</u> [s] (number of DRX cycles)	<u>T_{evaluateNTDD}</u> [s] (number of <u>DRX</u> cycles)	T _{measureFDD} [s] (number of DRX cycles)	T _{evaluateFDD} [s] (number of DRX cycles)	T _{measureGSM} [s] (number of DRX cycles)
0.08	4	0.64 (8 DRX	2.56 (32 DRX	0.64 (8 DRX cycles)	<u>2.56 (32</u> DRX	0.64 (8 DRX	2.56 (32 DRX	2.56 (32 DRX
		cycles)	cycles)		cycles)	cycles)	cycles)	cycles)
0.16	4	0.64 (4)	2.56 (16)	<u>0.64 (4)</u>	<u>2.56 (16)</u>	0.64 (4)	2.56 (16)	2.56 (16)
0.32	4	1.28 (4)	5.12 (16)	<u>1.28 (4)</u>	<u>5.12 (16)</u>	1.28 (4)	5.12 (16)	5.12 (16)
0.64	4	1.28 (2)	5.12 (8)	<u>1.28 (2)</u>	<u>5.12 (8)</u>	1.28 (2)	5.12 (8)	5.12 (8)
1.28	2	1.28 (1)	6.4 (5)	<u>1.28 (1)</u>	<u>6.4 (5)</u>	1.28 (1)	6.4 (5)	6.4 (5)
2.56	2	2.56 (1)	7.68 (3)	<u>2.56 (1)</u>	<u>7.68 (3)</u>	2.56 (1)	7.68 (3)	7.68 (3)
5.12	1	5.12 (1)	10.24 (2)	<u>5.12 (1)</u>	<u>10.24 (2)</u>	5.12 (1)	10.24 (2)	10.24 (2)

In idle mode, UE shall support DRX cycles lengths 0.64, 1.28, 2.56 and 5.12 s, according to [16].

<Next Section>

A.4.2.2B Scenario 2B: 3.84 Mcps/1.28 Mcps TDD cell re-selection

A.4.2.2B.1 Test Purpose and Environment

This test is to verify the requirement for the 3.84 Mcps/1.28 Mcps TDD cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 3.84 Mcps TDD serving cell, and 1 1.28 Mcps TDD cell to be re-selected. The UE is requested to monitor neighbouring cells on 1 3.84 Mcps TDD carrier and 1 1.28 Mcps TDD carrier. Test parameters are given in Table A.4.3C, A4.4C, and A.4.5C. Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.3C: General test parameters for 3.84 Mcps /1.28 Mcps TDD cell re-selection

Parameter		Unit	Value	Comment
Initial	Active cell		Cell 1	3.84 Mcps TDD OPTION cell
<u>condition</u>	Neighbour cell		Cell 2	1.28 Mcps TDD OPTION cell
Final condition	Active cell		Cell 2	1.28 Mcps TDD OPTION cell
	<u>HCS</u>		Not used	
UE_TXP	WR_MAX_RACH	<u>dBm</u>	<u>21</u>	The value shall be used for all cells in the test.
Qrxlevmin		dBm	<u>-103</u>	
Access Service Class (ASC#0)				Selected so that no additional
 Persistence value 			<u>1</u>	delay is caused by the random
				access procedure. The value shall
				be used for all cells in the test.
<u>T_{SI}</u>		<u>s</u>	<u>1,28</u>	The value shall be used for all cells in
				the test.
DRX cycle length		<u>s</u>	<u>1,28</u>	The value shall be used for all cells in
				the test.
	<u>T1</u>	<u>s</u>	<u>30</u>	
	<u>T2</u>	<u>s</u>	<u>15</u>	

Table A.4.4C: Cell 1 specific test parameters for 3.84 Mcps TDD/1.28 Mcps TDD cell re-selection

Parameter	<u>Unit</u>	<u>Cell 1</u>				
Timeslot Number		0	0		8	
		<u>T1</u>	<u>T2</u>	<u>T 1</u>	<u>T 2</u>	
UTRA RF Channel Number			<u>Cha</u>	nnel 1		
PCCPCH_Ec/lor	<u>dB</u>	<u>-3</u>	<u>-3</u>			
SCH_Ec/lor	<u>dB</u>	-9	-9	-9	<u>-9</u>	
<u>SCH_t_{offset}</u>		0				
PICH_Ec/lor	<u>dB</u>			-3	<u>-3</u>	
OCNS_Ec/lor	<u>dB</u>	<u>-3.12</u>				
\hat{I}_{or}/I_{oc}	<u>dB</u>	<u>10</u>	<u>7</u>	<u>10</u>	<u>7</u>	
PCCPCH_RSCP	dBm	-63	-66			
Qoffset1 _{s,n}	dB	<u>C1, C2: 0</u>				
<u>Qhyst1s</u>	dB			0		
Treselection	<u>s</u>	0				
Sintersearch	dB	not sent				
I _{oc}	<u>dBm/3.84</u> <u>MHz</u>	-70				
Propagation Condition		AWGN				

Table A.4.5C: Cell 2 specific test parameters for 3.84 Mcps TDD/1.28 Mcps TDD cell re-selection

Parameter	Unit	Unit Cell 2			
Timeslot Number		<u>0</u>		<u>DwPTS</u>	
		<u>T1</u>	<u>T2</u>	<u>T 1</u>	<u>T 2</u>
UTRA RF Channel			Char	nel 2	
<u>Number</u> PCCPCH_Ec/lor	dB	-3	-3		
DwPCH_Ec/lor	dB			0	0
OCNS_Ec/lor	dB	-3			
\hat{I}_{or}/I_{oc}	<u>dB</u>	<u>7</u>	<u>10</u>	<u>7</u>	<u>10</u>
PCCPCH_RSCP	dBm	-66	-63		
Qoffset1 _{s,n}	dB	<u>C2, C1: 0</u>			
<u>Qhyst1</u> s	dB	<u>0</u>			
Treselection	<u>S</u>	<u>0</u>			
Sintersearch	dB	not sent			
I _{oc}	<u>dBm/1.</u> 28 MHz	<u>-70</u>			
Propagation Condition		AWGN			

A.4.2.2B.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 SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

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

NOTE:

<u>The cell re-selection delay can be expressed as: $T_{evaluateNTDD} + T_{SI}$, where:</u>

 $\frac{T_{evaluateNTDD}}{A DRX cycle length of 1280ms is assumed for this test case, this leads to a T_{evaluate NTDD} of 6.4s}{according to Table 4.1 in section 4.2.}$

 $\frac{T_{SI}}{T_{SI}}$ 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 [16] for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

3GPP TSR RAN WG4 Meeting #24

R4-021168

Helsinki, Finland 12 - 16 August 2002

	CHANGE REQUEST	CR-Form-v7
æ	25.123 CR 257 # rev # Current versi	^{ion:} 4.5.0 [#]
For <u>HELP</u> on u	ng this form, see bottom of this page or look at the pop-up text o	over the X symbols.
Proposed change	ects: UICC apps# ME X Radio Access Network	K Core Network
Title: #	Cell reselection in CELL_FACH state	
Source: अ	RAN WG4	
Work item code: अ	_CRTDD-RF Date: ೫	21/08/2002
Category: ₩	se one of the following categories:Use one of tF (correction)2A (corresponds to a correction in an earlier release)R96B (addition of feature),R97C (functional modification of feature)R98D (editorial modification)R99etailed explanations of the above categories canRel-4e found in 3GPP TR 21.900.Rel-5	Rel-4 the following releases: (GSM Phase 2) (Release 1996) (Release 1997) (Release 1998) (Release 1999) (Release 4) (Release 5) (Release 6)
Reason for change	 1. Cell reselection performance requirements in CELL_FA using appropriate formulas. 2. No S-criteria detection performance requirement and "or performance requirement. 3. OCNS_Ec/lor ignored in the test cases. 4. lor_hat/loc not inline with the PCCPCH RSCP accuracy section 9 for the CELL_FACH state. 	ut-of-service"
Summary of chang	 1. Cell reselection delay and interrution time have been modeling 2. Introduce S-criteria detection performance requirement performance requirement. 3. OCNS_Ec/lor is inserted in test cases. 4. lor_hat/loc is changed to be aligned with PCCPCH RSC requirement. 5. Removal of square brackets. 	and "out-of-service"
Consequences if not approved:	 Cell reselection performance requirements would be incomplete. <u>Isolated Impact Analysis:</u> Would not affect the implement indicated in the CR, the implementation would be affected cases exist if not behaving like indicated in the CR. 	at cases remain
Clauses affected:	# 4.2.2.1.2; 5.4.3; A.5.4.2	
Other specs	Y N % X Other core specifications %	

affected:	XTest specificationsXO&M Specifications	34.122
Other comments:	# The corresponding Rel-5 CR is R4-021 Equivalent CRs in other Releases: CR2	

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Comprehensive information and tips about how to create CRs can be found at <u>http://www.3gpp.org/specs/CR.htm</u>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.2.2.1.2 1.28 Mcps TDD option

The UE shall measure the PCCPCH RSCP level of the serving cell and evaluate the cell selection criterion S defined in TS25.304 for the serving cell at least every DRX cycle. The UE shall filter the PCCPCH RSCP level of the serving cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureNTDD}/2$ (see table 4.1A).

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 in the measurement control system information, regardless of the measurement rules currently limiting UE measurement activities.

If the UE has not found any new suitable cell based the on searches and measurements of the neighbour cells indicated in the measurement control system information for 12 s, the UE shall initiate cell selection procedures for the selected PLMN as defined in TS25.304.

After this 12 s period a UE in Cell_PCH or URA_PCH is considered to be "out of service area" and shall perform actions according to [16].

<Next Section>

5.4.3 Requirements for 1.28Mcps TDD option

The cell re-selection delays specified below are applicable when the RRC parameter $T_{reselection}$ is set to 0. Otherwise the Cell reselection delay is increased by $T_{reselection}$ s.

P-CCPCH RSCP shall be used for cell reselection in Cell-FACH state to another TDD cell, CPICH RSCP and if requested in addition CPICH Ec/Io shall be used for <u>cell</u> re-selection to a FDD cell and GSM <u>BCCH</u> carrier RSSI shall be used for cell re-selection to a GSM cell. The accuracies of the measurements used for a-cell_-re-selection in an AWGN environment shall comply with the requirements in chapter 9. The measurements used for S-criteria and cell re-selection evaluation in CELL FACH state shall be performed according to section 8.4A.

5.4.3.1 Measurements

The UE measurement capability according to section 8.4A shall apply.

5.4.3.2 Cell re-selection delay

For cell re-selection to TDD, the cell re-selection delay is defined as the time between the occurrence of an event which will trigger Cell Reselection process and the moment in time when the UE starts to send SYNCH-UL sequence for sending the RRC CELL UPDATE message to the UTRAN.

For cell re-selection to FDD the cell re-selection delay is defined as the time between the occurrence of an event which will trigger Cell Reselection process and the moment in time when the UE starts sending the preambles on the PRACH for sending RRC CELL UPDATE message to the UTRAN.

For cell re-selection to GSM the cell re-selection delay is defined as the time between the occurrence of an event which will trigger Cell Reselection process and the moment in time when the UE starts sending the random access in the target cell of the new RAT.

5.4.3.2.1 Intra-frequency cell re-selection

The cell re-selection delay in CELL_FACH state for to an intra frequency cells shall be less than:

$$\frac{T_{\text{reselection, intra}} = T_{\text{identify intra}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}}}{T_{\text{reselection, intra}}} = T_{\text{identify intra}} + 40ms + T_{\text{SI}} + T_{\text{RA}}}$$

If a cell has been detectable at least for $T_{identify,intra}$, the cell re-selection delay in CELL_FACH state for to an intra frequency cells shall be less than:

$$T_{\text{reselection, intra}} = T_{\text{Measurement Period Intra}} + 40ms + T_{\text{SI}} + T_{\text{RA}}$$
$$T_{\text{reselection, intra}} = T_{\text{Measurement Period Intra}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \underline{\text{ms}}$$

where

 $T_{identify intra} = is Sepecified in 8.4A.2.2.1$

 $T_{\text{Measurement Period Intra}} = \underline{is } \underline{s} \underline{s} pecified in 8.4A.2.2.2$

- $\frac{T_{IU}}{T_{IU}}$ is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).
- T_{SI} = <u>Tis</u> 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 [16]25.331 for a UTRAN cell.
- T_{RA} = <u>Tis the</u> additional delay caused by the random access procedure.

This requirement assumes radio conditions to be sufficient, so reading of system information can be done without errors.

5.4.3.2.2 Inter-frequency TDD cell re-selection

The cell re-selection delay in CELL_FACH state for to an inter-frequency TDD cells shall be less than:

 $\frac{T_{\text{reselection, TDD, inter}} = T_{\text{identify inter}} + 40ms + T_{\text{SI}} + T_{\text{RA}}}{T_{\text{reselection, inter}}} = T_{\text{identify inter}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \underline{\text{ms}}$

If a cell has been detectable at least for $T_{identify;inter}$, the cell re-selection delay in CELL_FACH state for to an inter frequency cells shall be less than:

$$-T_{\text{reselection, TDD, inter}} = T_{\text{measurement inter}} + 40ms + T_{\text{SI}} + T_{\text{RA}}$$

 $T_{reselection, inter} = T_{measurement inter} + T_{IU} + 20 + T_{SI} + T_{RA} \underline{ms}$

where

$$\begin{array}{ll} T_{identify_inter} & = \underline{Sis\ s}{pecified\ in\ 8.4A.2.3.1} \\ T_{measurement\ inter} & = \underline{Sis\ s}{pecified\ in\ 8.4A.2.3.2} \\ \hline T_{IU} & is\ the\ interruption\ uncertainty\ when\ changing\ the\ timing\ from\ the\ old\ to\ the\ new\ cell.\ T_{IU}\ can\ be\ up\ to\ one\ frame\ (10\ ms).} \\ \hline T_{SI} & = \underline{Tis\ the\ time\ required\ for\ receiving\ all\ the\ relevant\ system\ information\ data\ according\ to\ the\ reception\ procedure\ and\ the\ RRC\ procedure\ delay\ of\ system\ information\ blocks\ defined\ in\ I16]25.331\ for\ a\ UTRAN\ cell.} \\ \hline T_{RA} & = \underline{Tis\ the\ additional\ delay\ caused\ by\ the\ random\ access\ procedure.} \end{array}$$

This requirement assumes radio conditions to be sufficient, so reading of system information can be done without errors.

5.4.3.2.3 Inter-frequency FDD cell re-selection

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and FDD.

The cell re-selection delay in CELL_FACH state for to a inter frequency FDD cells shall be less than:

$$T_{\text{reselection, FDD}} = T_{\text{identify FDD inter}} + 100ms + T_{\text{SI}} + T_{\text{RA}}$$
$$T_{\text{reselection, FDD}} = T_{\text{identify FDD inter}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \underline{\text{ms}}$$

If a cell has been detectable at least $T_{identify FDD inter}$, the cell re-selection delay in CELL_FACH state to FDD cell shall be less than:

$$\Gamma_{\text{reselection, FDD}} = T_{\text{measurement FDD inter}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \underline{\text{ms}}$$

where

$T_{identify\ FDD\ inter}$	=Sis specified in 8.4A.2.4.1
Tmeasurement FDD in	er is specified in 8.4A.2.4.1.
<u>T_{IU}</u>	is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).
T _{SI}	=T <u>is</u> 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 [16]25.331 for a UTRAN cell.
T _{RA}	= Tis the additional delay caused by the random access procedure.

This requirement assumes radio conditions to be sufficient, so reading of system information can be done without errors.

5.4.3.2.4 Inter-RAT cell re-selection

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and GSM.

The cell re-selection delay in CELL_FACH state for to an inter-RAT cells shall be less than:

	$T_{\text{reselection, GSM}} = T_{\text{identify GSM}} + T_{\text{Measurement GSM}} + T_{\text{BCCH}} + T_{\text{RA}}$
	$T_{\text{reselection, GSM}} = T_{\text{identify GSM}} + T_{\text{measurement GSM}} + 40 + T_{\text{BCCH}} + T_{\text{RA}} \underline{\text{ms}}$
<u>T_{RA}</u>	= The additional delay caused by the random access procedure.
<u>T_{BCCH}</u>	= the maximum time allowed to read BCCH data from GSM cell [21].
Where	

a) For UE requiring idle intervals or measurement occasions:

 $T_{identify GSM}$ = Is the worst case time for identification of one previously not identified GSM cell and is specified in TS25.225 Annex A.

 $T_{\text{Measurement GSM}} \quad \text{is the worst case time for measuring one previously identified GSM carrier}.$

$$T_{\text{Measurement GSM}} = Max \left\{ [480]ms, 8 \cdot \frac{N_{carriers}}{N_{GSM \ carrier \ RSSI}} \cdot T_{meas} \right\}$$
$$T_{\text{measurement GSM}} = Max \left\{ 8 \cdot \frac{N_{carriers}}{N_{GSM \ carrier \ RSSI}} \cdot T_{meas}, 480ms \right\}$$

where

N_{carriers}

is the number of GSM carriers in the Inter-RAT cell info list

N_{GSM carrier RSSI} can be derived from the values in table 8.7 is specified in section 8.4A.2.5.1.

 T_{RA} = The additional delay caused by the random access procedure.

 T_{RCCH} = the maximum time allowed to read BCCH data from GSM cell [TS 45.008].

b) For UE not requiring idle intervals or measurement occasions

 $\underline{T_{identify, GSM}} = 150 \text{ ms}$

 $T_{Measurement, GSM} = 480 \text{ ms}$

This requirement assumes radio conditions to be sufficient, so reading of system information can be done without errors.

5.4.3.3 Interruption time

For UTRA TDD, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts to transmit the SYNCH-UL sequence in the UpPTS for sending the RRC CELL UPDATE message to the UTRAN.

For UTRA FDD, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts sending preambles on the PRACH for sending the RRC CELL UPDATE message to the UTRAN.

For GSM, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts sending the random access in the target cell of the new RAT.

The requirements on interruption time in this section shall apply only if the signal quality of the serving cell is sufficient to allow decoding of the FACH during cell-re-selection.

The interruption time, i. e. the time between the last TTI the UE monitors the FACH channel on the serving cell and the time the UE starts to transmit in the target cell.

The UE shall perform the cell re selection with minimum interruption time.

In case the UE reselects a UTRAN cell the interruption time shall not exceed $T_{RA}+T_{SI}+50$ ms.

In case the UE reselects a GSM cell the interruption time shall not exceed $T_{RA}+T_{BCCH}+50ms$.

 T_{st} =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 25.331 for a UTRAN cell.

 T_{RA} = The additional delay caused by the random access procedure.

T_{BCCH} = the maximum time allowed to read BCCH data from GSM cell [TS 45.008].

5.4.3.3.1 TDD-TDD cell re-selection

In case of cell re-selection to a TDD cell, the interruption time shall be less than

<u> $T_{interrupt}$ TDD = T_{IU} +20+ T_{SI} + T_{RA} ms</u>

where

<u>T_{IU}</u>	is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).
<u>T_{sı}</u>	is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16].
<u>T</u> _{RA}	is the additional delay caused by the random access procedure.

5.4.3.3.2 TDD-FDD cell re-selection

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and FDD.

In case of cell re-selection to a FDD cell, the interruption time shall be less than

 $\underline{T}_{\underline{\text{interrupt, FDD}}} = \underline{T}_{\underline{IU}} + 20 + \underline{T}_{\underline{SI}} + \underline{T}_{\underline{RA}} \underline{\text{ms}}$

where

- T_{st}
 is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16].

 \underline{T}_{RA} is the additional delay caused by the random access procedure.

5.4.3.3.3 TDD-GSM cell re-selection

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and GSM.

In case of cell re-selection to an inter-RAT cell, the interruption time shall be less than

 $T_{\text{interrupt GSM}} = 40 + T_{\text{BCCH}} + T_{\text{RA}} \text{ ms}$

where

<u>T_{BCCH}</u> is the maximum time allowed to read BCCH data from the GSM cell [21].

 $\underline{T_{RA}}$ is the additional delay caused by the random access procedure.

5.4.3.4 Measurement and evaluation of cell selection criteria S of serving cell

The S-criteria detection delay is defined as the time between the occurrence of an event which leads to that the cell selection criteria S for serving cell is not fulfilled and the moment in time when the UE detects that the cell selection criteria S for serving cell is not fulfilled.

The UE shall filter the P-CCPCH RSCP measurements used for cell selection criteria S evaluation of the serving cell over at least 3 measurement periods $T_{Measurement Period Intra-}$

The S-critera detection delay in CELL FACH state shall be less than:

 $T_{\text{S-criteria}} = 5 \times T_{\text{Measurement}_Period Intra} \underline{\text{ms}}$

where

 $\underline{T_{Measurement_Period Intra}} = Specified in 8.4A.2.2.2.$

 The UE is "out of service area" if the UE has evaluated for 4 s that that the serving cell does not fulfil the cell selection criterion S and if the UE has not found any new suitable cell based on searches and measurements of the neighbour cells indicated in the measurement control system information during these 4 s. When the UE is "out of service area" it shall initiate cell selection procedures for the selected PLMN as defined in [18].

<Next Section>

A.5.4.2 1.28 Mcps TDD option

A.5.4.2.1 One frequency present in neighbour list

A.5.4.2.1.1 Test purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL_FACH state in the single carrier case reported in section 5.4.3.2.1.

The test parameters are given in Tables A.5.4.9to A.5.4.12

Table A.5.4.9: General test parameters for Cell Re-selection in CELL_FACH

	Parameter	Unit	Value	Comment
initial	Active cell		Cell1	
condition	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
final condition	Active cell		Cell2	
	HCS		Not used	
UE_1	TXPWR_MAX_RACH	dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-103	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T _{SI}		S	1.28	The value shall be used for all cells in the test.
	T1		15	
	T2	S	15	

Table A.5.4.10: Physical channel parameters for S-CCPCH.

Parameter	Unit	Level
Channel bit rate	kbps	35.2
Channel symbol rate	ksps	17.6
Slot Format #	-	0; 2
Frame allocation	-	Continuous frame allocation
Midamble allocation	-	Common Midamble

Table A.5.4.11: Trans	sport channel parameter	s for S-CCPCH
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Parameter	FACH
Transport Channel Number	1
Transport Block Size	240
Transport Block Set Size	240
Transmission Time Interval	20 ms
Type of Error Protection	Convolution Coding
Coding Rate	1/2
Rate Matching attribute	256
Size of CRC	16

Parameter	Unit		Ce	1		Cell 2				Cell 3				
Timeslot Number		()	DW	PTS	(0 DWPTS			0		DWPTS		
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	
UTRA RF Channel Number			Char	nel 1	el 1 Ch			nnel 1		Channel 1				
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3			
DwPCH_Ec/lor	dB			0	0			0	0			0	0	
OCNS_Ec/lor	<u>dB</u>	<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>			
\hat{I}_{or}/I_{oc}	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1	
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74			
Qoffset1 _{s,n}	dB		C1, C2: 0; C1, C3:0; C1,C4 C1, C5:0; C1,C6:0				: 0; C2, 0 2, C5: 0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5: 0; C3, C6:0			
Qhyst1₅	dB		()			()			0			
Treselection			()		0				0				
Sintrasearch	dB		not	sent			not	sent		not sent				
FACH measurement occasion info			sent		not sent				not sent					
		Cell 4				Cell 5				Cell 6				
Timeslot		()	DWPTS		0		DWPTS		0		DWPTS		
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	
UTRA RF Channel Number			Char	nel 1		Channel 1				Channel 1				
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3			
DwPCH_Ec/lor	dB			0	0			0	0			0	0	
OCNS_Ec/lor	<u>dB</u>	<u>-3</u>	<u>-3</u>			<u>-3</u>	-3			<u>-3</u>	<u>-3</u>			
\hat{I}_{or}/I_{oc}	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74			
Qoffset1 _{s,n}	dB	C4, C1: 0; C4, C2:0; C4 C4, C5:0; C4, C6:				C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0				
Qhyst1 _s	dB		()		0			0					
Treselection			()		0				0				
Sintrasearch	dB		not	sent		not sent				not sent				
FACH measurement occasion info			not	sent		not sent				not sent				
I _{oc}	dBm/1. 28 MHz					-70								
Propagation Condition						AWGN								

Note: S-CCPCH is located in an other downlink TS than TS0.

A.5.4.2.1.2 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 SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST to perform a CELL UPDATE message with cause cell reselection.

The cell re-selection delay shall be less than 1.6 s.

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

NOTE:

The cell re-selection delay can be expressed as:

$$T_{\text{reselection, intra}} = T_{\text{Measurement Period Intra}} + 40ms + T_{\text{SI}} + T_{\text{RA}},$$
$$T_{\text{reselection, intra}} = T_{\text{Measurement Period Intra}} + T_{\text{III}} + 20 + T_{\text{SI}} + T_{\text{RA}} \underline{\text{ms}},$$

where:

 $T_{Measurement\ Period\ Intra} \quad Specified\ in\ 8.4A.2.2.2\ gives\ 200ms\ for\ this\ test\ case.$

- T_{SI} 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 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.
- T_{RA} The additional delay caused by the random access procedure described in TS25.224. In this test case the persistence value is 1 thus T_{RA} is set to 35ms in the test case.

This gives a total of 1.545, allow 1.6s in the test case.

A.5.4.2.2 Two frequency present in neighbour list

A.5.4.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL_FACH state in section 5.4.23.42.2. The test parameters are given in Tables A.5.4.13 to A.5.4.16

Table A.5.4.13: General test parameters for Cell Re-selection in CELL_FACH

	Parameter	Unit	Value	Comment
initial	Active cell		Cell1	
condition	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
final condition	Active cell		Cell2	
	HCS		Not used	
UE_TXPWR_MAX_RACH		dBm	21	The value shall be used for all cells in the test.
Qrxlevmin		dBm	-103	The value shall be used for all cells in the test.
Access Service Class (ASC#0) - Persistence value			1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T _{SI}		S	1.28	The value shall be used for all cells in the test.
	T1	S	15	
	T2	S	15	

Table A.5.4.14: Physical channel parameters for S-CCPCH.

Parameter	Unit	Level
Channel bit rate	kbps	35.2
Channel symbol rate	ksps	17.6
Slot Format #	-	0; 2
Frame allocation	-	Continuous frame allocation
Midamble allocation	-	Common Midamble

Table A.5.4.15: Transport channel parameters for S-CCPCH

Parameter	FACH
Transport Channel Number	1
Transport Block Size	240
Transport Block Set Size	240
Transmission Time Interval	20 ms
Type of Error Protection	Convolution Coding
Coding Rate	1/2
Rate Matching attribute	256
Size of CRC	16

Table A.5.4.16: Cell specific test parameters for Cell re-selection in CELL_FACH state

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		(DW	PTS	(0 DWPTS				0 DWPTS		
		T1	, T2	T1	T2	T1	, T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel			Chan				Chan				Chan		
Number			enan						Ondriner 1				
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/lor	dB	Ŭ	0	0	0	Ŭ	0	0	0	Ŭ	Ŭ	0	0
OCNS_Ec/lor	dB	-3	<u>-3</u>	0	0	-3	<u>-3</u>	0	0	<u>-3</u>	<u>-3</u>	0	0
\hat{I}_{or}/I_{oc}	dB	9 10	7 <u>4</u>	9 10	7 4	7 4	9<u>10</u>	7 4	9 10	-1	-1	-1	-1
P¢CPCH RSCP	dBm	-634	-69 6			-69 6	-634			-74	-74		
		C1. C2	2: 0: C1.	C3:0; C1	1.C4:0	C2. C1	: 0: C2. 0	C3:0: C2	.C4:0	C3. C	1: 0: C3.	C2:0: C	3.C4:0
Qoffset1 _{s,n}	dB	C1, C5:0; C1,C6:0				C2, C1: 0; C2, C3:0; C2,C4:0 C2, C5: 0; C2:C6:0			C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5: 0; C3:C6:0				
Qhyst1 _s	dBm		(0		<u>, 00. 0</u> (0	`))	0
Treselection	S)			-)				<u>)</u>	
Sintrasearch	dB		not				not				not	-	
	dB												
Sintersearch	uБ		not	sent			not	sent			not	sem	
FACH measurement			not	sent			not	sent			not	sent	
occasion info													
FACH measurement			4	1			2	1			4	4	
occasion cycle length						ł				ł			
Inter-frequency TDD			TD				TD				тр		
measurement			TR	UE			TR	UE			TR	UE	
indicator													
Inter-frequency FDD				~-									
measurement			FAL	SE		FALSE				FALSE			
indicator													
			Ce			Cell 5 0 DWPTS					Cell 6 0 DWPTS		
Timeslot)		PTS	(-				0		
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel			Cha	nnel			Chan	inel 2			Cha	nnel	
Number									I		1	1	
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/lor	dB			0	0			0	0			0	0
OCNS_Ec/lor	dB	-3	<u>-3</u>			-3	<u>-3</u>			-3	-3		
\hat{I}_{or}/I_{oc}	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP		•		•	-		-					•	
PULPUH RSUP	-10	74	74			74	74			74	74		
	dBm	-74	-74			-74	-74			-74	-74		
Qoffset1 _{s n}		C	4, C1: 0;	C4, C2:		C5, C	1:0;C5,			C6, C1	: 0; C6, 0		
Qoffset1 _{s,n}	dB	C	4, C1: 0; 3:0C4, 0	C5:0; C4:		C5, C	1: 0; C5, C5, C4:0;	; C5:C6:0		C6, C1	: 0; C6, 0 C6, C4:0;	; C6:C5:	
Qoffset1 _{s,n} Qhyst1 _s		C	4, C1: 0; 3:0C4, 0			C5, C	1:0;C5,	; C5:C6:0		C6, C1	: 0; C6, 0 C6, C4:0;		
Qhyst1 _s Treselection	dB dB s	C	4, C1: 0; 3:0C4, C (C5:0; C4:))		C5, C	1: 0; C5, C5, C4:0; (; C5:C6:())		C6, C1	: 0; C6, 0 C6, C4:0; (; C6:C5:())	
Qhyst1 _s	dB dB s dB	C	4, C1: 0; 3:0C4, C (C5:0; C4:		C5, C	1: 0; C5, C5, C4:0;	; C5:C6:())		C6, C1	: 0; C6, 0 C6, C4:0	; C6:C5:())	
Qhyst1 _s Treselection	dB dB s	C	4, C1: 0; 3:0C4, C (C5:0; C4:)) sent		C5, C	1: 0; C5, C5, C4:0; (; C5:C6:()) sent		C6, C1	: 0; C6, 0 C6, C4:0; (; C6:C5:0)) sent	
Qhyst1 _s Treselection Sintrasearch	dB dB s dB	C	4, C1: 0; 3:0C4, 0 (0 0 0 0 0 0 0 0 0 0 0	C5:0; C4:)) sent sent		C5, C	1: 0; C5, C5, C4:0; (0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	; C5:C6:()) sent sent		C6, C1	: 0; C6, 0 C6, C4:0 (0 0 0 0 0 0 0 0 0 0	; C6:C5:0)) sent sent	
Qhyst1 _s Treselection Sintrasearch Sintersearch	dB dB s dB	C	4, C1: 0; 3:0C4, 0 (0 0 0 0 0 0 0 0 0 0 0	C5:0; C4:)) sent		C5, C	1: 0; C5, C5, C4:0; ((not :	; C5:C6:()) sent sent		C6, C1	: 0; C6, 0 C6, C4:0 (0 0 0 0 0 0 0 0 0 0	; C6:C5:0)) sent	
Qhyst1 _s Treselection Sintrasearch Sintersearch FACH measurement	dB dB s dB	C	4, C1: 0; 3:0C4, C ((not : not : not :	C5:0; C4:)) sent sent sent		C5, C	1: 0; C5, C5, C4:0; (0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	; C5:C6:()) sent sent sent		C6, C1	: 0; C6, 0 C6, C4:0 ((not : not :	; C6:C5:)) sent sent sent	
Qhyst1 _s Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement	dB dB s dB	C	4, C1: 0; 3:0C4, C ((not : not : not :	C5:0; C4:)) sent sent		C5, C	1: 0; C5, C5, C4:0; (0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	; C5:C6:()) sent sent sent		C6, C1	: 0; C6, 0 C6, C4:0 ((not : not :	; C6:C5:0)) sent sent	
Qhyst1 _s Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement occasion cycle length	dB dB s dB	C	4, C1: 0; 3:0C4, C ((not : not : not :	C5:0; C4:)) sent sent sent		C5, C	1: 0; C5, C5, C4:0; (0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	; C5:C6:()) sent sent sent		C6, C1	: 0; C6, 0 C6, C4:0 ((not : not :	; C6:C5:)) sent sent sent	
Qhyst1 _s Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement occasion cycle length Inter-frequency TDD	dB dB s dB	C	4, C1: 0; 3:0C4, C (not : not : 2	25:0; C4:)) sent sent sent 4		C5, C	1: 0; C5, C5, C4:0; C not : not : 2	; C5:C6:()) sent sent sent		C6, C1	: 0; C6, (C6, C4:0) (not : not : 2	; C6:C5:()) sent sent sent 4	
Qhyst1 _s Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement occasion cycle length Inter-frequency TDD measurement	dB dB s dB	C	4, C1: 0; 3:0C4, C ((not : not : not :	25:0; C4:)) sent sent sent 4		C5, C	1: 0; C5, C5, C4:0; (0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	; C5:C6:()) sent sent sent		C6, C1	: 0; C6, (C6, C4:0) (not : not : 2	; C6:C5:)) sent sent sent	
Qhyst1 _s Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement occasion cycle length Inter-frequency TDD measurement indicator	dB dB s dB	C	4, C1: 0; 3:0C4, C (not : not : 2	25:0; C4:)) sent sent sent 4		C5, C	1: 0; C5, C5, C4:0; C not : not : 2	; C5:C6:()) sent sent sent		C6, C1	: 0; C6, (C6, C4:0) (not : not : 2	; C6:C5:()) sent sent sent 4	
Qhyst1 _s Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement occasion cycle length Inter-frequency TDD measurement indicator Inter-frequency FDD	dB dB s dB	C	4, C1: 0; 3:0C4, ((not not 2 7 TR	C5:0; C4:)) sent sent 4 UE		C5, C	1: 0; C5, C5, C4:0; C 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	; C5:C6:()) sent sent sent 4 UE		C6, C1	: 0; C6, (<u>C6, C4:0</u> ; (<u>not</u> : <u>not</u> : <u>2</u> TR	; C6:C5:()) sent sent sent 4 UE	
Qhyst1 _s Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement occasion cycle length Inter-frequency TDD measurement indicator Inter-frequency FDD measurement	dB dB s dB	C	4, C1: 0; 3:0C4, C (not : not : 2	C5:0; C4:)) sent sent 4 UE		C5, C	1: 0; C5, C5, C4:0; C not : not : 2	; C5:C6:()) sent sent sent 4 UE		C6, C1	: 0; C6, (C6, C4:0) (not : not : 2	; C6:C5:()) sent sent sent 4 UE	
Qhyst1 _s Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement occasion cycle length Inter-frequency TDD measurement indicator Inter-frequency FDD measurement indicator	dB dB dB dB	C	4, C1: 0; 3:0C4, ((not not 2 7 TR	C5:0; C4:)) sent sent 4 UE		C5, C	1: 0; C5, C5, C4:0; (0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	<u>; C5:C6:(</u>)) sent sent sent uE _SE		C6, C1	: 0; C6, (<u>C6, C4:0</u> ; (<u>not</u> : <u>not</u> : <u>2</u> TR	; C6:C5:()) sent sent sent 4 UE	
Qhyst1 _s Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement occasion cycle length Inter-frequency TDD measurement indicator Inter-frequency FDD measurement	dB dB dB dB dB	C	4, C1: 0; 3:0C4, ((not not 2 7 TR	C5:0; C4:)) sent sent 4 UE		C5, C	1: 0; C5, C5, C4:0; (0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	; C5:C6:()) sent sent sent 4 UE		C6, C1	: 0; C6, (<u>C6, C4:0</u> ; (<u>not</u> : <u>not</u> : <u>2</u> TR	; C6:C5:()) sent sent sent 4 UE	
Qhyst1 _s Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement occasion cycle length Inter-frequency TDD measurement indicator Inter-frequency FDD measurement indicator	dB dB dB dB	C	4, C1: 0; 3:0C4, ((not not 2 7 TR	C5:0; C4:)) sent sent 4 UE		C5, C	1: 0; C5, C5, C4:0; () not : not : TR FAL	<u>; C5:C6:(</u>)) sent sent sent uE _SE		C6, C1	: 0; C6, (<u>C6, C4:0</u> ; (<u>not</u> : <u>not</u> : <u>2</u> TR	; C6:C5:()) sent sent sent 4 UE	
Qhyst1 _s Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement occasion cycle length Inter-frequency TDD measurement indicator Inter-frequency FDD measurement indicator	dB dB dB dB dB	C	4, C1: 0; 3:0C4, ((not not 2 7 TR	C5:0; C4:)) sent sent 4 UE		C5, C	1: 0; C5, C5, C4:0; () not : not : TR FAL	<u>; C5:C6:(</u>)) sent sent sent uE _SE		C6, C1	: 0; C6, (<u>C6, C4:0</u> ; (<u>not</u> : <u>not</u> : <u>2</u> TR	; C6:C5:()) sent sent sent 4 UE	

A.5.4.2.2.2 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 SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST to perform a CELL UPDATE message with cause cell reselection.

The cell re-selection delay shall be less than 2 s.

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

NOTE:

The cell re-selection delay can be expressed as:

$$T_{\text{reselection, TDD, inter}} = T_{\text{measurement inter}} + 40ms + T_{\text{SI}} + T_{\text{RA}},$$
$$T_{\text{reselection, inter}} = T_{\text{measurement inter}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \underline{\text{ms.}}$$

where:

 $T_{measurement\ inter} \underline{\qquad is\ } \underline{Ss} pecified\ in\ 8.4A.2.3.2\ gives\ 480ms\ for\ this\ test\ case.$

- T_{SI} 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 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.
- T_{RA} The additional delay caused by the random access procedure described in TS25.224. In this test case the persistence value is 1 thus T_{RA} is set to 35ms in the test case.

This gives a total of 1.8254s, allow 2s-1.9s in the test case.

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ж	25.123 CR 258 # rev # Current version: 5.1.0 #
For <u>HELP</u> on u	sing this form, see bottom of this page or look at the pop-up text over the $#$ symbols.
Proposed change a	affects: UICC apps# ME X Radio Access Network Core Network
Title: ೫	Cell reselection in CELL_FACH state
Source: भ	RAN WG4
Work item code: %	LCRTDD-RF Date: # 21/08/2002
Category: ₩	ARelease: %Rel-5Use one of the following categories:Use one of the following releases:F (correction)2A (corresponds to a correction in an earlier release)R96B (addition of feature),R97C (functional modification of feature)R98D (editorial modification)R99D tetailed explanations of the above categories canRel-4be found in 3GPP TR 21.900.Rel-5Rel-6(Release 6)
Reason for change	 1. Cell reselection performance requirements in CELL_FACH state are not state using appropriate formulas. 2. No S-criteria detection performance requirement and "out-of-service" performance requirement. 3. OCNS_Ec/lor ignored in the test cases. 4. lor_hat/loc not inline with the PCCPCH RSCP accuracy requirements in section 9 for the CELL_FACH state.
Summary of chang	 1. Cell reselection delay and interrution time have been modified. 2. Introduce S-criteria detection performance requirement and "out-of-service" performance requirement. 3. OCNS_Ec/lor is inserted in test cases. 4. lor_hat/loc is changed to be aligned with PCCPCH RSCP accuracy requirement. 5. Removal of square brackets.
Consequences if not approved:	 Cell reselection performance requirements would be incorrect and no specification for S-criteria detection and out-of-sevice. Test cases remain incomplete. Isolated Impact Analysis: Would not affect the implementation behaving like indicated in the CR, the implementation would be affected and incomplete test cases exist if not behaving like indicated in the CR.
Clauses affected:	¥ 4.2.2.1.2; 5.4.3; A.5.4.2
Other specs	Y N ¥ X Other core specifications ¥

affected:	-	X Test specifications X O&M Specifications
Other comments:	ж	
		Equivalent CRs in other Releases: CR257 cat. F to 25.123 v4.5.0

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <u>http://www.3gpp.org/specs/CR.htm</u>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked **#** contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.2.2.1.2 1.28 Mcps TDD option

The UE shall measure the PCCPCH RSCP level of the serving cell and evaluate the cell selection criterion S defined in TS25.304 for the serving cell at least every DRX cycle. The UE shall filter the PCCPCH RSCP level of the serving cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least $T_{measureNTDD}/2$ (see table 4.1A).

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 in the measurement control system information, regardless of the measurement rules currently limiting UE measurement activities.

If the UE has not found any new suitable cell based the on searches and measurements of the neighbour cells indicated in the measurement control system information for 12 s, the UE shall initiate cell selection procedures for the selected PLMN as defined in TS25.304.

After this 12 s period a UE in Cell_PCH or URA_PCH is considered to be "out of service area" and shall perform actions according to [16].

<Next Section>

5.4.3 Requirements for 1.28Mcps TDD option

The cell re-selection delays specified below are applicable when the RRC parameter $T_{reselection}$ is set to 0. Otherwise the Cell reselection delay is increased by $T_{reselection}$ s.

P-CCPCH RSCP shall be used for cell reselection in Cell-FACH state to another TDD cell, CPICH RSCP and if requested in addition CPICH Ec/Io shall be used for <u>cell</u> re-selection to a FDD cell and GSM <u>BCCH</u> carrier RSSI shall be used for cell re-selection to a GSM cell. The accuracies of the measurements used for a-cell_-re-selection in an AWGN environment shall comply with the requirements in chapter 9. The measurements used for S-criteria and cell re-selection evaluation in CELL FACH state shall be performed according to section 8.4A.

5.4.3.1 Measurements

The UE measurement capability according to section 8.4A shall apply.

5.4.3.2 Cell re-selection delay

For cell re-selection to TDD, the cell re-selection delay is defined as the time between the occurrence of an event which will trigger Cell Reselection process and the moment in time when the UE starts to send SYNCH-UL sequence for sending the RRC CELL UPDATE message to the UTRAN.

For cell re-selection to FDD the cell re-selection delay is defined as the time between the occurrence of an event which will trigger Cell Reselection process and the moment in time when the UE starts sending the preambles on the PRACH for sending RRC CELL UPDATE message to the UTRAN.

For cell re-selection to GSM the cell re-selection delay is defined as the time between the occurrence of an event which will trigger Cell Reselection process and the moment in time when the UE starts sending the random access in the target cell of the new RAT.

5.4.3.2.1 Intra-frequency cell re-selection

The cell re-selection delay in CELL_FACH state for to an intra frequency cells shall be less than:

$$\frac{T_{\text{reselection, intra}} = T_{\text{identify intra}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}}}{T_{\text{reselection, intra}}} = T_{\text{identify intra}} + 40ms + T_{\text{SI}} + T_{\text{RA}}}$$

If a cell has been detectable at least for $T_{identify,intra}$, the cell re-selection delay in CELL_FACH state for to an intra frequency cells shall be less than:

$$T_{\text{reselection, intra}} = T_{\text{Measurement Period Intra}} + 40ms + T_{\text{SI}} + T_{\text{RA}}$$
$$T_{\text{reselection, intra}} = T_{\text{Measurement Period Intra}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \underline{\text{ms}}$$

where

 $T_{identify intra} = is Sepecified in 8.4A.2.2.1$

 $T_{\text{Measurement Period Intra}} = \underline{is } \underline{s} \underline{s} pecified in 8.4A.2.2.2$

- $\underline{T_{IU}} \qquad \text{is the interruption uncertainty when changing the timing from the old to the new cell. } \underline{T_{IU}} \qquad \underline{T_{IU}}$
- T_{SI} = <u>Tis</u> 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 [16]25.331 for a UTRAN cell.
- T_{RA} = <u>Tis the</u> additional delay caused by the random access procedure.

This requirement assumes radio conditions to be sufficient, so reading of system information can be done without errors.

5.4.3.2.2 Inter-frequency TDD cell re-selection

The cell re-selection delay in CELL_FACH state for to an inter-frequency TDD cells shall be less than:

 $\frac{T_{\text{reselection, TDD, inter}} = T_{\text{identify inter}} + 40ms + T_{\text{SI}} + T_{\text{RA}}}{T_{\text{reselection, inter}}} = T_{\text{identify inter}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \underline{\text{ms}}$

If a cell has been detectable at least for $T_{identify;inter}$, the cell re-selection delay in CELL_FACH state for to an inter frequency cells shall be less than:

$$-T_{\text{reselection, TDD, inter}} = T_{\text{measurement inter}} + 40ms + T_{\text{SI}} + T_{\text{RA}}$$

 $T_{reselection, inter} = T_{measurement inter} + T_{IU} + 20 + T_{SI} + T_{RA} \underline{ms}$

where

$$\begin{array}{ll} T_{identify_inter} & = \underline{Sis\ s}{pecified\ in\ 8.4A.2.3.1} \\ T_{measurement\ inter} & = \underline{Sis\ s}{pecified\ in\ 8.4A.2.3.2} \\ \hline T_{IU} & is\ the\ interruption\ uncertainty\ when\ changing\ the\ timing\ from\ the\ old\ to\ the\ new\ cell.\ T_{IU}\ can\ be\ up\ to\ one\ frame\ (10\ ms).} \\ \hline T_{SI} & = \underline{Tis\ the\ time\ required\ for\ receiving\ all\ the\ relevant\ system\ information\ data\ according\ to\ the\ reception\ procedure\ and\ the\ RRC\ procedure\ delay\ of\ system\ information\ blocks\ defined\ in\ I16]25.331\ for\ a\ UTRAN\ cell.} \\ \hline T_{RA} & = \underline{Tis\ the\ additional\ delay\ caused\ by\ the\ random\ access\ procedure.} \end{array}$$

This requirement assumes radio conditions to be sufficient, so reading of system information can be done without errors.

5.4.3.2.3 Inter-frequency FDD cell re-selection

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and FDD.

The cell re-selection delay in CELL_FACH state for to a inter frequency FDD cells shall be less than:

$$T_{\text{reselection, FDD}} = T_{\text{identify FDD inter}} + 100ms + T_{\text{SI}} + T_{\text{RA}}$$
$$T_{\text{reselection, FDD}} = T_{\text{identify FDD inter}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \underline{\text{ms}}$$

If a cell has been detectable at least $T_{identify FDD inter}$, the cell re-selection delay in CELL_FACH state to FDD cell shall be less than:

$$\Gamma_{\text{reselection, FDD}} = T_{\text{measurement FDD inter}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \underline{\text{ms}}$$

where

$T_{identify\ FDD\ inter}$	=Sis specified in 8.4A.2.4.1
Tmeasurement FDD int	er_is specified in 8.4A.2.4.1.
<u>T_{IU}</u>	is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).
T _{SI}	=T <u>is</u> 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 [16]25.331 for a UTRAN cell.
T _{RA}	= Tis the additional delay caused by the random access procedure.

This requirement assumes radio conditions to be sufficient, so reading of system information can be done without errors.

5.4.3.2.4 Inter-RAT cell re-selection

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and GSM.

The cell re-selection delay in CELL_FACH state for to an inter-RAT cells shall be less than:

	$T_{\text{reselection, GSM}} = T_{\text{identify GSM}} + T_{\text{Measurement GSM}} + T_{\text{BCCH}} + T_{\text{RA}}$
	$T_{\text{reselection, GSM}} = T_{\text{identify GSM}} + T_{\text{measurement GSM}} + 40 + T_{\text{BCCH}} + T_{\text{RA}} \underline{\text{ms}}$
<u>T_{RA}</u>	= The additional delay caused by the random access procedure.
<u>T_{BCCH}</u>	= the maximum time allowed to read BCCH data from GSM cell [21].
Where	

a) For UE requiring idle intervals or measurement occasions:

 $T_{identify GSM}$ = Is the worst case time for identification of one previously not identified GSM cell and is specified in TS25.225 Annex A.

 $T_{\text{Measurement GSM}} \quad \text{is the worst case time for measuring one previously identified GSM carrier}.$

$$T_{\text{Measurement GSM}} = Max \left\{ [480]ms, 8 \cdot \frac{N_{carriers}}{N_{GSM carrier RSSI}} \cdot T_{meas} \right\}$$
$$T_{\text{measurement GSM}} = Max \left\{ 8 \cdot \frac{N_{carriers}}{N_{GSM carrier RSSI}} \cdot T_{meas}, 480ms \right\}$$

where

N_{carriers}

is the number of GSM carriers in the Inter-RAT cell info list

N_{GSM carrier RSSI} can be derived from the values in table 8.7 is specified in section 8.4A.2.5.1.

 T_{RA} = The additional delay caused by the random access procedure.

 T_{RCCH} = the maximum time allowed to read BCCH data from GSM cell [TS 45.008].

b) For UE not requiring idle intervals or measurement occasions

 $\underline{T_{identify, GSM}} = 150 \text{ ms}$

 $T_{Measurement, GSM} = 480 \text{ ms}$

This requirement assumes radio conditions to be sufficient, so reading of system information can be done without errors.

5.4.3.3 Interruption time

For UTRA TDD, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts to transmit the SYNCH-UL sequence in the UpPTS for sending the RRC CELL UPDATE message to the UTRAN.

For UTRA FDD, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts sending preambles on the PRACH for sending the RRC CELL UPDATE message to the UTRAN.

For GSM, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts sending the random access in the target cell of the new RAT.

The requirements on interruption time in this section shall apply only if the signal quality of the serving cell is sufficient to allow decoding of the FACH during cell-re-selection.

The interruption time, i. e. the time between the last TTI the UE monitors the FACH channel on the serving cell and the time the UE starts to transmit in the target cell.

The UE shall perform the cell re selection with minimum interruption time.

In case the UE reselects a UTRAN cell the interruption time shall not exceed $T_{RA}+T_{SI}+50$ ms.

In case the UE reselects a GSM cell the interruption time shall not exceed $T_{RA}+T_{BCCH}+50ms$.

 T_{st} =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 25.331 for a UTRAN cell.

 T_{RA} = The additional delay caused by the random access procedure.

 T_{BCCH} = the maximum time allowed to read BCCH data from GSM cell [TS 45.008].

5.4.3.3.1 TDD-TDD cell re-selection

In case of cell re-selection to a TDD cell, the interruption time shall be less than

<u> $T_{interrupt}$ TDD = T_{IU} +20+ T_{SI} + T_{RA} ms</u>

where

<u>T_{IU}</u>	is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).
<u>T_{si}</u>	is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16].
<u>T_{RA}</u>	is the additional delay caused by the random access procedure.

5.4.3.3.2 TDD-FDD cell re-selection

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and FDD.

In case of cell re-selection to a FDD cell, the interruption time shall be less than

 $\underline{T}_{\underline{\text{interrupt, FDD}}} = \underline{T}_{\underline{IU}} + 20 + \underline{T}_{\underline{SI}} + \underline{T}_{\underline{RA}} \underline{\text{ms}}$

where

- T_{st}
 is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16].

 \underline{T}_{RA} is the additional delay caused by the random access procedure.

5.4.3.3.3 TDD-GSM cell re-selection

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and GSM.

In case of cell re-selection to an inter-RAT cell, the interruption time shall be less than

 $T_{\text{interrupt GSM}} = 40 + T_{\text{BCCH}} + T_{\text{RA}} \text{ ms}$

where

 \underline{T}_{BCCH} is the maximum time allowed to read BCCH data from the GSM cell [21].

 $\underline{T_{RA}}$ is the additional delay caused by the random access procedure.

5.4.3.4 Measurement and evaluation of cell selection criteria S of serving cell

The S-criteria detection delay is defined as the time between the occurrence of an event which leads to that the cell selection criteria S for serving cell is not fulfilled and the moment in time when the UE detects that the cell selection criteria S for serving cell is not fulfilled.

The UE shall filter the P-CCPCH RSCP measurements used for cell selection criteria S evaluation of the serving cell over at least 3 measurement periods $T_{Measurement Period Intra-}$

The S-critera detection delay in CELL FACH state shall be less than:

 $T_{\text{S-criteria}} = 5 \times T_{\text{Measurement}_Period Intra} \underline{\text{ms}}$

where

 $\underline{T_{Measurement_Period Intra}} = Specified in 8.4A.2.2.2.$

 The UE is "out of service area" if the UE has evaluated for 4 s that that the serving cell does not fulfil the cell selection criterion S and if the UE has not found any new suitable cell based on searches and measurements of the neighbour cells indicated in the measurement control system information during these 4 s. When the UE is "out of service area" it shall initiate cell selection procedures for the selected PLMN as defined in [18].

<Next Section>

A.5.4.2 1.28 Mcps TDD option

A.5.4.2.1 One frequency present in neighbour list

A.5.4.2.1.1 Test purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL_FACH state in the single carrier case reported in section 5.4.3.2.1.

The test parameters are given in Tables A.5.4.9to A.5.4.12

Table A.5.4.9: General test parameters for Cell Re-selection in CELL_FACH

	Parameter		Value	Comment
initial	Active cell		Cell1	
condition	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
final condition	Active cell		Cell2	
	HCS		Not used	
UE_1	TXPWR_MAX_RACH	dBm	21	The value shall be used for all cells in the test.
	Qrxlevmin		-103	The value shall be used for all cells in the test.
	Service Class (ASC#0) Persistence value		1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
T _{SI}		S	1.28	The value shall be used for all cells in the test.
	T1	S	15	
	T2	S	15	

Table A.5.4.10: Physical channel parameters for S-CCPCH.

Parameter	Unit	Level
Channel bit rate	kbps	35.2
Channel symbol rate	ksps	17.6
Slot Format #	-	0; 2
Frame allocation	-	Continuous frame allocation
Midamble allocation	-	Common Midamble

Table A.5.4.11: Trans	sport channel parameter	s for S-CCPCH
-----------------------	-------------------------	---------------

Parameter	FACH
Transport Channel Number	1
Transport Block Size	240
Transport Block Set Size	240
Transmission Time Interval	20 ms
Type of Error Protection	Convolution Coding
Coding Rate	1/2
Rate Matching attribute	256
Size of CRC	16

Table A.5.4.12: Cell specific test parameters for Cell Re-selection in CELL_FACH
--

Parameter	Unit		Cell 1				Cell 2				Cell 3			
Timeslot Number		()	DW	PTS	(0 DWPTS			0		DW	DWPTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	
UTRA RF Channel Number		Channel 1			Channel 1			Channel 1						
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3			
DwPCH_Ec/lor	dB			0	0			0	0			0	0	
OCNS_Ec/lor	<u>dB</u>	<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>			
\hat{I}_{or}/I_{oc}	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1	
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74			
Qoffset1 _{s,n}	dB		: 0; C1, 0 C1, C5:0				: 0; C2, 0 2, C5: 0				1: 0; C3, 3, C5: 0			
Qhyst1₅	dB		()			(C			(0		
Treselection			()			()			(0		
Sintrasearch	dB		not	sent			not	sent			not	sent		
FACH measurement occasion info			not	sent		not sent				not sent				
			Ce	II 4		Cell 5				1	Ce	ell 6		
Timeslot		()	DW	PTS	0 DWPTS			0 DWPTS			PTS		
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	
UTRA RF Channel Number			Char	nel 1			Char	nel 1			Char	Channel 1		
PCCPCH Ec/lor	dB	-3	-3			-3	-3			-3	-3			
DwPCH_Ec/lor	dB			0	0			0	0	1		0	0	
OCNS_Ec/lor	<u>dB</u>	<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>			
\hat{I}_{or}/I_{oc}	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74			
Qoffset1 _{s,n}	dB		1: 0; C4, C4, C5:0;			C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0				C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0				
Qhyst1 _s	dB)			, ,)			, ,	0		
Treselection			()		0			1	(0			
Sintrasearch	dB		not	sent		not sent					not	sent		
FACH measurement occasion info		not sent			not sent				not sent					
I _{oc}	dBm/1. 28 MHz					1	-7	70						
Propagation Condition							AW	/GN						

Note: S-CCPCH is located in an other downlink TS than TS0.

A.5.4.2.1.2 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 SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST to perform a CELL UPDATE message with cause cell reselection.

The cell re-selection delay shall be less than 1.6 s.

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

NOTE:

The cell re-selection delay can be expressed as:

$$T_{\text{reselection, intra}} = T_{\text{Measurement Period Intra}} + 40ms + T_{\text{SI}} + T_{\text{RA}},$$
$$T_{\text{reselection, intra}} = T_{\text{Measurement Period Intra}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \underline{\text{ms.}},$$

where:

 $T_{Measurement\ Period\ Intra} \quad Specified\ in\ 8.4A.2.2.2\ gives\ 200ms\ for\ this\ test\ case.$

- T_{SI} 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 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.
- T_{RA} The additional delay caused by the random access procedure described in TS25.224. In this test case the persistence value is 1 thus T_{RA} is set to 35ms in the test case.

This gives a total of 1.545, allow 1.6s in the test case.

A.5.4.2.2 Two frequency present in neighbour list

A.5.4.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL_FACH state in section 5.4.23.42.2. The test parameters are given in Tables A.5.4.13 to A.5.4.16

	Parameter		Value	Comment				
initial	Active cell		Cell1					
condition	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6					
final condition	Active cell		Cell2					
	HCS		Not used					
UE_	_TXPWR_MAX_RACH	dBm	21	The value shall be used for all cells in the test.				
	Qrxlevmin		Qrxlevmin dBm		-103	The value shall be used for all cells in the test.		
	ss Service Class (ASC#0) - Persistence value		1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.				
T _{SI}		T _{SI} s		The value shall be used for all cells in the test.				
	T1	S	15					
	T2	S	15					

Table A.5.4.14: Physical channel parameters for S-CCPCH.

Parameter	Unit	Level
Channel bit rate	kbps	35.2
Channel symbol rate	ksps	17.6
Slot Format #	-	0; 2
Frame allocation	-	Continuous frame allocation
Midamble allocation	-	Common Midamble

Table A.5.4.15: Transport channel parameters for S-CCPCH

Parameter	FACH
Transport Channel Number	1
Transport Block Size	240
Transport Block Set Size	240
Transmission Time Interval	20 ms
Type of Error Protection	Convolution Coding
Coding Rate	1/2
Rate Matching attribute	256
Size of CRC	16

Table A.5.4.16: Cell specific test parameters for Cell re-selection in CELL_FACH state

Parameter	Unit		Cell 1				Cell 2				Cell 3			
Timeslot Number		(DW	PTS	0 DWPTS				0 DWPTS				
		T1	, T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	
UTRA RF Channel			Chan			Channel 2				Channel 1				
Number			enan						Charmer 1					
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3			
DwPCH_Ec/lor	dB	Ŭ	•	0	0	Ŭ	Ū	0	0	Ŭ	Ŭ	0	0	
OCNS_Ec/lor	dB	-3	<u>-3</u>	0	0	-3	-3	0	0	<u>-3</u>	<u>-3</u>	0	0	
\hat{I}_{or}/I_{oc}	dB	9 10	7 <u>4</u>	9 10	7 4	7 4	9 10	<u>74</u>	9 10	-1	-1	-1	-1	
P¢CPCH RSCP	dBm	-634	-69 6			-69 6	-634			-74	-74			
		C1. C2	2:0;C1,	C3:0: C1	1.C4:0	C2. C1	: 0; C2, C	C3:0: C2	C4:0	C3. C	1:0;C3,	C2:0: C	3.C4:0	
Qoffset1 _{s,n}	dB		C1, C5:0				C2, C5: 0				C3, C5: 0			
Qhyst1 _s	dBm		(0		<u>, 00. 0</u> (0	`````		<u>, 00.00.</u>)	0	
Treselection	S		())		
Sintrasearch	dB		not				not				not			
	dB													
Sintersearch	uБ		not	sent			not	sent			not	sent		
FACH measurement			not	sent			not	sent			not	sent		
occasion info														
FACH measurement			4	1			4	1			4	1		
occasion cycle length						+				ł				
Inter-frequency TDD			TO				тр				тр			
measurement			TR	UE			TR	UE			TR	UE		
indicator														
Inter-frequency FDD				~-										
measurement			FAL	SE			FALSE			FALSE				
indicator														
			Ce			Cell 5			Cell 6 0 DWPTS					
Timeslot		0			PTS)		PTS		0			
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	
UTRA RF Channel			Cha	nnel			Chan	nel 2			Cha	nnel		
Number					I			I	1		1	I	I	
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3			
DwPCH_Ec/lor	dB			0	0			0	0			0	0	
OCNS_Ec/lor	dB	-3	<u>-3</u>			-3	-3			-3	-3			
\hat{I}_{or}/I_{oc}	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
PCCPCH RSCP				•	•			•	•				•	
PULPUH RSUP	dBm	-74	-74			-74	-74			-74	-74		G2 0	
Qoffset1 _{s,n}	dB		4, C1: 0;				1:0;C5,				: 0; C6, 0			
		C4.C	CR-0C2 (· L· M· T· A·	C6:0		~F C1.0	; C5:C6:0)	(C6, C4:0)	
Qhyst1 _s		- /-		C5:0; C4:		, ,				0				
2.1.90(15	dB	_ , _	(<u>55, 04.0</u> ((J		
Treselection	S		()			()			()		
	s dB		()			())		
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Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement	s dB		(not : not : not :)) sent sent			(not : not : not :)) sent sent			not not not) sent sent		
Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement occasion cycle length	s dB		(not : not : not :)) sent sent sent			(not : not : not :)) sent sent sent			not not not) sent sent sent		
Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement	s dB		(not : not : not :) sent sent sent			(not : not : not :) sent sent sent			not not not) sent sent sent		
Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement occasion cycle length Inter-frequency TDD measurement	s dB		not s) sent sent sent			not s) sent sent sent			not not not) sent sent sent		
Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement occasion cycle length Inter-frequency TDD measurement indicator	s dB		not s) sent sent sent			not s) sent sent sent			not not not) sent sent sent		
Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement occasion cycle length Inter-frequency TDD measurement indicator Inter-frequency FDD	s dB		not s not s not s) sent sent sent 4 UE			not : not : not : ////////////////////////////////////) sent sent sent 4 UE			not not not TR) sent sent 4 UE		
Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement occasion cycle length Inter-frequency TDD measurement indicator Inter-frequency FDD measurement	s dB		not s) sent sent sent 4 UE			not : not : not : ////////////////////////////////////) sent sent sent			not not not) sent sent 4 UE		
Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement occasion cycle length Inter-frequency TDD measurement indicator Inter-frequency FDD measurement indicator	s dB dB		not s not s not s) sent sent sent 4 UE			not : not : not : TR) sent sent sent uE _SE			not not not TR) sent sent 4 UE		
Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement occasion cycle length Inter-frequency TDD measurement indicator Inter-frequency FDD measurement	s dB dB dBm/1.		not s not s not s) sent sent sent 4 UE			not : not : not : TR) sent sent sent 4 UE			not not not TR) sent sent 4 UE		
Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement occasion cycle length Inter-frequency TDD measurement indicator Inter-frequency FDD measurement indicator	s dB dB		not s not s not s) sent sent sent 4 UE			TR) sent sent sent 4 UE _SE			not not not TR) sent sent 4 UE		
Treselection Sintrasearch Sintersearch FACH measurement occasion info FACH measurement occasion cycle length Inter-frequency TDD measurement indicator Inter-frequency FDD measurement indicator	s dB dB dBm/1.		not s not s not s) sent sent sent 4 UE			TR) sent sent sent uE _SE			not not not TR) sent sent 4 UE		

A.5.4.2.2.2 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 SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST to perform a CELL UPDATE message with cause cell reselection.

The cell re-selection delay shall be less than 2 s.

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

NOTE:

The cell re-selection delay can be expressed as:

$$T_{\text{reselection, TDD, inter}} = T_{\text{measurement inter}} + 40ms + T_{\text{SI}} + T_{\text{RA}},$$
$$T_{\text{reselection, inter}} = T_{\text{measurement inter}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \underline{\text{ms.}}$$

where:

 $T_{measurement\ inter} \ \underline{\qquad is\ } \underline{Ss} pecified\ in\ 8.4A.2.3.2\ gives\ 480ms\ for\ this\ test\ case.$

- T_{SI} 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 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.
- T_{RA} The additional delay caused by the random access procedure described in TS25.224. In this test case the persistence value is 1 thus T_{RA} is set to 35ms in the test case.

This gives a total of 1.8254s, allow 2s-1.9s in the test case.

3GPP TSR RAN WG4 Meeting #24

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Helsinki, Finland 12 - 16 August 2002

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How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <u>http://www.3gpp.org/specs/CR.htm</u>. Below is a brief summary:

1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.

- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5 UTRAN Connected Mode Mobility

This section contains the requirements on the mobility procedures in UTRAN connected mode such as handover and cell re-selection.

Requirements related to the measurements in support of the execution of the UTRAN connected mode mobility procedures are specified in section 8.

The radio links the UE shall use are controlled by UTRAN with RRC signalling.

UE behaviour in response to UTRAN RRC messages is described in [16].

The purpose of Cell reselection in CELL_FACH, CELL_PCH and URA_PCH states is that the UE shall select a better cell according to the cell reselection criteria in [18]. CELL_FACH, CELL_PCH and URA_PCH states are described in [16].

5.1 TDD/TDD Handover

5.1.1 Introduction

5.1.1.1 3.84 Mcps TDD option

The TDD/TDD handover procedure is initiated from UTRAN with a RRC message that implies a hard handover as described in [16].

The TDD/TDD handover procedure may cause the UE to change its frequency.

5.1.1.2 1.28 Mcps TDD option

The purpose of TDD/TDD handover is to change the cell of the connection between UE and UTRAN. The handover procedure is initiated from UTRAN with a RRC message that implies a handover, refer to TS25.331[16]. The handover procedure may cause the UE to change its frequency.

For 1.28 Mcps TDD, at the beginning of the measurement process the UE shall find synchronisation to the cell to measure using the synchronisation channel (DwPCH). This is described under 'cell search' in 3GPP RAN TS25.201, TS25.221 TS25.222, TS25.223, TS25.224, TS25.225' if the monitored cell is a 1.28 Mcps TDD cell. For a TDD cell to monitor after this procedure the exact timing of the midamble of the P CCPCH is known and the measurements can be performed. Depending on the UE implementation and if timing information about the cell to monitor is available, the UE may perform the measurements on the P CCPCH directly without prior DwPCH synchronisation.

5.1.2 Requirements

5.1.2.1 TDD/TDD handover delay

5.1.2.1.1 3.84 Mcps TDD option

RRC procedure performance values for all RRC procedures that can command a hard handover are specified in [16].

When the UE receives a RRC message implying TDD/TDD handover with the activation time "now" or earlier than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCH within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCH at the designated activation time.

where:

4

 $D_{handover}$ equals the RRC procedure performance value defined in [16] plus the interruption time stated in section 5.1.2.2.1.

5.1.2.1.2 1.28 Mcps TDD option

<u>RRC</u> <u>Pp</u>rocedure <u>performance values</u> delay for all <u>RRC</u> procedures, that can command a <u>hard</u> handover, are specified in [16]TS25.331 section 13.5.2.

When the UE receives a RRC message that implies a <u>TDD/TDD</u> handover, with the activation time "now" or earlier than $D_{handover}$ seconds from the end of the last TTI containing the RRC command,, the UE shall start transmission within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCH or the SYNC-UL in case that a handover to 1.28 Mcps TDD option with SYNCH uplink exchange is recommended at the designated activation time.

where:

 $D_{handover}$ equals the RRC procedure <u>performance value</u> defined in <u>TS25.331 Section 13.5.2[16]</u> plus the interruption time stated in section 5.1.2.2.2.

5.1.2.2 Interruption time

5.1.2.2.1 3.84 Mcps TDD option

The interruption time i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE starts transmission of the new uplink DPCH, is dependent on whether the target cell is known for the UE or not.

If TDD/TDD intra-frequency or inter-frequency handover is commanded, the interruption time shall be less than,

$$T_{interrupt} = T_{offset} + T_{UL} + 30*F_{SFN} + 20*KC + 180*UC ms$$

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
F _{SFN}	Equal to 1 if SFN decoding is required and equal to 0 otherwise
KC	Equal to 1 if a known target cell is indicated in the RRC message implying TDD/TDD handover and equal to 0 otherwise
UC	Equal to 1 if an unknown target cell is indicated in the RRC message implying TDD/TDD handover and equal to 0 otherwise

An intra-frequency or inter-frequency TDD target cell shall be considered as known by the UE, if either or both of the following conditions are true:

- the target cell has been measured during the last 5 seconds
- the UE has had a radio linkconnected to the target cell during the last 5 seconds.

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.

5.1.2.2.2 1.28 Mcps TDD option

The interruption time i.e. the time between <u>the end of</u> the last TTI containing a transport block on the old DPCH and the time the UE starts transmission of the new uplink DPCH or the SYNC-UL in case that a handover with SYNCH uplink

exchange is recommended, shall be less than the value in table 5.1A. There is different requirement on the interruption time depending on if the cell is known or not and if the SFN of the target cell has to be decoded by the UE or not.

A cell shall be regarded as known by the UE if either or both of the following conditions are true:

- it has been measured during the last 5 seconds or
- a dedicated connection existed between the UE and the cell during the last 5 seconds.

The SFN of the target cell needs not to be decoded by the UE if either or both of the following conditions are true:

- a handover with timing maintain is commanded by the UTRAN or
- the SFN of the target cell is known by the UE.

cell in the handover command	Maximum delay [ms]			
message	Known Cell		Unknov	wn Cell
	SFN not to be decoded	SFN needs to be decoded	SFN not to be decoded	SFN needs to be decoded
Intra-frequency	40	70	350	400
Inter-frequency	40	70	350	400

Table 5.1A: TDD/ TDD handover – interruption time

The interruption time includes the time that can elapse till the appearance of the channel required for the synchronisation. And the time that can elapse till the appearance of the new uplink DPCH or the UpPTS in which the SYNC-UL shall be transmitted, which can be up to one frame (10ms).

The requirement in Table 5.1A for the cell shall apply if the signal quality of the unknown cell is good enough for successful synchronisation with one attempt.

NOTE: One synchronisation attempt can consist of coherent averaging using several frames.

5.2 TDD/FDD Handover

5.2.1 Introduction

5.2.1.1 3.84 Mcps TDD option

The purpose of TDD/FDD handover is to change the radio access mode from TDD to FDD. The TDD/FDD handover procedure is initiated from UTRAN with a RRC message that implies a hard handover as described in [16].

5.2.1.2 1.28 Mcps TDD option

The purpose of TDD/FDD handover is to change the radio access mode between from TDD to FDD and TDD.

The <u>TDD/FDD</u> handover procedure is initiated from UTRAN with a <u>RRC message that implies a hard handover as</u> <u>described in [16].command message</u>, refer to TS25.331. The handover procedure causes the UE to change its frequency.

5.2.2 Requirements

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

5.2.2.1 TDD/FDD handover delay

5.2.2.1.1 3.84 Mcps TDD option

RRC procedure performance values for all RRC procedures that can command a hard handover, are specified in [16].

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When the UE receives a RRC message implying TDD/FDD handover with the activation time "now" or earlier than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCH within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCH at the designated activation time.

where:

 $D_{handover}$ equals the RRC procedure performance value as defined in [16] plus the interruption time stated in section 5.2.2.2.

5.2.2.1.2 1.28 Mcps TDD option

RRC procedure performance values for all RRC procedures that can command a hard handover, are specified in [16].

When the UE receives a RRC message that implies a <u>TDD/FDD</u> handover, with the activation time "now" or earlier than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCH within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCH at the designated activation time.

where:

 $D_{handover}$ equals the RRC procedure <u>performance value</u>delay defined in <u>TS25.331 Section 13.5.2[16]</u> plus the interruption time stated in section 5.2.2.2.2.

The requirements do not apply if FDD macro diversity is used.

5.2.2.2 Interruption time

5.2.2.2.1 3.84 Mcps TDD option

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE starts transmission of the new uplink DPCCH, is dependent on whether the target cell is known for the UE or not.

If TDD/FDD handover is commanded, the interruption time shall be less than,

where,

T_{offset}	Equal to 10 ms, the frame timing uncertainty between the old cell and the target cell.
KC	Equal to 1 if a known target cell is indicated in the RRC message implying TDD/FDD handover and equal to 0 otherwise
UC	Equal to 1 if an unknown target cell is indicated in the RRC message implying TDD/FDD handover and equal to 0 otherwise

An inter-frequency FDD target cell shall be considered known by the UE, if the target cell has been measured by the UE during the last 5 seconds.

The phase reference is the Primary CPICH.

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.

7

Note that the requirements in this section assume that N312 has the smallest possible value, i.e. only one in-sync indication as described in [23] is required.

5.2.2.2.2 1.28 Mcps TDD option

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE starts transmission of the new uplink DPCCH, is dependent on whether the target cell is known for the UE or not shall be less than the value in table 5.2A

If TDD/FDD handover is commanded, the interruption time shall be less than,

 $\underline{T_{interrupt}} = \underline{T_{IU}} + 40 + 50 \text{*KC} + 150 \text{*UC ms}$

where,

T _{IU}	The interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up
_	to one frame (10 ms).
KC	Equal to 1 if a known target cell is indicated in the RRC message implying 1.28Mcps TDD/FDD handover and equal to 0 otherwise.

 UC
 Equal to 1 if an unknown target cell is indicated in the RRC message implying 1.28Mcps

 TDD/FDD handover and equal to 0 otherwise.

An inter-frequency FDD target cell shall be considered known by the UE, if the target cell has been measured by the UE during the last 5 seconds.

The phase reference is the Primary CPICH.

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.

Note that the requirements in this section assume that N312 has the smallest possible value, i.e. only one in-sync indication as described in [23] is required.

There is different requirement on the interruption time depending on if the cell is known or not and if the SFN of the target cell needs to be decoded by the UE during the interruption time or not.

The definition of known cell can be found in section 5.1.2.2.2.

cell in the handover command	Maximum update delay [ms]		
message	Known Cell		Unknown Cell
	SFN not to	SFN needs to	SFN needs to be
	be decoded	be decoded	decoded
1	100	130	400

The interruption time includes the interruption uncertainty when changing the timing from the old 1.28 Mcps TDD OPTION to the new FDD cell, which can be up to one frame (10ms) and the time required for measuring the downlink DPCCH channel as stated in TS 25.214 section 4.3.1.2.

The requirement in Table 5.2A for the unknown cell shall apply if the signal quality of the unknown cell is good enough for successful synchronisation with one attempt.

The requirements do not apply if FDD macro diversity is used.

8

5.3 TDD/GSM Handover

5.3.1 Introduction

5.3.1.1 3.84 Mcps TDD option

The purpose of inter-RAT handover from UTRAN TDD to GSM is to transfer a connection between the UE and UTRAN TDD to GSM. The handover procedure is initiated from UTRAN with a RRC message (HANDOVER FROM UTRAN COMMAND) as described in [16].

5.3.1.2 1.28 Mcps TDD option

The purpose of inter-RAT handover from UTRAN TDD to GSM is to transfer a connection between the UE and UTRAN TDD to GSM. The handover procedure is initiated from UTRAN with a RRC message (HANDOVER FROM UTRAN COMMAND). The procedure is described in [16]TS25.331 section 8.3.7.

5.3.2 Requirements

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

5.3.2.1 TDD/GSM handover delay

5.3.2.1.1 3.84 Mcps TDD option

The RRC procedure performance value for the RRC HANDOVER FROM UTRAN COMMAND shall be 50 ms.

If the activation time is used in the RRC HANDOVER FROM UTRAN COMMAND, it corresponds to the CFN of the UTRAN channel.

When the UE receives a RRC HANDOVER FROM UTRAN COMMAND with the activation time "now" or earlier than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to transmit as specified [22] on the new channel of the new RAT within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to transmit as specified in [22] on the new channel of the new RAT at the designated activation time.

where:

D_{handover} equals the RRC procedure performance value plus the interruption time stated in section 5.3.2.2.

5.3.2.1.2 1.28 Mcps TDD option

The RRC procedure performance value for the RRC HANDOVER FROM UTRAN COMMAND shall be within 50 ms.

If the activation time is used in the RRC HANDOVER FROM UTRAN COMMAND, it corresponds to the CFN of the UTRAN channel.

When the UE receives a RRC HANDOVER FROM UTRAN COMMAND with the activation time "now" or earlier than $\underline{D}_{handover}$ seconds the value in Table 5.3A from the end of the last TTI containing the RRC command, the UE shall be ready to transmit (as specified in [22]GSM 45.010) on the new channel within the new RAT within $\underline{D}_{handover}$ seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than $\underline{D_{handover}}$ seconds the value in Table 5.3A from the end of the last TTI containing the RRC command, the UE shall be ready to transmit (as specified in [22]GSM 45.010) on the <u>new</u> channel of the new RAT at the designated activation time.

where:

<u>D_{handover} equals the RRC procedure performance value plus the interruption time stated in section 5.3.2.2.</u> The UE shall process the RRC procedures for the RRC HANDOVER FROM UTRAN COMMAND within 50 ms. If the activation time is used, it corresponds to the CFN of the UTRAN channel.

Table 5.3.A: 1.28 Mcps TDD/GSM handover -handover delay

UE synchronisation status	handover delay [ms]
The UE has synchronised to the GSM cell before the	90
HANDOVER FROM UTRAN COMMAND is received	
The UE has not synchronised to the GSM cell before	190
the HANDOVER FROM UTRAN COMMAND is received	

5.3.2.2 Interruption time

5.3.2.2.1 3.84 Mcps TDD option

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE is ready to transmit on the new channel of the new RAT, is dependent on whether the UE has synchonised to the target cell or not before receiving the RRC HANDOVER FROM UTRAN COMMAND.

The interruption time for the purpose of TDD/GSM handover shall be less than the value in Table 5.4.

Table 5.4: TDD/GSM interruption time

Synchronisation status	Interruption time [ms]
The UE has synchronised to the GSM cell before the	40
HANDOVER FROM UTRAN COMMAND is received	
The UE has not synchronised to the GSM cell before	140
the HANDOVER FROM UTRAN COMMAND is received	

The requirements in Table 5.4 for the case where the UE has not synchronised to the GSM target cell before receiving the RRC HANDOVER FROM UTRAN COMMAND shall apply only if the signal quality of the GSM target 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. If after 800 ms the UE has not synchronised to the GSM cell it shall follow the handover failure procedure specified in [16].

5.3.2.2.2 1.28 Mcps TDD option

The interruption time, i.e. the time between the end of last TTI containing a transport block on the old <u>DPCH</u>channel and the time the UE is ready to transmit on the new channel <u>of the new RAT</u>, is dependent on whether the UE has synchonised to the target cell or not before receiving the RRC HANDOVER FROM UTRAN COMMAND.

<u>The interruption time for the purpose of TDD/GSM handover</u>, shall be less than the value in Table 5.4A. The requirement in Table 5.4A for the case, that UE is not synchronised to the GSM cell before the HANDOVER FROM UTRAN COMMAND is received, is valid when the signal quality of the GSM cell is good enough for successful synchronisation with one attempt.

Synchronisation status	Interruption time [ms]
The UE has synchronised to the GSM cell before the	40
HANDOVER FROM UTRAN COMMAND is received	
The UE has not synchronised to the GSM cell before	140
the HANDOVER FROM UTRAN COMMAND is received	

The requirements in Table 5.4A for the case where the UE has not synchronised to the GSM target cell before receiving the RRC HANDOVER FROM UTRAN COMMAND shall apply only if the signal quality of the GSM target 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. If after 800 ms the UE has not synchronised to the GSM cell it shall follow the handover failure procedure specified in [16].

3GPP TSR RAN WG4 Meeting #24

R4-021171

Helsinki, Finland 12 - 16 August 2002

CHANGE REQUEST		
ж	25.123 CR 260 #rev	# Current version: 5.1.0 #
For <u>HELP</u> on us	ing this form, see bottom of this page or	look at the pop-up text over the $#$ symbols.
Proposed change a		Radio Access Network Core Network
Title: ೫	Handover for 1.28 Mcps TDD OPTION	
Source: ೫	RAN WG4	
Work item code: #	LCRTDD-RF	Date: ೫ <mark>21/08/2002</mark>
	A Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an ear B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories be found in 3GPP <u>TR 21.900</u> .	R97 (Release 1997) R98 (Release 1998) R99 (Release 1999)
Reason for change	formulas.	nents are not stated using appropriate GSM if the first synchronisation fails.
Summary of chang		nents have been modified. the additional value 800ms introduced.
Consequences if not approved:	handover to GSM if the first synchr Isolated Impact Analysis: Hando	equirements and incorrect requirement for ronisation fails. over performance requirements have been lementation behaving like indicated in the CR.
Clauses affected:	¥ <mark>5</mark>	
Other specs affected:	YNXOther core specificationsXTest specificationsXO&M Specifications	ж
Other comments:	# Equivalent CRs in other Releases:	: CR259 cat. F to 25.123 v4.5.0

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <u>http://www.3gpp.org/specs/CR.htm</u>. Below is a brief summary:

1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.

- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5 UTRAN Connected Mode Mobility

This section contains the requirements on the mobility procedures in UTRAN connected mode such as handover and cell re-selection.

Requirements related to the measurements in support of the execution of the UTRAN connected mode mobility procedures are specified in section 8.

The radio links the UE shall use are controlled by UTRAN with RRC signalling.

UE behaviour in response to UTRAN RRC messages is described in [16].

The purpose of Cell reselection in CELL_FACH, CELL_PCH and URA_PCH states is that the UE shall select a better cell according to the cell reselection criteria in [18]. CELL_FACH, CELL_PCH and URA_PCH states are described in [16].

5.1 TDD/TDD Handover

5.1.1 Introduction

5.1.1.1 3.84 Mcps TDD option

The TDD/TDD handover procedure is initiated from UTRAN with a RRC message that implies a hard handover as described in [16].

The TDD/TDD handover procedure may cause the UE to change its frequency.

5.1.1.2 1.28 Mcps TDD option

The purpose of TDD/TDD handover is to change the cell of the connection between UE and UTRAN. The handover procedure is initiated from UTRAN with a RRC message that implies a handover, refer to TS25.331[16]. The handover procedure may cause the UE to change its frequency.

For 1.28 Mcps TDD, at the beginning of the measurement process the UE shall find synchronisation to the cell to measure using the synchronisation channel (DwPCH). This is described under 'cell search' in 3GPP RAN TS25.201, TS25.221 TS25.222, TS25.223, TS25.224, TS25.225' if the monitored cell is a 1.28 Mcps TDD cell. For a TDD cell to monitor after this procedure the exact timing of the midamble of the P CCPCH is known and the measurements can be performed. Depending on the UE implementation and if timing information about the cell to monitor is available, the UE may perform the measurements on the P CCPCH directly without prior DwPCH synchronisation.

5.1.2 Requirements

5.1.2.1 TDD/TDD handover delay

5.1.2.1.1 3.84 Mcps TDD option

RRC procedure performance values for all RRC procedures that can command a hard handover are specified in [16].

When the UE receives a RRC message implying TDD/TDD handover with the activation time "now" or earlier than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCH within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCH at the designated activation time.

where:

4

 $D_{handover}$ equals the RRC procedure performance value defined in [16] plus the interruption time stated in section 5.1.2.2.1.

5.1.2.1.2 1.28 Mcps TDD option

<u>RRC</u> <u>Pp</u>rocedure <u>performance values</u> delay for all <u>RRC</u> procedures, that can command a <u>hard</u> handover, are specified in [16]TS25.331 section 13.5.2.

When the UE receives a RRC message that implies a <u>TDD/TDD</u> handover, with the activation time "now" or earlier than $D_{handover}$ seconds from the end of the last TTI containing the RRC command,, the UE shall start transmission within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCH or the SYNC-UL in case that a handover to 1.28 Mcps TDD option with SYNCH uplink exchange is recommended at the designated activation time.

where:

D_{handover} equals the RRC procedure <u>performance value</u>delay defined in <u>TS25.331 Section 13.5.2[16]</u> plus the interruption time stated in section 5.1.2.2.2.

5.1.2.2 Interruption time

5.1.2.2.1 3.84 Mcps TDD option

The interruption time i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE starts transmission of the new uplink DPCH, is dependent on whether the target cell is known for the UE or not.

If TDD/TDD intra-frequency or inter-frequency handover is commanded, the interruption time shall be less than,

$$T_{interrupt} = T_{offset} + T_{UL} + 30*F_{SFN} + 20*KC + 180*UC ms$$

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
F _{SFN}	Equal to 1 if SFN decoding is required and equal to 0 otherwise
KC	Equal to 1 if a known target cell is indicated in the RRC message implying TDD/TDD handover and equal to 0 otherwise
UC	Equal to 1 if an unknown target cell is indicated in the RRC message implying TDD/TDD handover and equal to 0 otherwise

An intra-frequency or inter-frequency TDD target cell shall be considered as known by the UE, if either or both of the following conditions are true:

- the target cell has been measured during the last 5 seconds
- the UE has had a radio linkconnected to the target cell during the last 5 seconds.

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.

5.1.2.2.2 1.28 Mcps TDD option

The interruption time i.e. the time between <u>the end of</u> the last TTI containing a transport block on the old DPCH and the time the UE starts transmission of the new uplink DPCH or the SYNC-UL in case that a handover with SYNCH uplink

exchange is recommended, shall be less than the value in table 5.1A. There is different requirement on the interruption time depending on if the cell is known or not and if the SFN of the target cell has to be decoded by the UE or not.

A cell shall be regarded as known by the UE if either or both of the following conditions are true:

- it has been measured during the last 5 seconds or
- a dedicated connection existed between the UE and the cell during the last 5 seconds.

The SFN of the target cell needs not to be decoded by the UE if either or both of the following conditions are true:

- a handover with timing maintain is commanded by the UTRAN or
- the SFN of the target cell is known by the UE.

cell in the handover command	Maximum delay [ms]					
message	Know	n Cell	Unknown Cell			
	SFN not to be decoded	SFN needs to be decoded	SFN not to be decoded	SFN needs to be decoded		
Intra-frequency	40	70	350	400		
Inter-frequency	40	70	350	400		

Table 5.1A: TDD/ TDD handover – interruption time

The interruption time includes the time that can elapse till the appearance of the channel required for the synchronisation. And the time that can elapse till the appearance of the new uplink DPCH or the UpPTS in which the SYNC-UL shall be transmitted, which can be up to one frame (10ms).

The requirement in Table 5.1A for the cell shall apply if the signal quality of the unknown cell is good enough for successful synchronisation with one attempt.

NOTE: One synchronisation attempt can consist of coherent averaging using several frames.

5.2 TDD/FDD Handover

5.2.1 Introduction

5.2.1.1 3.84 Mcps TDD option

The purpose of TDD/FDD handover is to change the radio access mode from TDD to FDD. The TDD/FDD handover procedure is initiated from UTRAN with a RRC message that implies a hard handover as described in [16].

5.2.1.2 1.28 Mcps TDD option

The purpose of TDD/FDD handover is to change the radio access mode between from TDD to FDD and TDD.

The <u>TDD/FDD</u> handover procedure is initiated from UTRAN with a <u>RRC message that implies a hard handover as</u> <u>described in [16].command message</u>, refer to TS25.331. The handover procedure causes the UE to change its frequency.

5.2.2 Requirements

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

5.2.2.1 TDD/FDD handover delay

5.2.2.1.1 3.84 Mcps TDD option

RRC procedure performance values for all RRC procedures that can command a hard handover, are specified in [16].

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When the UE receives a RRC message implying TDD/FDD handover with the activation time "now" or earlier than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCH within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCH at the designated activation time.

where:

 $D_{handover}$ equals the RRC procedure performance value as defined in [16] plus the interruption time stated in section 5.2.2.2.

5.2.2.1.2 1.28 Mcps TDD option

RRC procedure performance values for all RRC procedures that can command a hard handover, are specified in [16].

When the UE receives a RRC message that implies a <u>TDD/FDD</u> handover, with the activation time "now" or earlier than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCH within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCH at the designated activation time.

where:

 $D_{handover}$ equals the RRC procedure <u>performance value</u>delay defined in <u>TS25.331 Section 13.5.2[16]</u> plus the interruption time stated in section 5.2.2.2.2.

The requirements do not apply if FDD macro diversity is used.

5.2.2.2 Interruption time

5.2.2.2.1 3.84 Mcps TDD option

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE starts transmission of the new uplink DPCCH, is dependent on whether the target cell is known for the UE or not.

If TDD/FDD handover is commanded, the interruption time shall be less than,

where,

T_{offset}	Equal to 10 ms, the frame timing uncertainty between the old cell and the target cell.
KC	Equal to 1 if a known target cell is indicated in the RRC message implying TDD/FDD handover and equal to 0 otherwise
UC	Equal to 1 if an unknown target cell is indicated in the RRC message implying TDD/FDD handover and equal to 0 otherwise

An inter-frequency FDD target cell shall be considered known by the UE, if the target cell has been measured by the UE during the last 5 seconds.

The phase reference is the Primary CPICH.

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.

7

Note that the requirements in this section assume that N312 has the smallest possible value, i.e. only one in-sync indication as described in [23] is required.

5.2.2.2.2 1.28 Mcps TDD option

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE starts transmission of the new uplink DPCCH, is dependent on whether the target cell is known for the UE or not shall be less than the value in table 5.2A

If TDD/FDD handover is commanded, the interruption time shall be less than,

 $\underline{T_{interrupt}} = \underline{T_{IU}} + 40 + 50 \times KC + 150 \times UC \text{ ms}$

where,

T _{IU}	The interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up
—	to one frame (10 ms).
KC	Equal to 1 if a known target cell is indicated in the RRC message implying 1.28Mcps TDD/FDD handover and equal to 0 otherwise.

 UC
 Equal to 1 if an unknown target cell is indicated in the RRC message implying 1.28Mcps

 TDD/FDD handover and equal to 0 otherwise.

An inter-frequency FDD target cell shall be considered known by the UE, if the target cell has been measured by the UE during the last 5 seconds.

The phase reference is the Primary CPICH.

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.

Note that the requirements in this section assume that N312 has the smallest possible value, i.e. only one in-sync indication as described in [23] is required.

There is different requirement on the interruption time depending on if the cell is known or not and if the SFN of the target cell needs to be decoded by the UE during the interruption time or not.

The definition of known cell can be found in section 5.1.2.2.2.

Table 5.2A: 1.28 Mcps TDD/FDD interruption time

cell in the handover command	Maximum update delay [ms]						
message	Known Cell		Unknown Cell				
	SFN not to	SFN needs to	SFN needs to be				
	be decoded	be decoded	decoded				
1	100	130	400				

The interruption time includes the interruption uncertainty when changing the timing from the old 1.28 Mcps TDD OPTION to the new FDD cell, which can be up to one frame (10ms) and the time required for measuring the downlink DPCCH channel as stated in TS 25.214 section 4.3.1.2.

The requirement in Table 5.2A for the unknown cell shall apply if the signal quality of the unknown cell is good enough for successful synchronisation with one attempt.

The requirements do not apply if FDD macro diversity is used.

5.3 TDD/GSM Handover

5.3.1 Introduction

5.3.1.1 3.84 Mcps TDD option

The purpose of inter-RAT handover from UTRAN TDD to GSM is to transfer a connection between the UE and UTRAN TDD to GSM. The handover procedure is initiated from UTRAN with a RRC message (HANDOVER FROM UTRAN COMMAND) as described in [16].

5.3.1.2 1.28 Mcps TDD option

The purpose of inter-RAT handover from UTRAN TDD to GSM is to transfer a connection between the UE and UTRAN TDD to GSM. The handover procedure is initiated from UTRAN with a RRC message (HANDOVER FROM UTRAN COMMAND). The procedure is described in [16]TS25.331 section 8.3.7.

5.3.2 Requirements

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

5.3.2.1 TDD/GSM handover delay

5.3.2.1.1 3.84 Mcps TDD option

The RRC procedure performance value for the RRC HANDOVER FROM UTRAN COMMAND shall be 50 ms.

If the activation time is used in the RRC HANDOVER FROM UTRAN COMMAND, it corresponds to the CFN of the UTRAN channel.

When the UE receives a RRC HANDOVER FROM UTRAN COMMAND with the activation time "now" or earlier than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to transmit as specified [22] on the new channel of the new RAT within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than $D_{handover}$ seconds from the end of the last TTI containing the RRC command, the UE shall be ready to transmit as specified in [22] on the new channel of the new RAT at the designated activation time.

where:

D_{handover} equals the RRC procedure performance value plus the interruption time stated in section 5.3.2.2.

5.3.2.1.2 1.28 Mcps TDD option

The RRC procedure performance value for the RRC HANDOVER FROM UTRAN COMMAND shall be within 50 ms.

If the activation time is used in the RRC HANDOVER FROM UTRAN COMMAND, it corresponds to the CFN of the UTRAN channel.

When the UE receives a RRC HANDOVER FROM UTRAN COMMAND with the activation time "now" or earlier than $\underline{D}_{handover}$ seconds the value in Table 5.3A from the end of the last TTI containing the RRC command, the UE shall be ready to transmit (as specified in [22]GSM 45.010) on the new channel within the new RAT within $\underline{D}_{handover}$ seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than $\underline{D_{handover}}$ seconds the value in Table 5.3A from the end of the last TTI containing the RRC command, the UE shall be ready to transmit (as specified in [22]GSM 45.010) on the <u>new</u> channel of the new RAT at the designated activation time.

where:

<u>D_{handover} equals the RRC procedure performance value plus the interruption time stated in section 5.3.2.2.</u> The UE shall process the RRC procedures for the RRC HANDOVER FROM UTRAN COMMAND within 50 ms. If the activation time is used, it corresponds to the CFN of the UTRAN channel.

Table 5.3.A: 1.28 Mcps TDD/GSM handover -handover delay

UE synchronisation status	handover delay [ms]
The UE has synchronised to the GSM cell before the	90
HANDOVER FROM UTRAN COMMAND is received	
The UE has not synchronised to the GSM cell before	190
the HANDOVER FROM UTRAN COMMAND is received	

5.3.2.2 Interruption time

5.3.2.2.1 3.84 Mcps TDD option

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE is ready to transmit on the new channel of the new RAT, is dependent on whether the UE has synchonised to the target cell or not before receiving the RRC HANDOVER FROM UTRAN COMMAND.

The interruption time for the purpose of TDD/GSM handover shall be less than the value in Table 5.4.

Table 5.4: TDD/GSM interruption time

Synchronisation status	Interruption time [ms]
The UE has synchronised to the GSM cell before the	40
HANDOVER FROM UTRAN COMMAND is received	
The UE has not synchronised to the GSM cell before	140
the HANDOVER FROM UTRAN COMMAND is received	

The requirements in Table 5.4 for the case where the UE has not synchronised to the GSM target cell before receiving the RRC HANDOVER FROM UTRAN COMMAND shall apply only if the signal quality of the GSM target 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. If after 800 ms the UE has not synchronised to the GSM cell it shall follow the handover failure procedure specified in [16].

5.3.2.2.2 1.28 Mcps TDD option

The interruption time, i.e. the time between the end of last TTI containing a transport block on the old <u>DPCH</u>channel and the time the UE is ready to transmit on the new channel <u>of the new RAT</u>, is dependent on whether the UE has synchonised to the target cell or not before receiving the RRC HANDOVER FROM UTRAN COMMAND.

<u>The interruption time for the purpose of TDD/GSM handover</u>, shall be less than the value in Table 5.4A. The requirement in Table 5.4A for the case, that UE is not synchronised to the GSM cell before the HANDOVER FROM UTRAN COMMAND is received, is valid when the signal quality of the GSM cell is good enough for successful synchronisation with one attempt.

Synchronisation status	Interruption time [ms]
The UE has synchronised to the GSM cell before the	40
HANDOVER FROM UTRAN COMMAND is received	
The UE has not synchronised to the GSM cell before	140
the HANDOVER FROM UTRAN COMMAND is received	

The requirements in Table 5.4A for the case where the UE has not synchronised to the GSM target cell before receiving the RRC HANDOVER FROM UTRAN COMMAND shall apply only if the signal quality of the GSM target 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. If after 800 ms the UE has not synchronised to the GSM cell it shall follow the handover failure procedure specified in [16].

3GPP TSR RAN WG4 Meeting #24

R4-021172

Helsinki, Finland 12 - 16 August 2002

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Reason for change: ೫	No performance requirements for Inter-RAT cell change
Summary of change: Ж	Introduce specification for Inter-RAT cell change
Consequences if #	Performance requirements for Inter-RAT cell change would not be present.
not approved:	Isolated Impact Analysis: Would not affect the implementation behaving like
	indicated in the CR, no performance requirements for Inter-RAT cell change if
	not behaving like indicated in the CR.

Clauses affected:	発 5.8(new)
Other specs affected:	Y N X Other core specifications X Test specifications X O&M Specifications
Other comments:	# The corresponding Rel-5 CR is R4-021173. Equivalent CRs in other Releases: CR262 cat. A to 25.123 v5.1.0

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- Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5.7 RACH reporting

5.7.1 Introduction

5.7.1.1 3.84 Mcps TDD option

The network may request the UE to report on RACH P-CCPCH RSCP for the serving cell and up to 6 strongest monitored set cells and SFN-SFN observed time difference between the serving cell and up to 6 different monitored set cells.

5.7.1.2 1.28 Mcps TDD option

Void

5.7.2 Requirements

5.7.2.1 3.84 Mcps TDD option

If all of the following conditions are true, the UE is allowed to have an additional delay of N_{RACH} *50 ms in RACH transmission compared to the normal RACH transmission delay.

- SFN-SFN observed time difference measurement results are required to be reported on RACH
- The set of cells on which the SFN-SFN observed time difference measurement is to be reported has not changed since the previous RACH measurement report
- The UE has not measured the SFN-SFN observed time differences for the cells to be reported on RACH in the CELL_FACH state according to the requirements defined in Section 8.4.2.2

If at least one of the previous conditions is false, the UE shall be able to report the requested measurement results on RACH within a normal RACH transmission delay.

 N_{RACH} is the number of cells requiring SFN decoding prior to the reporting of SFN-SFN observed time difference measurement results on RACH.

5.7.2.2 1.28 Mcps TDD option

Void

5.8 Inter-RAT cell change order from UTRAN in CELL_DCH and CELL_FACH

- 5.8.1 Introduction
- 5.8.1.1 3.84 Mcps TDD option

Void.

5.8.1.2 1.28 Mcps TDD option

The purpose of inter-RAT cell change order from 1.28 Mcps TDD to GSM is to transfer a connection between the UE and 1.28 Mcps TDD to GSM. This procedure may be used in CELL_DCH and CELL_FACH state. The cell change order procedure is initiated from UTRAN with a RRC message (CELL CHANGE ORDER FROM UTRAN). The procedure is described in [16].

5.8.2 Requirements

5.8.2.1 3.84 Mcps TDD option

Void.

5.8.2.2 1.28 Mcps TDD option

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and GSM.

5.8.2.2.1 Delay

The RRC procedure performance value for the RRC CELL CHANGE ORDER FROM UTRAN COMMAND shall be within 50 ms.

If the activation time is used in the RRC CELL CHANGE ORDER FROM UTRAN COMMAND, it corresponds to the CFN of the UTRAN channel.

When the UE receives a RRC CELL CHANGE ORDER FROM UTRAN COMMAND with the activation time "now" or earlier than the value in table 5.5A from the end of the last TTI containing the RRC command, the UE shall start transmit the random access in the target cell of the new RAT within the value in table 5.5A from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than the value in table 5.5A from the end of the last TTI containing the RRC command, the UE shall start transmit the random access in the target cell of the new RAT at the designated activation time.

Table 5.5A: Inter-RAT cell change order from UTRAN - delay

UE synchronisation status	delay [ms]
The UE has synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received	<u>90 + Т_{вссн} +Т_{ка}</u>
The UE has not synchronised to the GSM cell before the CELL	190 + Т _{вссн} + Т _{ва}
CHANGE ORDER FROM UTRAN COMMAND is received	

where

 T_{BCCH} = the maximum time allowed to read BCCH data from the GSM cell [21].

 T_{RA} = the additional delay caused by the random access procedure

5.8.2.2.2 Interruption time

The requirement on interruption time below is valid when the signal quality of the serving cell is good enough to allow decoding of the old channel during the inter-RAT cell change order from UTRAN delay.

The interruption time, i.e. the time between the end of the last TTI containing a transport block that the UE is able to receive on the old channel and the time the UE starts transmit the random access in the target cell, shall be less than the value in table 5.6A.

Table 5.6A: Inter-RAT cell change order from UTRAN - interruption time

Synchronisation status	Interruption time [ms]
The UE has synchronised to the GSM cell before the CELL	<u>40 + Т_{вссн} +Т_{ка}</u>
CHANGE ORDER FROM UTRAN COMMAND is received	
The UE has not synchronised to the GSM cell before the CELL	<u> 140 + Т_{вссн}+Т_{ка}</u>
CHANGE ORDER FROM UTRAN COMMAND is received	

where

 T_{BCCH} = the maximum time allowed to read BCCH data from the GSM cell [21].

 T_{RA} = the additional delay caused by the random access procedure

The requirements in Table 5.6A for the case where the UE has not synchronised to the GSM target cell before receiving the RRC CELL CHANGE ORDER FROM UTRAN COMMAND shall apply only if the signal quality of the GSM target 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. If after 800 ms the UE has not synchronised to the GSM cell it shall follow the cell change order from UTRAN failure procedure specified in [16].

3GPP TSR RAN WG4 Meeting #24

R4-021173

Helsinki, Finland 12 - 16 August 2002

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Consequences if	ж	Performance requirements for Inter-RAT cell change would not be present.
not approved:		Isolated Impact Analysis: Would not affect the implementation behaving like
		indicated in the CR, no performance requirements for Inter-RAT cell change if
		not behaving like indicated in the CR.
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Other specs affected:	Y N X Other core specifications X X Test specifications X X O&M Specifications X				
Other comments:	# Equivalent CRs in other Releases: CR261 cat. F to 25.123 v4.5.0				

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5.7 RACH reporting

5.7.1 Introduction

5.7.1.1 3.84 Mcps TDD option

The network may request the UE to report on RACH P-CCPCH RSCP for the serving cell and up to 6 strongest monitored set cells and SFN-SFN observed time difference between the serving cell and up to 6 different monitored set cells.

5.7.1.2 1.28 Mcps TDD option

Void

5.7.2 Requirements

5.7.2.1 3.84 Mcps TDD option

If all of the following conditions are true, the UE is allowed to have an additional delay of N_{RACH} *50 ms in RACH transmission compared to the normal RACH transmission delay.

- SFN-SFN observed time difference measurement results are required to be reported on RACH
- The set of cells on which the SFN-SFN observed time difference measurement is to be reported has not changed since the previous RACH measurement report
- The UE has not measured the SFN-SFN observed time differences for the cells to be reported on RACH in the CELL_FACH state according to the requirements defined in Section 8.4.2.2

If at least one of the previous conditions is false, the UE shall be able to report the requested measurement results on RACH within a normal RACH transmission delay.

 N_{RACH} is the number of cells requiring SFN decoding prior to the reporting of SFN-SFN observed time difference measurement results on RACH.

5.7.2.2 1.28 Mcps TDD option

Void

5.8 Inter-RAT cell change order from UTRAN in CELL_DCH and CELL_FACH

- 5.8.1 Introduction
- 5.8.1.1 3.84 Mcps TDD option

Void.

5.8.1.2 1.28 Mcps TDD option

The purpose of inter-RAT cell change order from 1.28 Mcps TDD to GSM is to transfer a connection between the UE and 1.28 Mcps TDD to GSM. This procedure may be used in CELL_DCH and CELL_FACH state. The cell change order procedure is initiated from UTRAN with a RRC message (CELL CHANGE ORDER FROM UTRAN). The procedure is described in [16].

5.8.2 Requirements

5.8.2.1 3.84 Mcps TDD option

Void.

5.8.2.2 1.28 Mcps TDD option

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and GSM.

5.8.2.2.1 Delay

The RRC procedure performance value for the RRC CELL CHANGE ORDER FROM UTRAN COMMAND shall be within 50 ms.

If the activation time is used in the RRC CELL CHANGE ORDER FROM UTRAN COMMAND, it corresponds to the CFN of the UTRAN channel.

When the UE receives a RRC CELL CHANGE ORDER FROM UTRAN COMMAND with the activation time "now" or earlier than the value in table 5.5A from the end of the last TTI containing the RRC command, the UE shall start transmit the random access in the target cell of the new RAT within the value in table 5.5A from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than the value in table 5.5A from the end of the last TTI containing the RRC command, the UE shall start transmit the random access in the target cell of the new RAT at the designated activation time.

Table 5.5A: Inter-RAT cell change order from UTRAN - delay

UE synchronisation status	delay [ms]
The UE has synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received	<u>90 + Т_{вссн} +Т_{ка}</u>
The UE has not synchronised to the GSM cell before the CELL	190 + Т _{вссн} + Т _{ва}
CHANGE ORDER FROM UTRAN COMMAND is received	

where

 T_{BCCH} = the maximum time allowed to read BCCH data from the GSM cell [21].

 T_{RA} = the additional delay caused by the random access procedure

5.8.2.2.2 Interruption time

The requirement on interruption time below is valid when the signal quality of the serving cell is good enough to allow decoding of the old channel during the inter-RAT cell change order from UTRAN delay.

The interruption time, i.e. the time between the end of the last TTI containing a transport block that the UE is able to receive on the old channel and the time the UE starts transmit the random access in the target cell, shall be less than the value in table 5.6A.

Table 5.6A: Inter-RAT cell change order from UTRAN - interruption time

Synchronisation status	Interruption time [ms]
The UE has synchronised to the GSM cell before the CELL	<u>40 + Т_{вссн} +Т_{ка}</u>
CHANGE ORDER FROM UTRAN COMMAND is received	
The UE has not synchronised to the GSM cell before the CELL	<u> 140 + Т_{вссн}+Т_{ка}</u>
CHANGE ORDER FROM UTRAN COMMAND is received	

where

 T_{BCCH} = the maximum time allowed to read BCCH data from the GSM cell [21].

 T_{RA} = the additional delay caused by the random access procedure

The requirements in Table 5.6A for the case where the UE has not synchronised to the GSM target cell before receiving the RRC CELL CHANGE ORDER FROM UTRAN COMMAND shall apply only if the signal quality of the GSM target 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. If after 800 ms the UE has not synchronised to the GSM cell it shall follow the cell change order from UTRAN failure procedure specified in [16].

3GPP TSR RAN WG4 Meeting #24

R4-021174

Helsinki, Finland 12 - 16 August 2002

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

A.4.2.1.1.2 1.28 Mcps TDD option

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.4.1A and A.4.2A. The UE is requested to monitor neighbouring cells on 1 carrier. Cell 1 and cell 2 shall belong to different Location Areas.

Pa	rameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
	HCS		Not used	
UE_TXPW	/R_MAX_RACH	dBm	21	The value shall be used for all cells in the test.
Qr	xlevmin	dBm	-103	The value shall be used for all cells in the test.
	ce Class (ASC#0) stence value		1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
	T _{SI}	S	1.28	The value shall be used for all cells in the test.
DRX o	cycle length	S	1.28	The value shall be used for all cells in the test.
	T1	S	15	
	T2	S	15	

 Table A.4.1A: General test parameters for Cell Re-selection single carrier multi-cell case

Parameter	Unit		Ce	ll 1			Ce	ll 2			Ce	ell 3					
Timeslot Number		()	DW	PTS	(0	DW	PTS	(0	DW	PTS				
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2				
UTRA RF Channel Number			Char	nel 1			Char	nnel 1		Char		inel 1					
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3						
DwPCH_Ec/lor	dB			0	0			0	0			0	0				
OCNS_Ec/lor	dB	-3	-3			-3	-3			-3	-3						
\hat{I}_{or}/I_{oc}	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1				
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74						
Qoffset1 _{s,n}	dB		C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1,C6:0								1: 0; C2, 22, C5: 0				1: 0; C3, C3, C5: 0		
Qhyst1 _s	dB		0								()			(0	
Treselection	S		0				()				0					
Sintrasearch	dB		not sent not sent								not	sent					
			Cell 4								Ce	II 5			Ce	ell 6	
Timeslot		()	DW	PTS	(0	DW	PTS	(0	DW	PTS				
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2				
UTRA RF Channel Number			Char	nel 1			Char	nnel 1			Char	nnel 1	nt 6 DWPTS T1 T2				
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3						
DwPCH_Ec/lor	dB			0	0			0	0			0	0				
OCNS_Ec/lor	dB	-3	-3			<u>-3</u>	-3			-3	<u>-3</u>						
\hat{I}_{or}/I_{oc}	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1				
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74						
Qoffset1 _{s,n}	dB			C2:0; C4 C4, C6:		C5, C1: 0; C5, C2:0; C5,C3:0 C5, C4:0; C5, C6:0					1: 0; C6, C6, C4:0;						
Qhyst1 _s	dB		()			()			(0					
Treselection	S			0			(C			(0					
Sintrasearch	dB		not	sent			not	sent			not	sent					
I _{oc}	dBm/1. 28 MHz		-70														
Propagation Condition			AWGN														

Table A.4.2A: Cell re-selection single carrier multi-cell case

4

<<u>Next</u> Section>

A.4.2.2.1.2 1.28 Mcps TDD option

This scenario implies the presence of 2 carriers and 6 cells as given in Table A.4.3A and A.4.4A. The UE is requested to monitor neighbouring cells on 2 carriers. Cell 1 and cell 2 shall belong to different Location Areas.

 Table A.4.3A: General test parameters for Cell Re-selection in Multi carrier case

Pa	rameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
	HCS		Not used	
UE_TXPW	/R_MAX_RACH	dBm	21	The value shall be used for all cells in the test.
Qr	xlevmin	dBm	-103	The value shall be used for all cells in the test.
	ice Class (ASC#0) stence value		1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
	T _{SI}	S	1.28	The value shall be used for all cells in the test.
DRX o	cycle length	S	1.28	The value shall be used for all cells in the test.
	T1	S	30	
	T2	S	15	

Table A.4.4A: Cell re-selection multi carrier multi cell case

Parameter	Unit		Ce	ell 1			Ce	ll 2			Ce	ell 3	
Timeslot Number		(0	DW	PTS	(0	DW	PTS		0	DW	PTS
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number			Char	nnel 1			Channel 2			Channel 1			
PCCPCH_Ec/lor	dB	-3	-3	[-3	-3		[-3	-3		
DwPCH_Ec/lor	dB			0	0			0	0		Ť	0	0
OCNS_Ec/lor	dB	-3	-3			-3	-3			-3	-3		
\hat{I}_{or}/I_{oc}	dB	10	7	10	7	7	10	7	10	-1	-1	-1	-1
PCCPCH RSCP	dBm	-63	-66			-66	-63			-74	-74		
Qoffset1 _{s,n}	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1, C6:0					2, C1: 0; 4:0C2, C						
Qhyst1 _s	dB		0				()				0	
Treselection	S		0				()				Channel 1 -3 0 -3 -1 -1 -1 -74 -74 -74 -74 -74 -74 -74 -74 -74 -74	
Sintrasearch	dB		not	sent			not	sent			not	sent	
Sintersearch	dB			sent				sent					
			Ce	ell 4			Ce	ll 5			Ce		
Timeslot			0		PTS		0		PTS		0		
		T1	T2	T1	T2	T1	T2	T1	T2	T1			T2
UTRA RF Channel Number			Cha	nnel			Char	nnel 2			Cha	annel	
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/lor	dB			0	0			0	0			0	0
OCNS_Ec/lor	<u>dB</u>	-3	<u>-3</u>			<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>		
\hat{I}_{or}/I_{oc}	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
Qoffset1 _{s,n}	dB			C2:0; C4; C4; C6;			1: 0; C5, C5, C4:0;						
Qhyst1 _s	dB			0			(0				0	
Treselection	S			0			()				0	
Sintrasearch	dB		not	sent			not	sent			not	sent	
Sintersearch	dB		not	sent			not	sent			not	sent	
I _{oc}	dBm/ 3, 84 <u>1.28</u> MHz							70					
Propagation Condition			AWGN										

<Next Section>

A.5.1.2 1.28Mcps TDD option

A.5.1.2.1 Handover to intra-frequency cell

A.5.1.2.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the intra-frequency handover delay in CELL_DCH state in the single carrier case as reported in section 5.1.2.1.2.

The test parameters are given in Table A.5.1.5 and A.5.1.6 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that PCCPCH RSCP and SFN-CFN observed timed difference shall be reported together with Event 1G. The test consists of three successive time periods, with a 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.

UTRAN shall send a Physical Channel reconfiguration with activation time at the beginning of T3 with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE so that the whole message is available at the UE the RRC procedure delay prior to the beginning of T3. The RRC procedure delay is defined [16].

Table A.5.1.5: General test parameters for intra-frequency handover

Par	rameter	Unit	Value	Comment
DPCH param	neters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2.2
Power Contro	ol		On	
Target quality	/ value on DPCH	BLER	0.01	
Initial	Active cell		Cell 1	
conditions	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
0		dB	0	cell-individual-offset The value shall be used for all cells in the test.
Hysteresis		dB	0	
Time to Trigg	jer	ms	0	
Filter coefficie	ent		0	
Monitored ce	II list size		6 TDD neighbours on Channel 1	
T1		S	5	
T2		S	5	
Т3		S	5	

Table A.5.1.6: Cell specific test parameters for intra-frequency handover

Parameter	Unit			C	ell 1					Ce	ll 2		
Timeslot Number			0			5			0		5		
		T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
UTRA RF Channel Number				Cha	nnel 1					Char	nnel 1		
PCCPCH_Ec/lor	dB		-3			n.a.			-3			n.a	
DPCH_Ec/lor	dB		n.a. Note1 n.a. n.a.								n	.a.	Note1
OCNS_Ec/lor	dB	-	<u>-3Note2</u>	2		Note2		-	<u>3Note2</u>	2		Note	2
\hat{I}_{or}/I_{oc}	dB		3		3			-Inf.	:	5	-	Inf.	5
I _{oc}	dBm/ 1.28 MHz						-7	0					
PCCPCH_RSCP	dBm		-70			n.a.		-Inf.	-6	68		n.a	•
Propagation Condition		AWGN											
	Note 1: The DPCH level is controlled by the power control loop												

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7

A.5.1.2.1.2 Test Requirements

The UE shall start to transmit the UL DPCH to cell 2 less than 40 ms from the beginning of time period T3.

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

A.5.1.2.2 Handover to inter-frequency cell

A.5.1.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter-frequency handover delay in CELL_DCH in the dual carrier case as reported in section 5.1.2.1.2.

The test consists of three successive time periods, with a time duration T1, T2 and T3. The test parameters are given in tables A.5.1.7 and A.5.1.8 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. The PCCPCH RSCP and SFN-CFN observed timed difference of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time at beginning of T3 with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE so that the whole message is available at the UE the RRC procedure delay prior to the beginning of T3. The RRC procedure delay is defined [16]

Para	meter	Unit	Value	Comment
DPCH para	meters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2.2
Power Cont	rol		On	
Target quali DPCH	ity value on	BLER	0.01	
Initial	Active cell		Cell 1	
conditions	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Threshold n	ion used	dBm	-75	Absolute RSCP threshold for event 2C
frequency				
0		dB	0	cell-individual-offset The value shall be used for all cells in the test.
Hysteresis		dB	0	
Time to Trig	ger	ms	0	
Filter coeffic	cient		0	
Monitored c	ell list size		6 TDD neighbours on Channel 1 6 TDD neighbours on Channel 2	
T1		S	5	
T2		S	10	
Т3		S	5	

Table A.5.1.7: General test parameters for inter-frequency handover

Parameter	Unit			Ce	ll 1					Ce	ell 2		
Timeslot Number			0			5			0			5	
		T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	Т3
UTRA RF Channel Number				Chan	nel 1					Cha	nnel 2		
PCCPCH_Ec/lor	dB		-3 n.a3 n.a.										
DPCH_Ec/lor	dB		n.a.		No	te1	n.a.		n.a.		n.	а	Note1
OCNS_Ec/lor	dB		- <u>3</u> Note2	2		Note2		-3Note2			Note2		
\hat{I}_{or}/I_{oc}	dB		3		3	3		-Inf	6	<u>9</u>	-Inf		<u>69</u>
I _{oc}	dBm/1.28 MHz						-7	7 0					
PCCPCH_RSCP	dBm		-70			n.a.		-Inf	-6	<u>47</u>		n.a	
Propagation Condition		AWGN											
Note 1: The DPCH lev	el is controlle	ed by th	ne powe	er contr	ol loop								
Note 2: The power of	the OCNS ch	annel t	that is a	added s	hall ma	ke the	total po	wer fro	m the c	cell to b	be equa	al to I	r

TableA.5.1.8: Cell Specific parameters for inter-frequency handover

A.5.1.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCH to cell 2 less than 40 ms from the beginning of time period T3.

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

<Next Section>

A5.5.1.1.2 1.28Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in CELL_PCH state in section 5.5.2.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.5.3 and A.5.5.4.

Table A.5.5.3: General test	parameters for Cel	I Re-selection single	e carrier multi-cell case
	parametere rer eer	in neo concenten chigh	

Pa	rameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
	HCS		Not used	
UE_TXPW	/R_MAX_RACH	dBm	21	The value shall be used for all cells in the test.
Qr	xlevmin	dBm	-103	The value shall be used for all cells in the test.
	ce Class (ASC#0) stence value		1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
	T _{SI}	S	1.28	The value shall be used for all cells in the test.
DRX o	cycle length	S	1.28	The value shall be used for all cells in the test.
	T1	S	15	
	T2	S	15	

Parameter	Unit		Ce	ll 1			Ce	ell 2			Ce	II 3					
Timeslot Number		(0	DW	PTS	(0	DW	PTS	-	0	DW	PTS				
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2				
UTRA RF Channel Number			Char	nnel 1			Char	nnel 1			Char	nel 1					
PCCPCH Ec/lor	dB	-3	-3			-3	-3			-3	-3						
DwPCH_Ec/lor	dB			0	0			0	0			0	0				
OCNS_Ec/lor	<u>dB</u>	-3	-3			<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>						
\hat{I}_{or}/I_{oc}	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1				
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74						
Qoffset1 _{s,n}	dB		C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1,C6:0					C3:0; C ; C2, C6									
Qhyst1 _s	dB		0					0			(DWPTS T1 T2 nel 1 0 0 -1 -1 -1 C2:0; C3,C4:(C3, C6:0 -1 -1 0 0 0 -1 0 0 0 -1 -1 0 0 0 0 -1 -1 0 0 0 -1 -1 -1 -1 0 0 0 -1 </td					
Treselection	S		0					0									
Sintrasearch	dB		not sent				not	sent			not	-1 -1 -1 -74 -1 0; C3, C2:0; C3,C4: 0; C3, C2:0; C3, C6:0 0 0 not sent Cell 6 T2 T1 T2 Channel 1 -3 0 0 0					
			Cell 4								Ce	ell 5			Ce		
Timeslot			D	DW	PTS		D		PTS		0		PTS				
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2				
UTRA RF Channel Number			Char	nnel 1			Char	nnel 1			Char	nel 1	nt 6 DWPTS T1 T2 el 1 0 0 -1 -1				
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3						
DwPCH_Ec/lor	dB			0	0			0	0			0	0				
OCNS_Ec/lor	dB	-3	-3			-3	-3			-3	-3						
\hat{I}_{or}/I_{oc}	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1				
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74						
Qoffset1 _{s,n}	dB			C2:0; C4; C4; C6:				C2:0; C ; C5, C6:									
Qhyst1 _s	dB))				0)					
Treselection	S			0			(0			(C					
Sintrasearch	dB		not	sent			not	sent			not	sent					
I _{oc}	dBm/1. 28 MHz		-70														
Propagation Condition			AWGN														

Table A.5.5.4: Cell re-selection single carrier multi-cell case

9

<Next Section>

A.5.5.2.1.2 for 1.28Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in CELL_PCH state in section 5.5.2.2.

This scenario implies the presence of 2 carriers and 6 cells as given in Table A.5.5.7 and A.5.5.8.

Pa	rameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5,	
			Cell6	
Final condition	Active cell		Cell2	
	HCS		Not used	
UE_TXPW	/R_MAX_RACH	dBm	21	The value shall be used for all cells in the test.
Qr	xlevmin	dBm	-103	The value shall be used for all cells in the test.
	ice Class (ASC#0) stence value		1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
	T _{SI}	S	1.28	The value shall be used for all cells in the test.
DRX o	DRX cycle length		1.28	The value shall be used for all cells in the test.
	T1	S	30	
	T2	S	15	

 Table A.5.5.7: General test parameters for Cell Re-selection in Multi carrier case

Table A.5.5.8: Cell re-selection multi carrier multi cell case

Parameter	Unit		Ce	ell 1			Ce	ll 2		Cell 3				
Timeslot Number			D	DW	PTS		0	DW	PTS		0	DW	PTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	
UTRA RF Channel			Char	nnel 1		Channel 2			Channel 1					
Number					-			-	-					
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3			
DwPCH_Ec/lor	dB			0	0			0	0			0	0	
OCNS_Ec/lor	<u>dB</u>	<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>			
\hat{I}_{or}/I_{oc}	dB	10	7	10	7	7	10	7	10	-1	-1	-1	-1	
PCCPCH RSCP	dBm	-63	-66			-66	-63			-74	-74			
Qoffset1 _{s,n}	dB		C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1, C6:0				2, C1: 0 4:0C2, 0				1: 0; C3, C3, C5:0			
Qhyst1 _s	dB		0					0				0		
Treselection	S		(0			(0				0		
Sintrasearch	dB		not	sent			not sent				not	sent		
Sintersearch	dB						not	sent		not sent				
		Cell 4				Ce	ell 5			Ce	ell 6			
Timeslot			0		PTS		0		PTS		0		PTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	
UTRA RF Channel Number			Cha	nnel		Channel 2				Cha	annel			
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3			
DwPCH_Ec/lor	dB			0	0			0	0			0	0	
OCNS_Ec/lor	dB	-3	-3			-3	-3			-3	-3			
\hat{I}_{or}/I_{oc}	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74			
Qoffset1 _{s,n}	dB			C2:0; C4; C4; C4; C6;			1: 0; C5, C5, C4:0;			C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0				
Qhyst1 _s	dB			0				0				0		
Treselection	S		0					0				0		
Sintrasearch	dB	not sent				not sent					not	sent		
Sintersearch	dB	not sent				not sent					not	sent		
I _{oc}	dBm/ 3. 84 <u>1.28</u> MHz	-70												
Propagation Condition		AWGN												

<Next Section>

A.5.6.1.1.2 for 1.28Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in URA_PCH state in section 5.6.2.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.6.3 and A.5.6.4.

Cell1 and Cell2 shall belong to different UTRAN Registration Areas (URA).

Table A.5.6.3: General test parameters for Cell Re-selection single carrier multi-cell case

Pa	rameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5,	
			Cell6	
Final condition	Active cell		Cell2	
	HCS		Not used	
UE_TXPW	R_MAX_RACH	dBm	21	The value shall be used for all cells in the test.
Qr	xlevmin	dBm	-103	The value shall be used for all cells in the test.
	ce Class (ASC#0) stence value		1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
	Tsı		1.28	The value shall be used for all cells in the test.
DRX o	DRX cycle length		1.28	The value shall be used for all cells in the test.
	T1	S	15	
	T2	S	15	

Parameter	Unit		Ce	ll 1			Ce	ell 2		Cell 3			
Timeslot Number		(D	DW	PTS	(D	DW	PTS	(0	DW	PTS
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number			Channel 1				Channel 1			Channel 1			
PCCPCH_Ec/lor	dB	-3 -3		-3	-3			-3	-3				
DwPCH_Ec/lor	dB			0	0			0	0			0	0
OCNS_Ec/lor	<u>dB</u>	<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>		
\hat{I}_{or}/I_{oc}	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74		
Qoffset1 _{s,n}	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1,C6:0						C3:0; C2; C2; C6			1: 0; C3, C3, C5: 0		
Qhyst1 _s	dB		(0				0		0			
Treselection	S			0		0				0			
Sintrasearch	dB		not sent					sent			not	sent	
			Cell 4				Ce	ell 5			Ce	ll 6	
Timeslot			D	DW			0		PTS		0		PTS
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number			Char	nnel 1		Channel 1					Char	nel 1	
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/lor	dB			0	0			0	0			0	0
OCNS_Ec/lor	dB	-3	-3			-3	-3			-3	-3		
\hat{I}_{or}/I_{oc}	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
Qoffset1 _{s,n}	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0						C2:0; C ; C5, C6:			1: 0; C6, C6, C4:0;		
Qhyst1 _s	dB	0						0			()	
Treselection	S	0				0					(C	
Sintrasearch	dB		not	sent		not sent not sent							
I _{oc}	dBm/1.28 MHz						-	70					
Propagation Condition		AWGN											

Table A.5.6.4: Cell re-selection single carrier multi-cell case

12

<<u>Next</u> Section>

A.5.6.2.1.2 1.28Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in URA_PCH state in section 5.6.2.2.

This scenario implies the presence of 2 carriers and 6 cells as given in Table A.5.6.7 and A.5.6.8.

Cell1 and Cell2 shall belong to different UTRAN Registration Areas (URA).

Pa	rameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
	HCS		Not used	
UE_TXPW	R_MAX_RACH	dBm	21	The value shall be used for all cells in the test.
Qr	xlevmin	dBm	-103	The value shall be used for all cells in the test.
	Access Service Class (ASC#0) - Persistence value		1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
	T _{SI}		1.28	The value shall be used for all cells in the test.
DRX o	DRX cycle length		1.28	The value shall be used for all cells in the test.
	T1	S	30	
	T2	S	15	

Table A.5.6.7: General test parameters for Cell Re-selection in Multi carrier case

Table A.5.6.8: Cell re-selection multi carrier multi cell case

Parameter	Unit		Ce	ll 1			Ce	ll 2		Cell 3			
Timeslot Number			D	DW	PTS		0	DW	PTS	(0	DW	PTS
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel		Channel 1				Channel 2			Channel 1				
Number													
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/lor	dB			0	0			0	0			0	0
OCNS_Ec/lor	<u>dB</u>	<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>		
\hat{I}_{or}/I_{oc}	dB	10	7	10	7	7	10	7	10	-1	-1	-1	-1
PCCPCH RSCP	dBm	-63	-66			-66	-63			-74	-74		
Qoffset1 _{s,n}	dB		C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1, C6:0				2, C1: 0; 4:0C2, C				1: 0; C3, C3, C5:0		
Qhyst1 _s	dB			0			()			()	
Treselection	S			0			(0			()	
Sintrasearch	dB		not	sent		not sent				not sent			
Sintersearch	dB			sent		not sent						sent	
		Cell 4					ll 5			Ce	ll 6		
Timeslot			0		PTS		0		PTS		0		PTS
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number			Cha	innel		Channel 2				Channel			
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/lor	dB			0	0			0	0			0	0
OCNS_Ec/lor	dB	-3	-3			-3	-3			<u>-3</u>	<u>-3</u>		
\hat{I}_{or}/I_{oc}	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
Qoffset1 _{s,n}	dB			C2:0; C4; C4; C4; C6;			1: 0; C5, C5, C4:0;				1: 0; C6, C6, C4:0;		
Qhyst1 _s	dB			0			()			()	
Treselection	S		0				(C			(C	
Sintrasearch	dB	not sent				not sent					not	sent	
Sintersearch	dB		not	sent			not	sent			not	sent	
I _{oc}	dBm/ 3.84 <u>1.28</u> MHz						-	70					
Propagation Condition		AWGN											

3GPP TSR RAN WG4 Meeting #24

R4-021175

Helsinki, Finland 12 - 16 August 2002

		C	CHANG	E REQ	UES	ST				CR-Form-v7
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How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <u>http://www.3gpp.org/specs/CR.htm</u>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

A.4.2.1.1.2 1.28 Mcps TDD option

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.4.1A and A.4.2A. The UE is requested to monitor neighbouring cells on 1 carrier. Cell 1 and cell 2 shall belong to different Location Areas.

Pa	rameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
	HCS		Not used	
UE_TXPW	/R_MAX_RACH	dBm	21	The value shall be used for all cells in the test.
Qr	xlevmin	dBm	-103	The value shall be used for all cells in the test.
	ce Class (ASC#0) stence value		1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
	T _{SI} s		1.28	The value shall be used for all cells in the test.
DRX o	cycle length	S	1.28	The value shall be used for all cells in the test.
	T1		15	
	T2	S	15	

 Table A.4.1A: General test parameters for Cell Re-selection single carrier multi-cell case

Parameter	Unit		Ce	ll 1			Ce	ll 2		Cell 3			
Timeslot Number		()	DW	PTS	(0 DV			(0	DW	PTS
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number			Channel 1			Channel 1			Channel 1				
PCCPCH_Ec/lor	dB	-3	-3 -3			-3	-3			-3	-3		
DwPCH_Ec/lor	dB			0	0			0	0			0	0
OCNS_Ec/lor	dB	-3	-3			-3	-3			-3	-3		
\hat{I}_{or}/I_{oc}	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74		
Qoffset1 _{s,n}	dB		C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1,C6:0				1: 0; C2, 22, C5: 0				1: 0; C3, C3, C5: 0		
Qhyst1 _s	dB		()			()			(0	
Treselection	S			0		0				0			
Sintrasearch	dB		not	sent		not sent				not sent			
			Cell 4				Ce	II 5			Ce	ell 6	
Timeslot		()	DW	PTS	(0	DW	PTS	(0	DW	PTS
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number			Char	nel 1		Channel 1				Channel 1			
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/lor	dB			0	0			0	0			0	0
OCNS_Ec/lor	dB	-3	-3			<u>-3</u>	-3			-3	<u>-3</u>		
\hat{I}_{or}/I_{oc}	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
Qoffset1 _{s,n}	dB	C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0					1: 0; C5, C5, C4:0;			C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
Qhyst1 _s	dB	0					()			(0	
Treselection	S	0					(C			(0	
Sintrasearch	dB	not sent not sent								not	sent		
I _{oc}	dBm/1. 28 MHz						-	70					
Propagation Condition		AWGN											

Table A.4.2A: Cell re-selection single carrier multi-cell case

4

<<u>Next</u> Section>

A.4.2.2.1.2 1.28 Mcps TDD option

This scenario implies the presence of 2 carriers and 6 cells as given in Table A.4.3A and A.4.4A. The UE is requested to monitor neighbouring cells on 2 carriers. Cell 1 and cell 2 shall belong to different Location Areas.

 Table A.4.3A: General test parameters for Cell Re-selection in Multi carrier case

Pa	rameter	Unit	Value	Comment		
Initial condition	Active cell		Cell1			
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6			
Final condition	Active cell		Cell2			
	HCS		Not used			
UE_TXPW	/R_MAX_RACH	dBm	21	The value shall be used for all cells in the test.		
Qr	xlevmin	dBm	-103	The value shall be used for all cells in the test.		
	ice Class (ASC#0) stence value		1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.		
	Tsı		T _{SI} s		1.28	The value shall be used for all cells in the test.
DRX o	DRX cycle length		1.28	The value shall be used for all cells in the test.		
	T1		30			
	T2	S	15			

Table A.4.4A: Cell re-selection multi carrier multi cell case

Parameter	Unit		Ce	ell 1			Ce	ll 2			Ce	ell 3	
Timeslot Number		(0	DW	PTS	(0	DW	PTS		0	DW	PTS
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1			Channel 2				Channel 1				
PCCPCH_Ec/lor	dB	-3	-3	[-3	-3		[-3	-3		
DwPCH_Ec/lor	dB			0	0			0	0		Ť	0	0
OCNS_Ec/lor	dB	-3	-3			-3	-3			-3	-3		
\hat{I}_{or}/I_{oc}	dB	10	7	10	7	7	10	7	10	-1	-1	-1	-1
PCCPCH RSCP	dBm	-63	-66			-66	-63			-74	-74		
Qoffset1 _{s,n}	dB		C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1, C6:0				2, C1: 0; 4:0C2, C				1: 0; C3, C3, C5:0		
Qhyst1 _s	dB			0			()				0	
Treselection	S			0			()				0	
Sintrasearch	dB		not	sent		not sent				not sent			
Sintersearch	dB		not sent			not sent						sent	
		Cell 4			Cell 5 0 DWPTS					Ce	ell 6		
Timeslot			0		PTS		0		-		0		PTS
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number			Cha	nnel		Channel 2				Cha	annel		
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/lor	dB			0	0			0	0			0	0
OCNS_Ec/lor	<u>dB</u>	-3	<u>-3</u>			<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>		
\hat{I}_{or}/I_{oc}	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74		
Qoffset1 _{s,n}	dB		C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0				1: 0; C5, C5, C4:0;			C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0			
Qhyst1 _s	dB			0			(0				0	
Treselection	S			0			()				0	
Sintrasearch	dB	not sent					not	sent			not	sent	
Sintersearch	dB	not sent					not	sent			not	sent	
I _{oc}	dBm/ 3, 84 <u>1.28</u> MHz	-70											
Propagation Condition		AWGN											

<Next Section>

A.5.1.2 1.28Mcps TDD option

A.5.1.2.1 Handover to intra-frequency cell

A.5.1.2.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the intra-frequency handover delay in CELL_DCH state in the single carrier case as reported in section 5.1.2.1.2.

The test parameters are given in Table A.5.1.5 and A.5.1.6 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that PCCPCH RSCP and SFN-CFN observed timed difference shall be reported together with Event 1G. The test consists of three successive time periods, with a 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.

UTRAN shall send a Physical Channel reconfiguration with activation time at the beginning of T3 with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE so that the whole message is available at the UE the RRC procedure delay prior to the beginning of T3. The RRC procedure delay is defined [16].

Table A.5.1.5: General test parameters for intra-frequency handover

Par	ameter	Unit	Value	Comment
DPCH param	eters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2.2
Power Contro			On	
Target quality	value on DPCH	BLER	0.01	
Initial	Active cell		Cell 1	
conditions	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
0		dB	0	cell-individual-offset The value shall be used for all cells in the test.
Hysteresis		dB	0	
Time to Trigg	er	ms	0	
Filter coefficie	ent		0	
Monitored cel	l list size		6 TDD neighbours on Channel 1	
T1		S	5	
T2		S	5	
Т3		S	5	

Table A.5.1.6: Cell specific test parameters for intra-frequency handover

Parameter	Unit			C	ell 1					Cell 2						
Timeslot Number			0			5			0							
		T1 T2 T3			T1	T2	T3	T1	T2	T3	T1	T2	T3			
UTRA RF Channel Number				Cha	nnel 1					Char	nnel 1					
PCCPCH_Ec/lor	dB		-3			n.a.			-3							
DPCH_Ec/lor	dB		n.a.		Not	e1	n.a.		n.a.		n.a.		Note1			
OCNS_Ec/lor	dB	-3Note2				Note2		-	<u>-3Note2</u>			Note2				
\hat{I}_{or}/I_{oc}	dB		3		3			-Inf. 5			-	5				
I _{oc}	dBm/ 1.28 MHz						-7	0								
PCCPCH_RSCP	dBm		-70			n.a.		-Inf.	-6	68		n.a				
Propagation Condition							AW	GN								
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I _{ar}																

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7

A.5.1.2.1.2 Test Requirements

The UE shall start to transmit the UL DPCH to cell 2 less than 40 ms from the beginning of time period T3.

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

A.5.1.2.2 Handover to inter-frequency cell

A.5.1.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter-frequency handover delay in CELL_DCH in the dual carrier case as reported in section 5.1.2.1.2.

The test consists of three successive time periods, with a time duration T1, T2 and T3. The test parameters are given in tables A.5.1.7 and A.5.1.8 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. The PCCPCH RSCP and SFN-CFN observed timed difference of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time at beginning of T3 with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE so that the whole message is available at the UE the RRC procedure delay prior to the beginning of T3. The RRC procedure delay is defined [16]

Para	meter	Unit	Value	Comment
DPCH para	meters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2.2
Power Cont	rol		On	
Target quali DPCH	ity value on	BLER	0.01	
Initial	Active cell		Cell 1	
conditions			Cell 2	
Final conditions	Active cell		Cell 2	
Threshold n	ion used	dBm	-75	Absolute RSCP threshold for event 2C
frequency				
0		dB	0	cell-individual-offset The value shall be used for all cells in the test.
Hysteresis		dB	0	
Time to Trig	ger	ms	0	
Filter coeffic	cient		0	
Monitored c	ell list size		6 TDD neighbours on Channel 1 6 TDD neighbours on Channel 2	
T1	1 s		5	
T2		S	10	
Т3		S	5	

Table A.5.1.7: General test parameters for inter-frequency handover

Parameter	Unit			Ce	II 1					Ce	ell 2			
Timeslot Number			0			5			0		5			
		T1 T2 T3			T1	T2	T3	T1	T2	Т3	T1	T2	T3	
UTRA RF Channel Number			Channel 1 Cha								nnel 2			
PCCPCH_Ec/lor	dB	-3 n.a.							-3		n.a.			
DPCH_Ec/lor	dB	n.a.		n.a.			n.a.		n.a.		n.	а	Note1	
OCNS_Ec/lor	dB	-	<u>3Note2</u>	2		Note2		-	<u>-3Note2</u>			Note2		
\hat{I}_{or}/I_{oc}	dB		3		3	3		-Inf <u>69</u>		<u>9</u>	-Inf		<u>69</u>	
I _{oc}	dBm/1.28 MHz						-7	0						
PCCPCH_RSCP	dBm		-70			n.a.		-Inf	-6	<u>4</u> 7		n.a.		
Propagation Condition							AW	GN						
Note 1: The DPCH lev														
Note 2: The power of	the OCNS ch	annel t	hat is a	dded s	hall ma	ke the t	total po	wer fro	m the c	cell to b	be equa	al to I	r	

TableA.5.1.8: Cell Specific parameters for inter-frequency handover

A.5.1.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCH to cell 2 less than 40 ms from the beginning of time period T3.

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

<Next Section>

A5.5.1.1.2 1.28Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in CELL_PCH state in section 5.5.2.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.5.3 and A.5.5.4.

Table A.5.5.3: General test	parameters for Cel	I Re-selection single	e carrier multi-cell case
	parametere rer eer	in neo concenten chigh	

Pa	rameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
	HCS		Not used	
UE_TXPW	UE_TXPWR_MAX_RACH		21	The value shall be used for all cells in the test.
Qr	xlevmin	dBm	-103	The value shall be used for all cells in the test.
	ce Class (ASC#0) stence value		1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
	T _{SI}	S	1.28	The value shall be used for all cells in the test.
DRX o	cycle length	S	1.28	The value shall be used for all cells in the test.
	T1	S	15	
	T2	S	15	

Parameter	Unit		Ce	ll 1			Ce	ell 2			Ce	II 3		
Timeslot Number		(0	DW	PTS	(0	DW	PTS	-	0	DW	PTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	
UTRA RF Channel Number			Char	nnel 1			Char	nnel 1			Char	nel 1		
PCCPCH Ec/lor	dB	-3	-3			-3	-3			-3	-3			
DwPCH_Ec/lor	dB			0	0			0	0			0	0	
OCNS_Ec/lor	<u>dB</u>	-3	-3			<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>			
\hat{I}_{or}/I_{oc}	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1	
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74			
Qoffset1 _{s,n}	dB			C3:0; C ² ; C1,C6:				C3:0; C ; C2, C6			1: 0; C3, C3, C5: 0			
Qhyst1 _s	dB		(0				0			(C		
Treselection	S			0				0		0				
Sintrasearch	dB		not	sent			not	sent			not	sent		
			Ce	ll 4			Ce	ell 5			Ce	ll 6		
Timeslot			D	DW	PTS		D		PTS		0		PTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	
UTRA RF Channel Number			Char	nnel 1			Char	nnel 1			Channel 1			
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3			
DwPCH_Ec/lor	dB			0	0			0	0			0	0	
OCNS_Ec/lor	dB	-3	-3			-3	-3			-3	-3			
\hat{I}_{or}/I_{oc}	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74			
Qoffset1 _{s,n}	dB			C2:0; C4; C4; C6:				C2:0; C ; C5, C6:			1: 0; C6, C6, C4:0;			
Qhyst1 _s	dB))				0)		
Treselection	S			0			(0			(C		
Sintrasearch	dB		not	sent			not	sent			not	sent		
I _{oc}	dBm/1. 28 MHz		-70											
Propagation Condition		AWGN												

Table A.5.5.4: Cell re-selection single carrier multi-cell case

9

<Next Section>

A.5.5.2.1.2 for 1.28Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in CELL_PCH state in section 5.5.2.2.

This scenario implies the presence of 2 carriers and 6 cells as given in Table A.5.5.7 and A.5.5.8.

Pa	rameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5,	
			Cell6	
Final condition	Active cell		Cell2	
	HCS		Not used	
UE_TXPW	UE_TXPWR_MAX_RACH		21	The value shall be used for all cells in the test.
Qr	Qrxlevmin		-103	The value shall be used for all cells in the test.
	ice Class (ASC#0) stence value		1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
	T _{SI}	S	1.28	The value shall be used for all cells in the test.
DRX o	DRX cycle length		1.28	The value shall be used for all cells in the test.
	T1	S	30	
	T2	S	15	

 Table A.5.5.7: General test parameters for Cell Re-selection in Multi carrier case

Table A.5.5.8: Cell re-selection multi carrier multi cell case

Parameter	Unit		Ce	ell 1			Ce	ll 2		Cell 3				
Timeslot Number			D	DW	PTS		0	DW	PTS		0	DW	PTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	
UTRA RF Channel			Char	nnel 1			Char	nnel 2			Char	nnel 1		
Number					-			-	-					
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3			
DwPCH_Ec/lor	dB			0	0			0	0			0	0	
OCNS_Ec/lor	<u>dB</u>	<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>			
\hat{I}_{or}/I_{oc}	dB	10	7	10	7	7	10	7	10	-1	-1	-1	-1	
PCCPCH RSCP	dBm	-63	-66			-66	-63			-74	-74			
Qoffset1 _{s,n}	dB	C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1, C6:0					2, C1: 0 4:0C2, 0				1: 0; C3, C3, C5:0			
Qhyst1 _s	dB			0				0				0		
Treselection	S		(0			(0		0				
Sintrasearch	dB		not	sent			not	sent		not sent				
Sintersearch	dB	not sent					not	sent			not	sent		
		Cell 4					Ce	ell 5			Ce	ell 6		
Timeslot			0		PTS		0		PTS		0		PTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	
UTRA RF Channel Number			Cha	nnel			Char	nnel 2			Cha	annel		
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3			
DwPCH_Ec/lor	dB			0	0			0	0			0	0	
OCNS_Ec/lor	dB	-3	-3			-3	-3			-3	-3			
\hat{I}_{or}/I_{oc}	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74			
Qoffset1 _{s,n}	dB			C2:0; C4; C4; C4; C6;			1: 0; C5, C5, C4:0;				1: 0; C6, C6, C4:0			
Qhyst1 _s	dB			0				0				0		
Treselection	S		(0				0				0		
Sintrasearch	dB		not	sent			not	sent			not	sent		
Sintersearch	dB		not	sent			not	sent			not	sent		
I _{oc}	dBm/ 3. 84 <u>1.28</u> MHz	-70												
Propagation Condition		AWGN												

<Next Section>

A.5.6.1.1.2 for 1.28Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in URA_PCH state in section 5.6.2.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.6.3 and A.5.6.4.

Cell1 and Cell2 shall belong to different UTRAN Registration Areas (URA).

Table A.5.6.3: General test parameters for Cell Re-selection single carrier multi-cell case

Pa	rameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
	HCS		Not used	
UE_TXPW	'R_MAX_RACH	dBm	21	The value shall be used for all cells in the test.
Qr	xlevmin	dBm	-103	The value shall be used for all cells in the test.
	ce Class (ASC#0) stence value		1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
	T _{SI}	S	1.28	The value shall be used for all cells in the test.
DRX o	cycle length	S	1.28	The value shall be used for all cells in the test.
	T1	S	15	
	T2	S	15	

Parameter	Unit		Ce	ll 1			Ce	ell 2		Cell 3				
Timeslot Number		(D	DW	PTS	(D	DW	PTS	(0	DW	PTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	
UTRA RF Channel Number			Char	nnel 1			Char	nnel 1			Char	nnel 1		
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3			
DwPCH_Ec/lor	dB			0	0			0	0			0	0	
OCNS_Ec/lor	<u>dB</u>	<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>			
\hat{I}_{or}/I_{oc}	dB	9	7	9	7	7	9	7	9	-1	-1	-1	-1	
PCCPCH RSCP	dBm	-64	-66			-66	-64			-74	-74			
Qoffset1 _{s,n}	dB			C3:0; C ² ; C1,C6:				C3:0; C2; C2; C6			1: 0; C3, C3, C5: 0			
Qhyst1 _s	dB		(0				0			0			
Treselection	S			0				0		0				
Sintrasearch	dB		not	sent				sent			not	sent		
			Ce	ll 4			Ce	ell 5			Ce	ll 6		
Timeslot			D	DW			0		PTS		0		PTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	
UTRA RF Channel Number			Char	nnel 1			Char	nnel 1			Channel 1			
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3			
DwPCH_Ec/lor	dB			0	0			0	0			0	0	
OCNS_Ec/lor	dB	-3	-3			-3	-3			-3	-3			
\hat{I}_{or}/I_{oc}	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74			
Qoffset1 _{s,n}	dB			C2:0; C4; C4; C6;				C2:0; C ; C5, C6:			1: 0; C6, C6, C4:0;			
Qhyst1 _s	dB))				0			()		
Treselection	S			0			(0			(C		
Sintrasearch	dB		not	sent			not	sent			not	sent		
I _{oc}	dBm/1.28 MHz		-70											
Propagation Condition		AWGN												

Table A.5.6.4: Cell re-selection single carrier multi-cell case

12

<<u>Next</u> Section>

A.5.6.2.1.2 1.28Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in URA_PCH state in section 5.6.2.2.

This scenario implies the presence of 2 carriers and 6 cells as given in Table A.5.6.7 and A.5.6.8.

Cell1 and Cell2 shall belong to different UTRAN Registration Areas (URA).

Pa	rameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cells		Cell2, Cell3,Cell4, Cell5, Cell6	
Final condition	Active cell		Cell2	
	HCS		Not used	
UE_TXPW	UE_TXPWR_MAX_RACH		21	The value shall be used for all cells in the test.
Qr	Qrxlevmin		-103	The value shall be used for all cells in the test.
	ce Class (ASC#0) stence value		1	Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test.
	T _{SI}	S	1.28	The value shall be used for all cells in the test.
DRX o	DRX cycle length		1.28	The value shall be used for all cells in the test.
	T1	S	30	
	T2	S	15	

Table A.5.6.7: General test parameters for Cell Re-selection in Multi carrier case

Table A.5.6.8: Cell re-selection multi carrier multi cell case

Parameter	Unit		Ce	ll 1			Ce	ll 2			Ce	II 3		
Timeslot Number			D	DW	PTS		0	DW	PTS	(0	DW	PTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	
UTRA RF Channel			Char	nnel 1			Char	nel 2			Char	nel 1		
Number														
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3			
DwPCH_Ec/lor	dB			0	0			0	0			0	0	
OCNS_Ec/lor	<u>dB</u>	<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>			<u>-3</u>	<u>-3</u>			
\hat{I}_{or}/I_{oc}	dB	10	7	10	7	7	10	7	10	-1	-1	-1	-1	
PCCPCH RSCP	dBm	-63	-66			-66	-63			-74	-74			
Qoffset1 _{s,n}	dB		C1, C2: 0; C1, C3:0; C1,C4:0 C1, C5:0; C1, C6:0				2, C1: 0; 4:0C2, C				1: 0; C3, C3, C5:0			
Qhyst1 _s	dB			0			()			()		
Treselection	S			0			()			()		
Sintrasearch	dB		not sent				not	sent		not sent				
Sintersearch	dB		not sent					sent				sent		
		Cell 4						ll 5			Ce	ll 6		
Timeslot			0		PTS		0		PTS		0		PTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	
UTRA RF Channel Number			Cha	innel			Char	nnel 2			Channel			
PCCPCH_Ec/lor	dB	-3	-3			-3	-3			-3	-3			
DwPCH_Ec/lor	dB			0	0			0	0			0	0	
OCNS_Ec/lor	dB	-3	-3			-3	-3			<u>-3</u>	<u>-3</u>			
\hat{I}_{or}/I_{oc}	dB	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	
PCCPCH RSCP	dBm	-74	-74			-74	-74			-74	-74			
Qoffset1 _{s,n}	dB			C2:0; C4; C4; C4; C6;			1: 0; C5, C5, C4:0;			C6, C1: 0; C6, C2:0; C6,C3:0 C6, C4:0; C6, C5:0				
Qhyst1 _s	dB			0			()			()		
Treselection	S			0			(C			(C		
Sintrasearch	dB		not	sent			not	sent			not	sent		
Sintersearch	dB		not	sent			not	sent			not	sent		
I _{oc}	dBm/ 3.84 <u>1.28</u> MHz	-70												
Propagation Condition		AWGN												

3GPP TSR RAN WG4 Meeting #24

R4-021176

Helsinki, Finland 12 - 16 August 2002

CHANGE REQUEST									CR-Form-v7		
ж		<mark>25.123</mark>	CR	265	жrev	H	Cur	rent vers	ion:	4.5.0	ж
For <u>HELP</u> of	n usi	ing this for	m, see	bottom of this	s page or	· look at t	the pop	o-up text	over	the # syl	mbols.
Proposed chang	ge af	fects: l	JICC a	pps¥ 📃	ME	Radio	Acces	s Netwoi	rk	Core Ne	etwork
Title:	ж	RACH rep	ortina	for 1.28 Mcps							
Source:	Ж	RAN WG	4								
Work item code.	: #	LCRTDD-	RF					Date: ೫	21/	/08/2002	
Category:		F (corr A (corr B (adc C (fun D (edit	rection) respond lition of ctional l torial m blanatio	ds to a correctic feature), modification of t odification) ns of the above	on in an ea feature)		U	lease: # se <u>one</u> of 2 R96 R97 R98 R99 Rel-4 Rel-5 Rel-6	the fc (GSI (Rele (Rele (Rele (Rele (Rele	H-4 M Phase 2) ease 1996) ease 1997) ease 1997) ease 1998) ease 1999) ease 4) ease 5) ease 6)	

Reason for change: #	No performance requirements for RACH reporting
Summary of change: ೫	Introduce specification for RACH reporting
Consequences if # not approved:	Performance requirements for RACH reporting would not be present. Isolated Impact Analysis: Would not affect the implementation behaving like indicated in the CR, no performance requirements for RACH reporting if not behaving like indicated in the CR.
01	

Clauses affected:	Ж	5.	7		
	[Y	N		
Other specs affected:	ж	X	X X	Other core specifications # Test specifications O&M Specifications	34.122
Other comments:	ж			corresponding Rel-5 CR is R4-02 valent CRs in other Releases: CR	

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5.7 RACH reporting

5.7.1 Introduction

5.7.1.1 3.84 Mcps TDD option

The network may request the UE to report on RACH P-CCPCH RSCP for the serving cell and up to 6 strongest monitored set cells and SFN-SFN observed time difference between the serving cell and up to 6 different monitored set cells.

5.7.1.2 1.28 Mcps TDD option

The network may request the UE to report on RACH P-CCPCH RSCP for the serving cell and up to 6 strongest monitored set cells and SFN-SFN observed time difference between the serving cell and up to 6 different monitored set cells. Void

5.7.2 Requirements

5.7.2.1 3.84 Mcps TDD option

If all of the following conditions are true, the UE is allowed to have an additional delay of N_{RACH} *50 ms in RACH transmission compared to the normal RACH transmission delay.

- SFN-SFN observed time difference measurement results are required to be reported on RACH
- The set of cells on which the SFN-SFN observed time difference measurement is to be reported has not changed since the previous RACH measurement report
- The UE has not measured the SFN-SFN observed time differences for the cells to be reported on RACH in the CELL_FACH state according to the requirements defined in Section 8.4.2.2

If at least one of the previous conditions is false, the UE shall be able to report the requested measurement results on RACH within a normal RACH transmission delay.

 N_{RACH} is the number of cells requiring SFN decoding prior to the reporting of SFN-SFN observed time difference measurement results on RACH.

5.7.2.2 1.28 Mcps TDD option

If all of the following conditions are true, the UE is allowed to have an additional delay of N_{RACH} *50 ms in RACH transmission compared to the normal RACH transmission delay.

- SFN-SFN observed time difference measurement results are required to be reported on RACH
- The set of cells on which the SFN-SFN observed time difference measurement is to be reported has not changed since the previous RACH measurement report
- The UE has not measured the SFN-SFN observed time differences for the cells to be reported on RACH in the CELL FACH state according to the requirements defined in Section 8.4A.2.2

If at least one of the previous conditions is false, the UE shall be able to report the requested measurement results on RACH within a normal RACH transmission delay.

 $\underline{N_{RACH}}$ is the number of cells requiring SFN decoding prior to the reporting of SFN-SFN observed time difference measurement results on RACH. Void

3GPP TSR RAN WG4 Meeting #24

R4-021177

Helsinki, Finland 12 - 16 August 2002

CHANGE REQUEST									
25.123	CR 266	жrev	ж	Current vers	^{ion:} 5.1.0	ж			
For HELP on using this form, see bottom of this page or look at the pop-up text over the # symbols.									
e affects:	UICC apps#	ME X	Radio Ac	ccess Networ	k Core Ne	etwork			
<mark>€ RACH re</mark>	porting for 1.28 M	cps TDD							
€ RAN WG	4								
€ LCRTDD	-RF			<i>Date:</i>	21/08/2002				
Use <u>one</u> of F (con A (con B (ad C (fur D (ed Detailed ex	rection) rresponds to a corre- dition of feature), actional modification itorial modification) planations of the abo	ction in an earl of feature)		Use <u>one</u> of 2 () R96 R97 R98 R99 Rel-4	the following rel (GSM Phase 2) (Release 1996) (Release 1997) (Release 1998) (Release 1999) (Release 4) (Release 5)				
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Reason for change: #	No performance requirements for RACH reporting
Summary of change: ¥	Introduce specification for RACH reporting
Consequences if # not approved:	Performance requirements for RACH reporting would not be present. Isolated Impact Analysis: Would not affect the implementation behaving like indicated in the CR, no performance requirements for RACH reporting if not behaving like indicated in the CR.
Clauses affected: #	5.7

Other specs affected:	ж	Y I X X X X	Other core specifications # Test specifications # O&M Specifications •
Other comments:	ж	Eq	uivalent CRs in other Releases: CR265 cat. F to 25.123 v4.5.0

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5.7 RACH reporting

5.7.1 Introduction

5.7.1.1 3.84 Mcps TDD option

The network may request the UE to report on RACH P-CCPCH RSCP for the serving cell and up to 6 strongest monitored set cells and SFN-SFN observed time difference between the serving cell and up to 6 different monitored set cells.

5.7.1.2 1.28 Mcps TDD option

<u>The network may request the UE to report on RACH P-CCPCH RSCP for the serving cell and up to 6 strongest</u> monitored set cells and SFN-SFN observed time difference between the serving cell and up to 6 different monitored set <u>cells.</u>Void

5.7.2 Requirements

5.7.2.1 3.84 Mcps TDD option

If all of the following conditions are true, the UE is allowed to have an additional delay of N_{RACH} *50 ms in RACH transmission compared to the normal RACH transmission delay.

- SFN-SFN observed time difference measurement results are required to be reported on RACH
- The set of cells on which the SFN-SFN observed time difference measurement is to be reported has not changed since the previous RACH measurement report
- The UE has not measured the SFN-SFN observed time differences for the cells to be reported on RACH in the CELL_FACH state according to the requirements defined in Section 8.4.2.2

If at least one of the previous conditions is false, the UE shall be able to report the requested measurement results on RACH within a normal RACH transmission delay.

 N_{RACH} is the number of cells requiring SFN decoding prior to the reporting of SFN-SFN observed time difference measurement results on RACH.

5.7.2.2 1.28 Mcps TDD option

If all of the following conditions are true, the UE is allowed to have an additional delay of N_{RACH} *50 ms in RACH transmission compared to the normal RACH transmission delay.

- SFN-SFN observed time difference measurement results are required to be reported on RACH
- The set of cells on which the SFN-SFN observed time difference measurement is to be reported has not changed since the previous RACH measurement report
- The UE has not measured the SFN-SFN observed time differences for the cells to be reported on RACH in the CELL FACH state according to the requirements defined in Section 8.4A.2.2

If at least one of the previous conditions is false, the UE shall be able to report the requested measurement results on RACH within a normal RACH transmission delay.

 $\underline{N_{RACH}}$ is the number of cells requiring SFN decoding prior to the reporting of SFN-SFN observed time difference measurement results on RACH. Void

3GPP TSR RAN WG4 Meeting #24

R4-021366

Helsinki,	Finland	12 -	16	August	2002
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CHANGE REQUEST							
æ	25.123 CR 267 # rev 1 ^{# Current version:} 4.5.0	ŧ					
For HELP on U	sing this form, see bottom of this page or look at the pop-up text over the ¥ symb	nols					
Proposed change							
Title: #	Correction to SFN-SFN type 2 measurement mapping for LCR TDD option						
Source: ೫	RAN WG4						
Work item code: ₩	LCRTDD-RF Date: # 21/08/2002						
Category: ₩	F Release: % Rel-4 Use one of the following categories: Use one of the following release F (correction) 2 (GSM Phase 2) A (corresponds to a correction in an earlier release) R96 (Release 1996) B (addition of feature), R97 (Release 1997) C (functional modification of feature) R98 (Release 1998) D (editorial modification) R99 (Release 1999) Detailed explanations of the above categories can be found in 3GPP TR 21.900. Rel-4 (Release 5) Rel-6 (Release 6)	ses:					
Reason for change	In TSG-RAN1 Meeting #27, the CR R1-02-0922 was approved, it has correct the definition of SFN-SFN type 2 measurement. Base on the new definition reporting range of +/- 1/2 timeslot is sufficient. Furthermore, the reporting accuracy of 1.28Mcps TDD should be enhanced.						
Summary of chang	e: # Changing the reporting range for SFN-SFN observed time difference type 432, 432]chips, and changing the measurement reporting granularity to 1/3 chip.						
Consequences if not approved:	 The reporting range is so big that most reporting value is never to use. At the same time, the reporting accuracy is low and effecting performance of UE position measurement using SFN-SFN observed time difference type 2. <u>Isolated Impact Analysis:</u> Would not affect the implementation behaving like indicated in the CR, the implementation would be affected if not behaving like indicated in the CR. 						
Clauses affected:	¥ 9.1.1.8, 9.2.1.12						
Other specs Affected:	YNXOther core specifications#XTest specifications34.122XO&M Specifications						
Other comments:	# Equivalent CRs in other Releases: CR268r1 cat. A to 25.123 v5.1.0						

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- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

9.1.1.8 SFN-SFN observed time difference

The measurement period is equal to the measurement period for UE P-CCPCH RSCP measurement. The measurement period for CELL_DCH state and CELL_FACH state can be found in section 8.

9.1.1.8.1 Accuracy requirements

9.1.1.8.1.1 3.84 Mcps TDD option

The accuracy requirement in table 9.17 is valid under the following conditions:

P-CCPCH_RSCP1,2 ≥ -102 dBm..

 $\left| P - CCPCH RSCP1 \right|_{in \ dBm} - P - CCPCH RSCP2 \right|_{in \ dBm} \le 20 dB$

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1.2.6.

Parameter	Unit	Accuracy [chip]	Conditions lo [dBm/3.84 MHz]
SFN-SFN observed time difference	chip	+/-0,5 for both type 1 and 2	-9450

9.1.1.8.1.2 1.28 Mcps TDD option

The accuracy requirements in table 9.3B are valid under the following conditions:

P-CCPCH RSCP1,2 \geq -102 dBm.

$$\left| P - CCPCH RSCP1 \right|_{in \ dBm} - P - CCPCH RSCP2 \right|_{in \ dBm} \le 20 dB$$

P-CCPCH Ec/Io \geq -8 dB

 $DwPCH_Ec/Io \ge -5 dB$

Table 9.17A: SFN-SFN observed time difference accuracy

Parameter	Unit	Accuracy	Conditions lo [dBm/ 1.28 MHz]
SFN-SFN observed time difference	Chip	+/-0,5 for type 1 but +/- 0.125 for type 2	-9450

9.1.1.8.2 Range/mapping

9.1.1.8.2.1 3.84 Mcps TDD option

The reporting range for SFN-SFN observed time difference type 1 is from 0 ... 9830400 chip.

In table 9.18 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Reported value	Measured quantity value	Unit
T1_SFN-SFN_TIME _0000000	$0 \le$ SFN-SFN observed time difference type 1 < 1	chip
T1_SFN-SFN_TIME _0000001	$1 \leq$ SFN-SFN observed time difference type 1 < 2	chip
T1_SFN-SFN_TIME _0000002	$2 \le$ SFN-SFN observed time difference type 1 < 3	chip
T1_SFN-SFN_TIME _9830397	9830397 ≤ SFN-SFN observed time difference type 1 < 9830398	chip
T1_SFN-SFN_TIME _9830398	$9830398 \le$ SFN-SFN observed time difference type 1 < 980399	chip
T1_SFN-SFN_TIME _9830399	9830399 ≤ SFN-SFN observed time difference type 1 < 9830400	chip

Table 9.18

The reporting range for SFN-SFN observed time difference type 2 is from -1280 ... +1280 chip.

In table 9.19 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Reported value	Measured quantity value	Unit
T2_SFN-SFN_TIME _00000	SFN-SFN observed time difference type 2 < -	chip
	1280,0000	
T2_SFN-SFN_TIME _00001	-1280,0000 ≤ SFN-SFN observed time	chip
	difference type 2 < -1279,9375	
T2_SFN-SFN_TIME _00002	-1279,9375 ≤ SFN-SFN observed time	chip
	difference type 2 < -1279,8750	
T2_SFN-SFN_TIME _40959	1279,8750 ≤ SFN-SFN observed time	chip
	difference type 2 < 1279,9375	
T2_SFN-SFN_TIME _40960	1279,9375 ≤ SFN-SFN observed time	chip
	difference type 2 < 1280,0000	
T2_SFN-SFN_TIME _40961	1280,0000 ≤ SFN-SFN observed time	chip
	difference type 2	

Table 9.19

9.1.1.8.2.2 1.28 Mcps TDD option

The reporting range for SFN-SFN observed time difference type 1 is from 0 ... 3276800 chip.

In table 9.18A mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Reported value	Measured quantity value	Unit
T1_SFN-SFN_TIME _0000000	$0 \leq$ SFN-SFN observed time difference type 1 < 1	chip
T1_SFN-SFN_TIME _0000001	$1 \leq$ SFN-SFN observed time difference type $1 < 2$	chip
T1_SFN-SFN_TIME _0000002	$2 \leq$ SFN-SFN observed time difference type 1 < 3	chip
T1_SFN-SFN_TIME _3276797	$\begin{array}{l} 3276797 \leq SFN\text{-}SFN \text{ observed time difference type 1} \\ < 3276798 \end{array}$	chip
T1_SFN-SFN_TIME _3276798	$3276798 \leq$ SFN-SFN observed time difference type 1 < 3276799	chip
T1_SFN-SFN_TIME _3276799	$3276799 \le$ SFN-SFN observed time difference type 1 < 3276800	chip

Table 9.18A

The reporting range for SFN-SFN observed time difference type 2 is from $-\underline{4326400} \dots +\underline{4326400}$ chip.

In table 9.19A mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.19A

Reported value	Measured quantity value	Unit
T2_SFN-SFN_TIME _00000	SFN-SFN observed time difference type 2 < -432,000006400,00	chip
T2_SFN-SFN_TIME _00001	$-432,000006400,00 \le$ SFN-SFN observed time difference type 2 < - 431,968756399,75	chip
T2_SFN-SFN_TIME _00002	- <u>431,96875</u> 6399,75 ≤ SFN-SFN observed time difference type 2 < - <u>431,9375</u> 6399,50	chip
T2_SFN-SFN_TIME	<u>431,9375</u> 6399,50 ≤ SFN-SFN observed time difference type 2 <	chip
_ <u>27647</u> 51199	<u>431,96875</u> 6399,75	
T2_SFN-SFN_TIME	<u>431,968756399,75</u> ≤ SFN-SFN observed time difference type 2 <	chip
_ <u>27648</u> 51200	432,000006400,00	
T2_SFN-SFN_TIME	<u>432,00000</u> 6400,00 ≤ SFN-SFN observed time difference type 2	chip
_ <u>27649</u> 51201		

There are 3 kind of special time slot (DwPTS, UpPTS and GP) in 1.28 Mcps TDD frame structure. When calculation the SFN-SFN observed time difference in type 2, it needs to consider the position and affection of these 3 special time slots.

Let us suppose:

T_{RxTSi}: time of start of timeslot#0 received of the serving TDD cell i.

 T_{RxTSk} : time of start of timeslot#0 received from the target UTRA cell k that is closest in time to the start of the timeslot of the serving TDD cell i.

SFN SFN observed time difference = T_{RxTSk} - T_{RxTSi} , in chips, which means to calculate the time difference of the start position of the current frame in cell i to the closest starting position of one frame in cell k.

Editor Note: Here in type 2 we only consider to measure the difference of two cells of 1.28 Mcps TDD. The measurement method is like that in TS25.215. In type 2 measurement of TS25.215, it measures the time difference of the start position of the P CPICH of two cells. That is just something like in 1.28 Mcps TDD.

< Next changed section >

9.2.1.12 SFN-SFN observed time difference

The measurement period shall be 100 ms.

- 9.2.1.12.1 Accuracy requirements
- 9.2.1.12.1.1 3.84 Mcps TDD option

Table 9.44I: SFN-SFN observed time difference accuracy

Parameter	Unit	Accuracy [chip]	Conditions	
Farailleter	Unit	Accuracy [chip]	Range [chips]	
SFN-SFN observed time difference	chip	+/-0,5	-1280 +1280	

9.2.1.12.1.2

1.28 Mcps TDD option

Table 9.44J: SFN-SFN observed time difference accuracy

Parameter	l Init		Conditions
	Unit	Accuracy [chip]	Range [chips]
SFN-SFN observed time difference	Chip	+/- 0.125	- <u>432</u> 6400 + <u>432</u> 6400

9.2.1.12.2 Range/mapping

9.2.1.12.2.1 3.84 Mcps TDD option

The reporting range for SFN-SFN observed time difference is from -1280 ... +1280 chip.

In table 9.44K mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Reported value	Measured quantity value	Unit
SFN-SFN_TIME _00000	SFN-SFN observed time difference < -	chip
	1280,0000	
SFN-SFN_TIME _00001	-1280,0000 ≤ SFN-SFN observed time	chip
	difference < -1279,9375	
SFN-SFN_TIME _00002	-1279,9375 ≤ SFN-SFN observed time	chip
	difference < -1279,8750	
SFN-SFN_TIME _40959	1279,8750 ≤ SFN-SFN observed time	chip
	difference < 1279,9375	
SFN-SFN_TIME _40960	1279,9375 ≤ SFN-SFN observed time	chip
	difference < 1280,0000	
SFN-SFN_TIME _40961	1280,0000 ≤ SFN-SFN observed time	chip
	difference	

Table 9.44K

9.2.1.12.2.2 1.28 Mcps TDD option

The reporting range for SFN-SFN observed time difference is from $-\underline{4326400} \dots +\underline{4326400}$ chip.

In table 9.44L mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.44L

Reported value	Measured quantity value	Unit
SFN-SFN_TIME _00000	SFN-SFN observed time difference < - <u>432,00000</u> 6400,00	chip
SFN-SFN_TIME _00001	- <u>432,00000</u> 6400,00 ≤ SFN-SFN observed time difference < - <u>431,96875</u> 6399,75	chip
SFN-SFN_TIME _00002	$-\frac{431,968756399,75}{431,9375} \le SFN-SFN observed time difference < - 431,93756399,50$	chip
SFN-SFN_TIME <u>27647</u> 51199	<u>431,9375</u> 6399,50 ≤ SFN-SFN observed time difference < 431,968756399,75	chip
SFN-SFN_TIME _ <u>27648</u> 51200	$\frac{431,968756399,75}{432,00006400,00} \le SFN-SFN observed time difference < \frac{432,000006400,00}{432,000006400,00}$	chip
SFN-SFN_TIME _ <u>27649</u> 51201	<u>432,00000</u> 6400,00 ≤ SFN-SFN observed time difference	chip

3GPP TSR RAN WG4 Meeting #24

R4-021367

Helsinki, Finland 12 - 16 August 2002

æ	25.123 CR 268 # rev 1 ^{# Current version: 5.1.0 [#]}	8		
For <u>HELP</u> on u	sing this form, see bottom of this page or look at the pop-up text over the $lpha$ symbol	ols.		
Proposed change	Iffects: UICC apps# ME X Radio Access Network Core Netwo	ork		
Title: भ	Correction to SFN-SFN type 2 measurement mapping for LCR TDD option			
Source: #	RAN WG4			
Work item code: भ	LCRTDD-RF Date: # 21/08/2002			
Category: Ж	A Release: % Rel-5 Use one of the following categories: Use one of the following release 2 (GSM Phase 2) A (corresponds to a correction in an earlier release) R96 (Release 1996) B (addition of feature), R97 (Release 1997) C (functional modification of feature) R98 (Release 1998) D (editorial modification) R99 (Release 1999) Detailed explanations of the above categories can Rel-4 (Release 4) be found in 3GPP TR 21.900. Rel-5 (Release 5)	es:		
Reason for change	In TSG-RAN1 Meeting #27, the CR R1-02-0922 was approved, it has corre the definition of SFN-SFN type 2 measurement. Base on the new definition reporting range of +/- 1/2 timeslot is sufficient. Furthermore, the reporting accuracy of 1.28Mcps TDD should be enhanced			
Summary of chang	e: # Changing the reporting range for SFN-SFN observed time difference type 2 432, 432]chips, and changing the measurement reporting granularity to 1/3 chip.			
Consequences if not approved:	* The reporting range is so big that most reporting value is never to use. At the same time, the reporting accuracy is low and effecting performance of UE position measurement using SFN-SFN observed time difference type 2.	ne		
	Isolated Impact Analysis: Would not affect the implementation behaving like indicated in the CR, the implementation would be affected if not behaving like indicated in the CR.			
Clauses affected:	ж <mark>9.1.1.8, 9.2.1.12</mark>			
Other specs Affected:	Y N X Other core specifications % X Test specifications % X O&M Specifications %			
Other comments:	# Equivalent CRs in other Releases: CR267r1 cat. F to 25.123 v4.5.0			

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at <u>http://www.3gpp.org/specs/CR.htm</u>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

9.1.1.8 SFN-SFN observed time difference

The measurement period is equal to the measurement period for UE P-CCPCH RSCP measurement. The measurement period for CELL_DCH state and CELL_FACH state can be found in section 8.

9.1.1.8.1 Accuracy requirements

9.1.1.8.1.1 3.84 Mcps TDD option

The accuracy requirement in table 9.17 is valid under the following conditions:

P-CCPCH_RSCP1,2 ≥ -102 dBm..

 $\left| P - CCPCH RSCP1 \right|_{in \ dBm} - P - CCPCH RSCP2 \right|_{in \ dBm} \le 20 dB$

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1.2.6.

Parameter	Unit	Accuracy [chip]	Conditions lo [dBm/3.84 MHz]
SFN-SFN observed time difference	chip	+/-0,5 for both type 1 and 2	-9450

9.1.1.8.1.2 1.28 Mcps TDD option

The accuracy requirements in table 9.3B are valid under the following conditions:

P-CCPCH RSCP1,2 \geq -102 dBm.

$$\left| P - CCPCH RSCP1 \right|_{in \ dBm} - P - CCPCH RSCP2 \right|_{in \ dBm} \le 20 dB$$

P-CCPCH Ec/Io \geq -8 dB

 $DwPCH_Ec/Io \ge -5 dB$

Table 9.17A: SFN-SFN observed time difference accuracy

Parameter	Unit	Accuracy	Conditions lo [dBm/ 1.28 MHz]
SFN-SFN observed time difference	Chip	+/-0,5 for type 1 but +/- 0.125 for type 2	-9450

9.1.1.8.2 Range/mapping

9.1.1.8.2.1 3.84 Mcps TDD option

The reporting range for SFN-SFN observed time difference type 1 is from 0 ... 9830400 chip.

In table 9.18 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Reported value	Measured quantity value	Unit
T1_SFN-SFN_TIME _0000000	$0 \leq$ SFN-SFN observed time difference type 1 < 1	chip
T1_SFN-SFN_TIME _0000001	$1 \leq$ SFN-SFN observed time difference type 1 < 2	chip
T1_SFN-SFN_TIME _0000002	$2 \le$ SFN-SFN observed time difference type 1 < 3	chip
T1_SFN-SFN_TIME _9830397	9830397 ≤ SFN-SFN observed time difference type 1 < 9830398	chip
T1_SFN-SFN_TIME _9830398	9830398 ≤ SFN-SFN observed time difference type 1 < 980399	chip
T1_SFN-SFN_TIME _9830399	9830399 ≤ SFN-SFN observed time difference type 1 < 9830400	chip

Table 9.18

The reporting range for SFN-SFN observed time difference type 2 is from -1280 ... +1280 chip.

In table 9.19 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Reported value	Measured quantity value	Unit
T2_SFN-SFN_TIME _00000	SFN-SFN observed time difference type 2 < -	chip
	1280,0000	
T2_SFN-SFN_TIME _00001	-1280,0000 ≤ SFN-SFN observed time	chip
	difference type 2 < -1279,9375	
T2_SFN-SFN_TIME _00002	-1279,9375 ≤ SFN-SFN observed time	chip
	difference type 2 < -1279,8750	
T2_SFN-SFN_TIME _40959	1279,8750 ≤ SFN-SFN observed time	chip
	difference type 2 < 1279,9375	
T2_SFN-SFN_TIME _40960	1279,9375 ≤ SFN-SFN observed time	chip
	difference type 2 < 1280,0000	
T2_SFN-SFN_TIME _40961	1280,0000 ≤ SFN-SFN observed time	chip
	difference type 2	-

Table 9.19

9.1.1.8.2.2 1.28 Mcps TDD option

The reporting range for SFN-SFN observed time difference type 1 is from 0 ... 3276800 chip.

In table 9.18A mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.18A

Reported value	Measured quantity value	Unit
T1_SFN-SFN_TIME _0000000	$0 \leq$ SFN-SFN observed time difference type 1 < 1	chip
T1_SFN-SFN_TIME _0000001	$1 \leq$ SFN-SFN observed time difference type 1 < 2	chip
T1_SFN-SFN_TIME _0000002	$2 \leq$ SFN-SFN observed time difference type 1 < 3	chip
T1_SFN-SFN_TIME _3276797	$3276797 \leq SFN-SFN$ observed time difference type 1 < 3276798	chip
T1_SFN-SFN_TIME _3276798	3276798 ≤ SFN-SFN observed time difference type 1 < 3276799	chip
T1_SFN-SFN_TIME _3276799	$3276799 \le$ SFN-SFN observed time difference type 1 < 3276800	chip

The reporting range for SFN-SFN observed time difference type 2 is from $-\underline{4326400} \dots +\underline{4326400}$ chip.

In table 9.19A mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.19A

Reported value	Measured quantity value	Unit
T2_SFN-SFN_TIME _00000	SFN-SFN observed time difference type 2 < -432,000006400,00	chip
T2_SFN-SFN_TIME _00001	$-432,000006400,00 \le$ SFN-SFN observed time difference type 2 < - 431,968756399,75	chip
T2_SFN-SFN_TIME _00002	- <u>431,96875</u> 6399,75 ≤ SFN-SFN observed time difference type 2 < - <u>431,9375</u> 6399,50	chip
T2_SFN-SFN_TIME	<u>431,9375</u> 6399,50 ≤ SFN-SFN observed time difference type 2 <	chip
_ <u>27647</u> 51199	<u>431,96875</u> 6399,75	
T2_SFN-SFN_TIME	<u>431,968756399,75</u> ≤ SFN-SFN observed time difference type 2 <	chip
_ <u>27648</u> 51200	432,000006400,00	
T2_SFN-SFN_TIME	$432,00006400,00 \le$ SFN-SFN observed time difference type 2	chip
_ <u>27649</u> 51201		

There are 3 kind of special time slot (DwPTS, UpPTS and GP) in 1.28 Mcps TDD frame structure. When calculation the SFN-SFN observed time difference in type 2, it needs to consider the position and affection of these 3 special time slots.

Let us suppose:

T_{RxTSi}: time of start of timeslot#0 received of the serving TDD cell i.

 T_{RxTSk} : time of start of timeslot#0 received from the target UTRA cell k that is closest in time to the start of the timeslot of the serving TDD cell i.

SFN SFN observed time difference = T_{RxTSk} - T_{RxTSi} , in chips, which means to calculate the time difference of the start position of the current frame in cell i to the closest starting position of one frame in cell k.

Editor Note: Here in type 2 we only consider to measure the difference of two cells of 1.28 Mcps TDD. The measurement method is like that in TS25.215. In type 2 measurement of TS25.215, it measures the time difference of the start position of the P CPICH of two cells. That is just something like in 1.28 Mcps TDD.

< Next changed section >

9.2.1.12 SFN-SFN observed time difference

The measurement period shall be 100 ms.

- 9.2.1.12.1 Accuracy requirements
- 9.2.1.12.1.1 3.84 Mcps TDD option

Table 9.44I: SFN-SFN observed time difference accuracy

Parameter	er Unit Accuracy [chip]		Conditions	
Parameter	Unit	Accuracy [chip]	Range [chips]	
SFN-SFN observed time difference	chip	+/-0,5	-1280 +1280	

9.2.1.12.1.2

1.28 Mcps TDD option

Table 9.44J: SFN-SFN observed time difference accuracy

Desembles	Unit Accuracy [chip]	Conditions	
Parameter		Accuracy [cnip]	Range [chips]
SFN-SFN observed time difference	Chip	+/- 0.125	- <u>432</u> 6400 + <u>432</u> 6400

9.2.1.12.2 Range/mapping

9.2.1.12.2.1 3.84 Mcps TDD option

The reporting range for SFN-SFN observed time difference is from -1280 ... +1280 chip.

In table 9.44K mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Reported value	Measured quantity value	Unit
SFN-SFN_TIME _00000	SFN-SFN observed time difference < -	chip
	1280,0000	
SFN-SFN_TIME _00001	-1280,0000 ≤ SFN-SFN observed time	chip
	difference < -1279,9375	
SFN-SFN_TIME _00002	-1279,9375 ≤ SFN-SFN observed time	chip
	difference < -1279,8750	
SFN-SFN_TIME _40959	1279,8750 ≤ SFN-SFN observed time	chip
	difference < 1279,9375	
SFN-SFN_TIME _40960	1279,9375 ≤ SFN-SFN observed time	chip
	difference < 1280,0000	
SFN-SFN_TIME _40961	1280,0000 ≤ SFN-SFN observed time	chip
	difference	

Table 9.44K

9.2.1.12.2.2 1.28 Mcps TDD option

The reporting range for SFN-SFN observed time difference is from $-\underline{4326400} \dots +\underline{4326400}$ chip.

In table 9.44L mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.44L

Reported value	Measured quantity value	Unit
SFN-SFN_TIME _00000	SFN-SFN observed time difference < - <u>432,00000</u> 6400,00	chip
SFN-SFN_TIME _00001	- <u>432,00000</u> 6400,00 ≤ SFN-SFN observed time difference < - <u>431,96875</u> 6399,75	chip
SFN-SFN_TIME _00002	$-\frac{431,968756399,75}{431,9375} \le SFN-SFN observed time difference < - 431,93756399,50$	chip
SFN-SFN_TIME <u>27647</u> 51199	<u>431,9375</u> 6399,50 ≤ SFN-SFN observed time difference < 431,968756399,75	chip
SFN-SFN_TIME _ <u>27648</u> 51200	$\frac{431,968756399,75}{432,00006400,00} \le SFN-SFN observed time difference < \frac{432,000006400,00}{432,000006400,00}$	chip
SFN-SFN_TIME _ <u>27649</u> 51201	<u>432,00000</u> 6400,00 ≤ SFN-SFN observed time difference	chip