TSG RAN Meeting #15 **RP-020028**

Cheju, Korea, 5 - 8 March 2002

Title: **CRs (Rel-4) to TS 25.123**

Source: **TSG RAN WG4**

Agenda Item: **7.4.4**

RAN4 Tdoc	Spec	CR	Rev	Phase	Title	Cat	Curr Ver	New Ver
R4-020447	25.123	170	1	Rel-4	Chapter 8 measurements Cell-DCH	F	4.3.0	4.4.0
R4-020139	25.123	171		Rel-4	Chapter 8 measurements Cell-FACH	F	4.3.0	4.4.0
R4-020140	25.123	172		Rel-4	Section 9 corrections	F	4.3.0	4.4.0
R4-020152	25.123	173		Rel-4	Correction of NodeB Synchronisation mapping type 1 for 3.84Mcps TDD	F	4.3.0	4.4.0
R4-020153	25.123	174		Rel-4	Correction of 1.28Mcps TDD GSM cell re-selection test case	F	4.3.0	4.4.0
R4-020195	25.123	176		Rel-4	Section 4 and 5 wording clarification for 1.28 Mcps TDD option	F	4.3.0	4.4.0
R4-020196	25.123	177		Rel-4	General corrections in section A4-A5 for 1.28 Mcps TDD option	F	4.3.0	4.4.0
R4-020197	25.123	178		Rel-4	Correction of RRC connection re-establishment section for 1.28 Mcps TDD option	F	4.3.0	4.4.0

3GPP TSG RAN WG4 Meeting #21 **R4-020447**

Sophia Antipolis, France 28th January - 1st February 2002

CR-Form-v6.1

CHANGE REQUEST

⌘ **25.123** **CR** **170** ⌘ **rev** **1** ⌘ Current version: **4.3.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Chapter 8 measurements Cell-DCH
Source:	⌘	RAN WG4
Work item code:	⌘	LCRTDD-RF
Date:	⌘	1/2/2002
Category:	⌘	**F**
Release:	⌘	Rel-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change: ⌘ Most of the figures are still in square brackets. The requirements for the UE shall be capable of monitoring are not consistant in the requirements. Currently there are performance requirements for periodic and event triggered reporting of FDD and TDD cells, but requirements for periodic and event triggered reporting of GSM cells are missing.

Summary of change: ⌘

- All square brackets in sections 8.1A.2.1, 8.1A.2.2, 8.1A.2.3, 8.1A.2.3.4, 8.1A.2.5, 8.1A.2.6, 8.2A, 8.3A are removed.
- A consistant text desiption for the UE shall be capable of monitoring is provided for the common part.
- Requirements for TDD synchronisation to new cells are shifted from section 8.1A.2.6 (removed) to the sections 8.1A.2.1 (definitions), 8.1A.2.2.1 and 8.1A.2.3.1 (inserted as side condition) to have consitence to other specifications. Square brackets for this side conditions are also removed.
- For TDD, FDD and GSM measurements requirements on reporting of measurements are corrected and clarifications to L3 filtering behaviour are added to improve consistence with RRC protocol specifications.
- Requirements for identification of detectable cells not belonging to the monitored set are added.
- Requirments for interfrequency measurements are corrected by introduction of value $X_{\text{basic measurement TDDinter}} = 6$ and section 8.1A.2.3.2 is renamed to 'UE P-CCPCH measurement capability'.
- Requirments for interfrequency measurements are corrected by introduction of value $X_{\text{basic measurement FDDinter}} = 6$ and section 8.1A.2.4.2 is renamed to 'UE CPICH measurement capability'.
- For GSM measurements requirements are split for UE requiring idle intervals to perform measurements and UE that do not require idle intervals to perform the GSM measurements and this is further detailed in the sub-sections for GSM RSSI measurement and BSIC verification.
- Requirements for periodic and event triggered reporting of GSM cells are

		added.
Consequences if not approved:	⌘	Non-uniform behaviour of the UE. There will be no requirements for the reporting of measurements on GSM cells. Requirements for the reporting of measurements on TDD and FDD cells will be incorrect. Isolated Impact Analysis: Correction of a requirement where the specification was ambiguous or not sufficiently explicit. Would not affect implementations behaving like indicated in the CR, would affect implementations that do not behave like indicated in the CR.

Clauses affected:	⌘	8.1A.2.1, 8.1A.2.2, 8.1A.2.3, 8.1A.2.3.4, 8.1A.2.5, 8.1A.2.5.2.3(new), 8.1A.2.5.2.4(new), 8.1A.2.6 (removed), 8.2A, 8.3A		
Other specs affected:	⌘	[ ] Other core specifications [X] Test specifications [ ] O&M Specifications	⌘	34.122
Other comments:	⌘			

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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.

8.1A Measurements in CELL_DCH State (1.28 Mcps option)

8.1A.1 Introduction

This section contains requirements on the UE regarding measurement reporting in CELL_DCH state. The requirements are split in TDD intra frequency, TDD inter frequency, FDD and GSM measurements. These measurements may be used by the UTRAN, e.g. for handover decisions. The measurements are defined in TS 25.225, the measurement model is defined in TS 25.302 and measurement accuracies are specified in section 9. Control of measurement reporting is specified in TS 25.331 and parallel measurements are specified in section 8.2A. For the description of the idle intervals see TS 25.225, Annex A.

8.1A.2 Requirements

8.1A.2.1 UE Measurement Capability

The UE shall be able to monitor up to

- 32 intra frequency TDD cells, and
- 32 inter frequency cells, including
  - TDD ~~mode~~ cells distributed on up to [x] additional TDD carriers and
  - Depending on UE capability, FDD ~~mode~~ cells, distributed on up to 3 FDD carriers~~.~~ and
- Depending on UE capability, ~~the UE shall also in addition be able to support and process at least~~ 32 GSM cells distributed on up to 32 GSM carriers.

Performance requirements for different types of measurements and different number of cells are defined in the following sections.

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

The received P-CCPCH E_c/I_o is defined as

$$\left(\frac{P-CCPCH\_E_c}{I_o}\right)_{in\ dB} = \left(\frac{P-CCPCH\_E_c}{I_{or}}\right)_{in\ dB} - \left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB}$$

The received DwPTS E_c/I_o is defined as

$$\left(\frac{DwPCH\_E_c}{I_o}\right)_{in\ dB} = \left(\frac{DwPCH\_E_c}{I_{or}}\right)_{in\ dB} - \left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB}$$

8.1A.2.2 TDD intra frequency measurements

During the CELL_DCH state the UE shall continuously measure ~~detected~~ identified intra frequency cells and search for new intra frequency cells in the monitoring set. In case the network requests the UE to report ~~unlisted~~ detected set cells, the UE shall also search for intra frequency cells outside the monitored and active set. Cells, which are neither included in the active set nor in the monitored set, and are identified by the UE belong to the detected set according to TS 25.331. Intra frequency measurements can be performed (simultaneously to data reception from the active cell) in all time slots not used for inter frequency measurements.

8.1A.2.2.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

~~$$T_{identify\ \ intra} = Max\left\{[800], T_{basic\ identify\ TDD,\ intra} \cdot \frac{T_{Measurement\ Period,\ Intra}}{T_{Intra}}\right\} ms$$~~

$$T_{identify\ \ intra} = Max\left\{800, T_{basic\ identify\ TDD,\ intra} \cdot \frac{T_{Measurement\ Period,\ Intra}}{T_{Intra}}\right\} ms$$

A cell shall be considered detectable when P-CCPCH Ec/Io > -8 dB and DwPCH Ec/Io > -5 dB. When L3 filtering is used an additional delay can be expected.

The UE shall be able to identify a new detectable cell not belonging to the monitored set within

$$T_{identify\ \ detected\ set} = 30s$$

when P-CCPCH Ec/Io > -8 dB, DwPCH Ec/Io > -5 dB. When L3 filtering is used an additional delay can be expected.

8.1A.2.2.2 UE P-CCPCH measurement capability

In the CELL_DCH state the measurement period for intra frequency measurements is ~~[~~200~~]~~ ms. When no inter frequency measurement is scheduled, the UE shall be capable of performing P-CCPCH measurements for ~~[~~6~~]~~ ~~detected~~ identified intra-frequency cells of the monitored set and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of ~~[~~200~~]~~ ms. When inter-frequency measurements are required by the network, the UE shall be capable of performing P-CCPCH measurements for at least $Y_{measurement\ intra}$ cells , where $Y_{measurement\ intra}$ is defined in the following equation. ~~The detectable cells, that were not measured during that measurement period, shall be measured in the following measurement periods.~~ The measurement accuracy for all measured cells shall be as specified in the section 9. If the UE has identified more than $Y_{measurement\ intra}$ cells, the UE shall perform measurements of all identified cells but the reporting rate of P-CCPCH measurements of cells from UE physical layer to higher layers may be decreased.

$$Y_{measurement\ \ intra} = Floor\left\{X_{basic\ measurement\ TDD} \cdot \frac{T_{Intra}}{T_{Measurement\ \ Period,\ Intra}}\right\}$$

whereby function Floor(x) takes the integer part of x.

$X_{basic\ measurement\ TDD}$ = ~~[~~6~~]~~ (cells)

$T_{Measurement\_Period,\ Intra}$ = ~~[~~200~~]~~ ms. The measurement period for Intra frequency P-CCPCH measurements.

T_{Intra} : This is the minimum time that is available for intra frequency measurements, during the measurement period with an arbitrarily chosen timing. It is assumed for the requirement that the slot allocation allows measurement windows to be of minimum duration necessary to perform the measurements.

$T_{basic\_identify\_TDD,\ intra}$ = ~~[~~800~~]~~ ms. This is the time period used in the intra frequency equation where the maximum allowed time for the UE to identify a new TDD cell is defined. (side conditions are defined in subclause 8.1A.2.6).

The UE shall furthermore be capable of performing P-CCPCH measurements for at least 1 detected intra-frequency cell, in the detected set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 10 s. The measurement accuracy for all measured cells shall be as specified in the section 9.

8.1A.2.2.3 Periodic Reporting

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

8.1A.2.2.4 Event-triggered Periodic Reporting

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

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1A.2.2.5 Event Triggered Reporting.

8.1A.2.2.5 Event Triggered Reporting

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

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

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

The event triggered measurement reporting delay, on cells belonging to monitored set, measured without L3 filtering shall be less than $T_{identify\ intra}$ defined in Section 8.1A.2.2.1. ~~When L3 filtering is used an additional delay can be expected..~~

~~If a cell has been detectable at least for the time period $T_{identify\ intra}$ and then enters the reporting range, the event triggered measurement reporting delay shall be less than $T_{Measurement\_Period\ Intra}$ when the L3 filter has not been used.~~

If a cell belonging to monitored set has been detectable at least for the time period $T_{identify\_intra}$ and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than $T_{Measurement\_Period\ Intra}$ when the L3 filter has not been used and the UE P-CCPCH measurement capabilities of Section 8.1A.2.2.2 are valid.

The event triggered measurement reporting delay on cells not belonging to monitored set, measured without L3 filtering, shall be less than the above defined $T_{identify\ detected\ set}$, defined in Section 8.1A.2.2.1.

8.1A.2.3 TDD inter frequency measurements

When signalled by the network during CELL_DCH state, the UE shall continuously measure ~~detected~~ identified inter frequency cells and search for new inter frequency cells indicated in the measurement control information.

8.1A.2.3.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

~~$$T_{identify\ inter} = Max\left\{[5000], T_{basic\ identify\ TDD,inter} \cdot \frac{T_{Measurement\ Period,\ Inter}}{T_{Inter}} \cdot N_{Freq}\right\} ms$$~~

$$T_{identify\ inter} = Max\left\{5000, T_{basic\ identify\ TDD,inter} \cdot \frac{T_{Measurement\ Period,\ Inter}}{T_{Inter}} \cdot N_{Freq}\right\} ms$$

A cell shall be considered detectable when P-CCPCH Ec/Io > -8 dB and DwPCH_Ec/Io > -5 dB. When L3 filtering is used an additional delay can be expected.

8.1A.2.3.2 UE P-CCPCH measurement capability~~Measurement period~~

When TDD inter frequency measurements are scheduled, the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in section 9 with measurement period given by

~~$$T_{measurement\ inter} = Max\left\{[480], T_{basic\ measurement\ TDD\ inter} \cdot \frac{T_{Measurement\ Period,\ Inter}}{T_{Inter}} \cdot N_{Freq}\right\} ms$$~~

$$T_{measurement\ inter} = Max\left\{T_{Measurement\ Period,\ Inter}, T_{basic\ measurement\ TDD\ inter} \cdot \frac{T_{Measurement\ Period,\ Inter}}{T_{Inter}} \cdot N_{Freq}\right\} ms$$

In case of a dual receiver UE, the measurement period for inter frequency measurements is ~~[~~480~~]~~ ms.

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

$X_{basic\ measurement\ TDDinter}$ = 6

$T_{Measurement\_Period\ Inter}$ = [480] ms. The period used for calculating the measurement period $T_{measurement\_inter}$ for inter frequency P-CCPCH measurements.

$T_{Inter:}$ This is the minimum time available for inter frequency measurements during the period $T_{Measurement\_Period\ inter}$ with an arbitrarily chosen timing. The minimum time depends on the channel allocation and is calculated by assuming [2*0.1] ms for implementation margin (for the description of the idle intervals see Annex A of 25.225). It is assumed for the requirement that the slot allocation allows measurement windows in the idle periods to be of minimum duration necessary to perform the measurements.

$T_{basic\_identify\_TDD,inter}$ = [800]ms. This is the time period used in the inter frequency equation where the maximum allowed time for the UE to identify a new TDD cell is defined. (side conditions are defined in subclause 8.1A.2.6).

$T_{basic\_measurement\_TDD\ inter}$ = [50] ms. This is the time period used in the equation for defining the measurement period for inter frequency P-CCPCH measurements.

N_{Freq} Number of TDD frequencies indicated in the inter frequency measurement control information.

8.1A.2.3.3 Periodic Reporting

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

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1A.2.3.4 Event Triggered Reporting.

8.1A.2.3.4 Event Triggered Reporting

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

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

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

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify\ inter}$ defined in Section 8.1A.2.3.1. When L3 filtering is used an additional delay can be expected. If a cell has been detectable at least for the time period $T_{identify\_inter}$ and then enters the reporting range, the event triggered measurement reporting delay shall be less than $T_{Measurement\_Period\ Inter}$ when the L3 filter has not been used.

8.1A.2.4 FDD measurements

The requirements in this section apply only to UE supporting FDD mode.

In the CELL_DCH state when FDD inter frequency measurements are scheduled the UE shall continuously measure detected identified inter frequency FDD cells and search for new inter frequency cells indicated in the measurement control information.

The UE shall be capable of measuring the requested measurement quantity of at least 32 cells on a maximum of 3 frequencies.

8.1A.2.4.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

~~$$T_{identify\ FDD\ inter} = Max\left\{[5000], T_{basic\ identify\ FDD\ inter} \cdot \frac{T_{Measurement\ Period\ FDD\ inter}}{T_{FDD\ inter}} \cdot N_{Freq}\right\} ms$$~~

$$T_{identify\ FDD\ inter} = Max\left\{5000, T_{basic\ identify\ FDD\ inter} \cdot \frac{T_{Measurement\ Period\ FDD\ inter}}{T_{FDD\ inter}} \cdot N_{Freq}\right\} ms$$

A cell shall be considered detectable when CPICH Ec/Io ≥ -20 dB, SCH_Ec/Io ≥ -17 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected.

8.1A.2.4.2 UE CPICH measurement capability~~Measurement period~~

When FDD inter frequency measurements are scheduled, the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9 with measurement period given by

$$T_{measurement\ FDD\ inter} = Max\left\{T_{Measurement\ Period\ FDD\ inter}, T_{basic\ measurement\ FDD\ inter} \cdot \frac{T_{Measurement\ Period\ FDD\ inter}}{T_{FDD\ inter}} \cdot N_{Freq}\right\} ms$$

If the UE does not need to perform FDD measurements in the idle intervals only, the measurement period for inter frequency measurements is 480 ms.

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

$X_{basic\ measurement\ FDDinter} = 6$

$T_{Measurement\_Period\ FDD\ inter}$ = ~~[~~480~~]~~ ms. The period used for calculating the measurement period $T_{measurement\_FDD\ inter}$ for inter frequency CPICH measurements.

$T_{FDD\ inter:}$ This is the minimum time that is available for inter frequency measurements, during the period $T_{Measurement\_Period\ FDD\ inter}$ with an arbitrarily chosen timing. The minimum time depends on the channel allocation and is calculated by assuming [2*0.1] ms for implementation margin (for the description of the idle intervals see Annex A of 25.225). It is assumed for the requirement that the slot allocation allows measurement windows in the idle periods to be of minimum duration necessary to perform the measurements.

$T_{basic\_identify\_FDD,inter}$ = ~~[~~800~~]~~ ms. This is the time period used in the inter frequency equation where the maximum allowed time for the UE to identify a new FDD cell is defined.

$T_{basic\_measurement\_FDD\ inter}$ = ~~[~~50~~]~~ ms. This is the time period used in the equation for defining the measurement period for inter frequency CPICH measurements.

N_{Freq}: Number of FDD frequencies indicated in the inter frequency measurement control information.

8.1A.2.4.3 Periodic Reporting

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

8.1A.2.4.4 Event Triggered Reporting

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

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

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

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify\ FDD\ inter}$ defined in Section 8.1A.2.4.1. When L3 filtering is used an additional delay can be expected.

If a cell has been detectable at least for the time period $T_{identify\_FDD\ inter}$ and then enters the reporting range, the event triggered measurement reporting delay shall be less than $T_{Measurement\_Period\ FDD\ Inter}$ provided the timing to that cell has not changed more than +/-32 chips while ~~transmission gap has~~ idle intervals have not been available and the L3 filter has not been used.

8.1A.2.5 GSM measurements

The requirements in this section applies only to UE supporting GSM.

Measurements on GSM cells can be requested with BSIC verified or BSIC non-verified.

1) For a UE requiring idle intervals or measurement occations to perform GSM measurements. When signalled by UTRAN during CELL_DCH state, the UE shall continuously measure GSM cells and search for new GSM cells given in the monitored set.

2) For a UE not requiring idle intervals or measurement occations to perform GSM measurements:

- the UE shall measure all GSM cells present in the monitored set
- the relevant requirements for GSM dedicated mode when a TCH channel is assigned in TS 45.008 shall apply. This is further detailed in the following sub-sections.

~~Measurements on a GSM cell can be requested with BSIC verified or BSIC non-verified.~~

~~If BSIC verified is requested for a GSM cell the UE shall only report measurement quantities for that GSM cell with a BSIC "verified" according to section 8.1A.2.5.2 "BSIC verification". If BSIC verification is not required for a GSM cell the UE shall report measurement quantities for that GSM cell irrespectively if the BSIC has been verified or not verified according to section 8.1A.2.5.2 "BSIC verification"~~

~~If the UE does not need to perform GSM measurements in the idle intervals only, the requirements of handover measurements in TS 45.008 shall apply.~~

8.1A.2.5.1 GSM carrier RSSI

1) For a UE requiring idle intervals or measurement occations to perform GSM measurements

An UE supporting GSM measurements shall shall meet the minimum number of GSM RSSI carrier measurements specified ~~be able to measure GSM carrier RSSI levels of GSM cells from the monitored set with acquisition speed defined~~ in table 8.1A.

In the CELL_DCH state the measurement period, $T_{Measurement\ Period,\ GSM}$, for the GSM carrier RSSI measurement is ~~[~~480~~]~~ ms.

The UE shall meet the measurement accuracy requirements stated for RXLEV in TS 45.008, when the given measurement time allows the UE to the take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

Table 8.1A

Idle Interval Length (slots)	Number of GSM carrier RSSI meaqsurements
3	~~[~~1~~]~~
4	~~[~~2~~]~~
5	~~[~~3~~]~~

For the description of the idle intervals see Annex A of 25.225.
In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least ~~[~~3~~]~~ samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods. This means that, in this particular case, the L1 reporting period to higher layers of a GSM neighbour can be a multiple of the measurement period.

2) For a UE not requiring idle intervals or measurement occations to perform GSM measurements

The samples allocated to each carrier shall as far as possible be uniformly distributed over each measurement period. At least 3 received signal level measurement samples are required per RSSI value. The measurement period is 480 ms.

8.1A.2.5.2 BSIC verification

1) For a UE requiring idle intervals or measurement occations to perform GSM measurements

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

~~1)~~ Initial BSIC identification
Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the TDD and GSM cell. The UE shall trigger the initial BSIC identification within the available idle intervals as specified in TS 25.225, Annex A (Fig. A.1). The requirements for Initial BSIC identification can be found in section 8.1A.2.5.2.1,"Initial BSIC identification".

~~2)~~ BSIC re-confirmation
Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The UE shall trigger the BSIC re-confirmation within the available idle intervals as specified in TS 25.225, Annex A (Fig. A.1). The requirements for Initial BSIC identification can be found in section 8.1A.2.5.2.2, "BSIC re-confirmation".

Measurements on a GSM cell can be requested with BSIC verified or BSIC non-verified. If GSM measurements are requested with BSIC verified the UE shall be able to report the GSM cells with BSIC verified for those cells where the verification of BSIC has been successful.

The UE shall use the last available GSM carrier RSSI measurement results for arranging GSM cells in signal strength order for performing BSIC identification. The UE shall perform event evaluation for event-triggered reporting after the BSIC has been verified for a GSM cell. The UE shall use the last available GSM carrier RSSI measurement results in event evaluation and event-triggered reporting. Periodic reports shall be triggered according to the given reporting period even if the BSIC of a GSM cell has not been verified. Non verified BSIC shall be indicated in the measurement report.

The BSIC of a GSM cell is considered to be “verified” if the UE has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification) and from that moment the BSIC shall be re-confirmed at least once every $T_{\text{re-confirm abort}}$ seconds. Otherwise the BSIC of the GSM cell is considered as “non-verified”. The time requirement for initial BSIC identification, $T_{\text{identify abort}}$, and the BSIC re-confirmation interval $T_{\text{re-confirm abort}}$ can be found in the sections below.

The worst-case time for identification of one previously not identified GSM cell measurement is specified in TS 25.225, Annex A.

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 45.005.

2) For a UE not requiring idle intervals or measurement occations to perform GSM measurements

If a BSIC is decoded and matches the expected value, it is considered as “verified”, else it is considered as “non verified”.

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 45.005.

8.1A.2.5.2.1 Initial BSIC identification

This measurement is performed in the idle intervals as specified in TS 25.225, Annex A (Fig. A.1).

For GSM cells that are requested with BSIC verified the UE shall attempt to decode the SCH on the BCCH carrier of the ~~[~~8~~]~~ strongest BCCH carriers of the GSM cells indicated in the measurement control information. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BSIC carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value after layer 3 filtering. The GSM signal strength levels used in BSIC identification for arranging GSM cells in signal strength order shall be based on the latest GSM carrier RSSI measurement results available.

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

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

The UE shall be able to perform initial BSIC decoding on one new GSM BCCH carrier within the time specified in Annex A in TS 25.225.

When N new GSM cells are to be BSIC identified the time is changed to N *$T_{identify\ abort}$, with

$T_{identify\ abort}$ = ~~[~~5000~~]~~ ms. This is the time necessary to identify one new GSM cell. It is assumed for the requirement that the slot allocation allows measurement windows in the idle periods to be of minimum duration necessary to perform the measurements.

8.1A.2.5.2.2 BSIC re-confirmation

The requirements of this section are applicable for BSIC re-confirmation.

The UE shall maintain the timing information of at least ~~[~~8~~]~~ identified GSM cells. Initial timing information is obtained from the initial BSIC ~~decoding~~identification. The timing information shall be updated every time the BSIC is decoded.

For each idle interval, the UE is able to use for BSIC re-confirmation, the UE shall attempt to decode the BSIC falling within the effective measurement window. If more than one BSIC can be decoded within the same measurement window given by the idle intervals, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts or if the UE has not been able to re-confirm the BSIC for a GSM BCCH carrier within $T_{re\text{-}confirm\_abort}$ seconds, the UE shall abort the BSIC re-confirmation attempts for that GSM BCCH carrier. The GSM BCCH carrier shall be treated as a new GSM BCCH carrier with unidentified BSIC and the GSM BCCH carrier shall be moved to the initial BSIC decoding procedure, see section 8.1A.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 8 strongest GSM cells in the monitored list.

This measurement shall be based on the idle intervals as specified in TS 25.225, Annex A (Fig. A.1).The time requirement for BSIC re-confirmation is specified in Annex A in TS 25.225.

$T_{re\text{-}confirm\ abort}$ =~~[~~5000~~]~~ ms. This is the BSIC reconfirmation interval.

It is assumed for the requirement that the slot allocation allows measurement windows in the idle periods to be of minimum duration necessary to perform the measurements.

8.1A.2.5.2.3 Periodic Reporting

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

8.1A.2.5.2.4 Event Triggered Reporting

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

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

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that that the

measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH . The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered reporting delay requirement is valid when the UE for each GSM carrier in the monitored set can take the required number of samples during the measurement period $T_{Measurement\ Period,\ GSM}$ (see section 8.1A.2.5.1).

The event triggered measurement reporting delay for a GSM cell with verified BSIC, measured without L3 filtering shall be less than $2*T_{Measurement\ Period,\ GSM}$, where $T_{Measurement\ Period,\ GSM}$ is defined in Section 8.1A.2.5.1. When L3 filtering is used an additional delay can be expected. For a GSM cell with non-verified BSIC an additional delay according to section 8.1A.2.5.2.1 Initial BSIC identification can be expected.

~~8.1A.2.6 TDD Synchronisation to new cells~~

~~Time for synchronisation to new cell is defined as the time from when the cell appears until the time when the cell is reported in a RRC message to the network. The time needed to synchronise depends on the level of the received signal and is different for inter and intra frequency cells.~~

~~These time limits are used in the requirements for the measurements in paragraph 8.1A.2 as well as preconditions in paragraph 9.~~

~~The requirements given for by $T_{basic\ identify\ TDD,\ intra}$ and by $T_{basic\ identify\ TDD,\ inter}$ are valid under the following side conditions:~~

$$\left(\frac{P-CCPCH\_E_c}{I_o}\right)_{in\ dB} \geq [-8] dB$$

$$\left(\frac{DwPCH\_E_c}{I_o}\right)_{in\ dB} \geq [-5] dB$$

~~where the received P-CCPCH E_c/I_o is defined as~~

$$\left(\frac{P-CCPCH\_E_c}{I_o}\right)_{in\ dB} = \left(\frac{P-CCPCH\_E_c}{I_{or}}\right)_{in\ dB} - \left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB}$$

~~and the received DwPTS E_c/I_o is defined as~~

$$\left(\frac{DwPCH\_E_c}{I_o}\right)_{in\ dB} = \left(\frac{DwPCH\_E_c}{I_{or}}\right)_{in\ dB} - \left(\frac{I_o}{\hat{I}_{or}}\right)_{in\ dB}$$

<NEXT CHANGED SECTION>

8.2A Parallel Measurements in CELL_DCH State (1.28 Mcps option)

8.2A.1 Introduction

The purpose with this section is to ensure that all UE can handle a certain number of measurements in parallel. The measurements are defined in TS 25.225, the measurement model is defined in TS 25.302 and measurement accuracies are specified in section 9. Control of measurement reporting is specified in TS 25.331 and measurements reporting delays are specified in section 8.1A. For the description of the idle intervals see TS 25.225, Annex A.

8.2A.2 Requirements

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

The UE shall be able to perform parallel measurements according to table 8.2A.

In addition to the requirements in table 8.2A the UE shall in parallel, in state CELL_DCH, also be able to measure and report the quantities according to section 8.1A.

Table 8.2A: Parallel measurement requirements

Measurement quantity	Number of parallel measurements possible to request from the UE
Transport channel BLER	~~[~~1~~]~~ per TrCh
UE transmitted power	~~[~~1~~]~~
SFN-SFN observed time difference type 2	[]
UE GPS Timing of Cell Frames for UP	[]

<NEXT CHANGED SECTION>

8.3A Capabilities for Support of Event Triggering and Reporting Criteria in CELL_DCH State (1.28 Mcps option)

8.3A.1 Introduction

This section contains requirements on UE capabilities for support of event triggering and reporting criteria.

The UE can be requested to make measurements under different measurement identity numbers. With each identity number there may be associated multiple number of events. The purpose of this section is to set some limits on the number of different reporting criteria the UE may be requested to track in parallel.

8.3A.2 Requirements

In this section reporting criteria can be either event triggered reporting criteria or periodic reporting criteria.

The UE shall be able to support in parallel per category up to E_{cat} reporting criteria according to Table 8.6A. The same type of events (e.g. events 1G) are counted as different events if either any of the parameters related to the events or their neighbour cell lists differ from each other.

For the measurement categories: Intra-frequency, Inter frequency and Inter-RAT the UE need not support more than 14 reporting criteria in total. For the measurement categories Traffic volume and Quality measurements the UE need not support more than 16 reporting criteria in total.

Table 8.6A: Requirements for reporting criteria per measurement category

Measurement category	E_{cat}	Note
Intra-frequency	~~[~~4~~]~~	Applicable for periodic reporting or TDD events (1G-1I).
Inter-frequency	~~[~~6~~]~~	Applicable for periodic reporting or Event 2A-2F
Inter-RAT	~~[~~4~~]~~	Only applicable for UE with this capability
UE internal measurements	~~[~~8~~]~~	
Traffic volume measurements	~~[~~2 + (2 per Transport Channel)~~]~~	
Quality measurements	~~[~~2 per Transport Channel~~]~~	
UP measurements	~~[~~2~~]~~	Only applicable for UE with this capability.

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CR-Form-v6.1

CHANGE REQUEST

⌘ **25.123** **CR** **178** ⌘ **rev** **-** ⌘ Current version: **4.3.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Correction of RRC connection re-establishment section for 1.28 Mcps TDD option
Source:	⌘	RAN WG4
Work item code:	⌘	LCRTDD-RF
Date:	⌘	1/2/2002
Category:	⌘	**F**
Release:	⌘	Rel-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change: ⌘ The current requirements and test cases for RRC connection Re-establishment contain some errors:

The formula describing the Re-establishment delay is incorrect since the random access procedure delay T_{RA} is missing.

Moreover the following ambiguities can be noted:

N_{313} and T_{313} parameter are unclear.

- N_{315} parameter value is not in the set defined in TS25.331

-The T_{SI} definition is not inline with the definition used in the TS25.123.

-The final state of test1 and test2 should be explicitly stated.

- Contradictory statement related to cell 2 in Test2 (included and non-included in monitored set stated).

Summary of change: ⌘ 1-Clarification and correction of the Re-establishment delay formula.

The Re-establishment delay is split into the delay caused by the RRC procedure and the delay caused by the Re-establishment requirement for the UE. T_{RA} is added to the formula (T_{RA}= 35 ms is assumed in this test case) .

2- Clarification and correction of the Re-establishment delay test cases.

Test 1 and Test 2 parameter presentation section are separated in two different sections. Correction of N313 and N315 parameters. Clarification of the UE final state. Cell2 is explicitly stated as included in the monitored set. The wording of T_{SI} is updated. Correction of RF parameters for cell 1 during the tests. Addition of a note concerning OCNS. Square brackets for RF parameters and for T_{search} in case of unknown cell search are removed. The values for the RRC re-establisment delay are updated and a note clarifying the calculation of the

		requirement is added. Addition of a implementation margin in the test requirement.
Consequences if not approved:	⌘	Unnecessary tight requirement for the Re-establishment delay procedure. Unclear definitions and ambiguities remaining in the requirement and in the test cases. Contradiction between TS25.123 and the description of this procedure in Ts25.214 and TS25.331. <u>Isolated Impact Analysis:</u> This CR has no impact on current implementations because the change in the RRC re-establishment delay definition is inline with the current interpretation of the requirement which can be seen from the test cases, thus the requirement itself remains unchanged.

Clauses affected:	⌘	6A.1.2.2, A.6A.1.1.2		
Other specs affected:	⌘	[ ] Other core specifications [X] Test specifications [ ] O&M Specifications	⌘	34.122
Other comments:	⌘			

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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.

6A RRC Connection Control

6A.1 RRC Connection re-establishment

6A.1.1 Introduction

RRC connection re-establishment is needed, when a UE in state CELL_DCH loses radio connection due to radio link failure. The procedure when a radio link failure occurs in CELL_DCH is specified in TS 25.331.

6A.1.2 Requirements

6A.1.2.1 3.84Mcps option

The requirements in this section are applicable when the UE performs a RRC connetion re-establishment to a cell belonging to any of the frequencies present in the previous monitored set.

When the UE is in CELL_DCH state, the UE shall be capable of sending a CELL UPDATE message using the cause "radio link failure" within $T_{RE-ESTABLISH}$ seconds from when the CPHY-Out-Of-Synch primitive indicates lost synchronisation.

The RRC connection re-establishment delay requirement ($T_{RE-ESTABLISH-REQ}$) is defined as the time between the moment when the CPHY-Out-Of-Synch primitive indicates lost synchronisation, to when the UE starts to send a CELL UPDATE message using the cause "radio link failure" on the PRACH.

$T_{RE-ESTABLISH-REQ}$ is depending on whether the target cell is known by the UE or not. A cell is known if either or both of the following conditions are true:

- the UE has had a dedicated connection to the cell during the last 5 seconds
- the cell has been measured by the UE during the last 5 seconds

The RRC connection re-establishment delay shall be less than

$50ms+T_{search}+ T_{SI}$

in case that the target cell is known by the UE, and

$50ms+T_{search}*NF + T_{SI}$

in case that the target cell is not known by the UE;

where

T_{search} is the time it takes for the UE to search the cell.

T_{search} =100 ms if the target cell is known by the UE, and

T_{search} =800 ms if the target cell is not known by the UE.

T_{SI} is the maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell (ms).

NF is the number of different frequencies in the monitored set.

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

6A.1.2.2 1.28Mcps TDD option

The requirements in this section are applicable when the UE performs a RRC connection re-establishment to a cell belonging to any of the frequencies present in the previous monitored set.

When the UE is in CELL_DCH state, the UE shall be capable of sending a CELL UPDATE message using the cause "radio link failure" within $T_{RE\text{-}ESTABLISH}$ seconds from when the radio link failure occurred.~~the CPHY-Out-Of-Synch primitive indicates lost synchronisation.~~

$T_{RE\text{-}ESTABLISH}$ equals the RRC procedure delay ($T_{RRC\text{-}RE\text{-}ESTABLISH}$) according to TS25.331 plus the UE Re-establishment delay requirement ($T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ}$), specified in 6A.1.2.2.1.

$$T_{RE\text{-}ESTABLISH} = T_{RRC\text{-}RE\text{-}ESTABLISH} + T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ}$$

6A.1.2.2.1 Re-establishment delay requirement

The ~~RRC connection~~ UE ~~r~~Re-establishment delay requirement ($T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ}$) is defined as the time between the moment when radio link failure is considered by the UE ~~the CPHY-Out-Of-Synch primitive indicates lost synchronisation~~, to when the UE starts to send SYNC-UL in the UpPTS for sending a CELL UPDATE message using the cause "radio link failure".

$T_{RE\text{-}ESTABLISH\text{-}REQ}$ is depending on whether the target cell is known by the UE or not. A cell is known if either or both of the following conditions are true:

- the UE has had a dedicated connection to the cell during the last 5 seconds
- the cell has been measured by the UE during the last 5 seconds

The ~~RRC connection~~ UE ~~r~~Re-establishment delay shall be less than

$$T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}KNOWN} = 50ms + T_{search} + T_{SI} + T_{RA}$$

in case that the target cell is known by the UE, and

$$T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}UNKNOWN} = 50ms + T_{search} * NF + T_{SI} + T_{RA}$$

in case that the target cell is unknown by the UE

where

T_{search} is the time it takes for the UE to search the cell.

T_{search} =100 ms if the target cell is known by the UE, and

T_{search} =~~[~~800~~]~~ ms if the target cell is not known by the UE.

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 25.331 for a UTRAN cell (ms).~~maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell (ms).~~

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

NF is the number of different frequencies in the monitored set.

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

---NEXT SECTION CHANGES-------

A.6A.1.1.2 for1.28Mcps TDD option

The purpose is to verify that the RRC connection re-establishment delay is within the specified limits. These tests will verify the requirements in section 6A.1.2.2.

A.6A.1.1.2.1 TEST 1

The test parameters are given in table A.6A.5 and table A.6A.6 below. In the measurement control information it is indicated to the UE that periodic reporting shall be used. The test consists of 2 successive time periods, with a time duration of T1 and T2 respectively. At the start of time period T2, the dedicated channel is removed.

Table A.6A.5 General test parameters for RRC connection re-establishment delay, Test 1

Parameter		Unit	Value	Comment
DCH Parameters			DL Reference measurement channel 12.2 kbps	As specified in TS25.102, section A.2.2.2
Power Control			On	
Active cell	Initial condition		Cell 1	
	Final condition		Cell 2	
N313		~~Frames~~	20	
N315		~~Frames~~	~~20~~1	
T313		Seconds	0	
T_{SI}		ms	1280	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). Note: Since 1280 ms is one of the typical values for repeating system information blocks, T_{SI} of 1280 ms could be increased by the RRC procedure delay in order to allow the SIB repetition period of 1280 ms
Monitored cell list size			24	Monitored set shall only include intra frequency neighbours
Cell 2			~~included in monitored set~~	Included in monitored set~~Cell parameters according table A6.6~~
Reporting frequency		Seconds	4	
T1		s	10	
T2		s	6	

Table A.6A.6 Cell specific parameters for RRC connection re-establishment delay test, Test 1

Parameter	Unit	Cell 1				Cell 2			
Timeslot Number		0		~~DwPTS~~5		0		~~DwPTS~~	
		T1	T2	T1	T2	T1	T2	~~T1~~	~~T2~~
UTRA RF Channel Number		Channel 1				Channel 1			
DCH_Ec/Ior	dB	Not applicable		-3		Not applicable			
OCNS_Ec/Ior	dB	Note 1		Note 1		Note 1			
PCCPCH_Ec/Ior	dB	-3				-3			
~~DwPCH_Ec/Ior~~	~~dB~~			~~0~~				~~0~~	
$\hat{I}_{or}/I_{oc}$	dB	[3]	-infinity~~[-13]~~	3	-infinity	~~[~~6~~]~~	~~[~~6~~]~~		
I_{oc}	dBm/1.28 MHz	-70							
PCCPCH_RSCP	dBm	~~[~~-70~~]~~	~~[-86]~~-infinity	Not applicable		~~[~~-67~~]~~	~~[~~-67~~]~~		
Propagation Condition		AWGN							

NOTE 1: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}. ~~The DPCH of cell 1 is located in an other timeslot than 0, at the start of time period T2, the dedicated channel is removed.~~

A.6A.1.1.2.2 TEST 2

The test parameters are given in table A.6A.7 and table A.6A.8 below. In the measurement control information it is indicated to the UE that periodic reporting shall be used. The test consists of 2 successive time periods, with a time duration of T1 and T2 respectively. At the start of time period T2, the dedicated channel is removed.

Table A.6A.7 General test parameters for RRC connection re-establishment delay, Test 2

Parameter		Unit	Value	Comment
DCH Parameters			DL Reference measurement channel 12.2 kbps	As specified in TS25.102, section A.2.2.2
Power Control			On	
Active cell	Initial condition		Cell 1	Channel 1
	Final condition		Cell 2	Channel 2 or 3
N313		~~Frames~~	20	
N315		~~Frames~~	1~~20~~	
T313		Seconds	0	
T_{SI}		ms	1280	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). Note: Since 1280 ms is one of the typical values for repeating system information blocks, T_{SI} of 1280 ms could be increased by the RRC procedure delay in order to allow the SIB repetition period of 1280 ms
Cells in the monitored set			24	
Channels in the monitored set			Channel 1, Channel 2, Channel 3	
Cell 2			~~Located on channel 2, cell 2 not included in monitored set~~	~~Parameters according table A6.8~~ Cell 2 is not included in the monitored set. Cell 2 is located on a different channel than cell 1.
Reporting frequency		Seconds	4	
T1		s	10	
T2		s	6	

Table A.6A.8: Cell specific parameters for RRC connection re-establishment delay test, Test 2

Parameter	Unit	Cell 1				Cell 2			
Timeslot Number		0		~~DwPTS~~5		0		~~DwPTS~~	
		T1	T2	T1	T2	T1	T2	~~T1~~	~~T2~~
UTRA RF Channel Number		Channel 1				Channel 2			
DCH_Ec/Ior	dB	Not applicable		-3		Not applicable			
OCNS_Ec/Ior	dB	Note 1		Note 1		Note 1			
PCCPCH_Ec/Ior	dB	-3				-3			
~~DwPCH_Ec/Ior~~	~~dB~~			~~0~~				~~0~~	
$\hat{I}_{or}/I_{oc}$	dB	~~[~~3~~]~~	-infinity ~~[-13]~~	3	-infinity	~~[~~6~~]~~	~~[~~6~~]~~		
I_{oc}	dBm/1.28 MHz	-70							
PCCPCH_RSCP	dBm	~~[~~-70~~]~~	~~[-86]~~ -infinity	Not applicable		~~[~~-67~~]~~	~~[~~-67~~]~~		
Propagation Condition		AWGN							

NOTE 1: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}. ~~The DPCH of cell 1 is located in an other timeslot than 0, at the start of time period T2, the dedicated channel is removed.~~

A.6A.1.2 Test Requirements

A.6A.1.2.1 3.84Mcps TDD option

A.6A.1.2.1.1 Test 1

The RRC connection re-establishment 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 of a CELL UPDATE message using the cause "radio link failure".

The RRC connection re-establishment delay shall be less than 1630 ms.

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

NOTE:

N313 is the number in frames of consecutive "out of synch" indications from layer 1 for the established dedicated physical channel before starting timer T313. In this test case N313=20 frames, resulting in 200ms to be taken into account for the test case.

The RRC connection re- establishment delay can be expressed as: $50ms+T_{search} + T_{SI}$ where:

T_{search} is the time it takes for the UE to search the cell. T_{search} =100 ms in case of a known target cell.

T_{SI} Maximum repetition rate of relevant system information 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 delay of 1.63s in the test case.

A.6A.1.2.1.2 Test 2

The RRC connection re-establishment 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 of a CELL UPDATE message using the cause "radio link failure".

The RRC re-establishment delay shall be less than 3930 ms.

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

NOTE:

N313 is the number in frames of consecutive "out of synch" indications from layer 1 for the established dedicated physical channel before starting timer T313. In this test case N313=20 frames, resulting in 200ms to be taken into account for the test case.

The RRC connection re-establishment delay can be expressed as: $50ms+T_{search}*NF + T_{SI}$ where:

T_{search} is the time it takes for the UE to search the cell. T_{search} =800 ms in case of an unknown target cell.

NF is the number of different frequencies in the monitored set. NF=3

T_{SI} Maximum repetition rate of relevant system information 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 3.93s in the test case.

A.6A.1.2.2 for 1.28Mcps TDD option

A.6A.1.2.2.1 Test 1

The ~~RRC connection r~~Re-establishment 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 SYNC-UL in the UpPTS for sending a CELL UPDATE message using the cause "radio link failure".

The ~~RRC connection r~~Re-establishment delay $T_{RE-ESTABLISH}$ to a known cell -shall be less than ~~1630~~1815 ms.

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

NOTE: The Re-establishment delay can be expressed in this case as

$T_{RE\text{-}ESTABLISH} = T_{RRC\text{-}RE\text{-}ESTABLISH} + T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}KNOWN}$.

Where

$T_{RRC\text{-}RE\text{-}ESTABLISH} = 160ms + (N_{313} - 1) * 10ms + T_{313}$

$T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}KNOWN} = 50ms + T_{search} + T_{SI} + T_{RA}$,

$N_{313} = 20$ ~~is the number in frames of consecutive "out of synch" indications from layer 1 for the established dedicated physical channel before starting timer T313. In this test case N313=20 frames, resulting in 200ms to be taken into account for the test case.~~

$T_{313} = 0s$

~~The RRC connection re establishment delay can be expressed as: 50ms+T_{search} + T_{SI} where:~~

T_{search} is the time it takes for the UE to search the cell. T_{search} =100 ms in case of a known target cell.

T_{RA} The additional delay caused by the random access procedure. 35 ms is assumed in this test case

T_{SI} 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 25.331 for a UTRAN cell (ms). ~~Maximum repetition rate of relevant system information 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 delay of 1.815~~63~~s, allow 1.9s in the test case.

A.6A.1.2.2.2 Test 2

The ~~RRC connection r~~Re-establishment 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 SYNC-UL in the UpPTS for sending a CELL UPDATE message using the cause "radio link failure".

The ~~RRC r~~Re-establishment delay to an unknown cell shall be less than ~~[3930~~4115~~]~~ ms.

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

NOTE: The Re-establishment delay can be expressed in case as

$T_{RE\text{-}ESTABLISH} = T_{RRC\text{-}RE\text{-}ESTABLISH} + T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}UNKNOWN}$.

Where

$T_{RRC\text{-}RE\text{-}ESTABLISH} = 160ms + (N_{313} - 1) * 10ms + T_{313}$

$T_{UERE\text{-}ESTABLISH\text{-}REQ\text{-}UNKNOWN} = 50ms + T_{search} * NF + T_{SI} + T_{RA}$,

$N_{313} = 20$ ~~is the number in frames of consecutive "out of synch" indications from layer 1 for the established dedicated physical channel before starting timer T313. In this test case N313=20 frames, resulting in 200ms to be taken into account for the test case~~.

$T_{313} = 0s$

~~The RRC connection re establishment delay can be expressed as: 50ms+T_{search} *NF + T_{SI} where:~~

T_{search} is the time it takes for the UE to search the cell. T_{search} =~~[~~800~~]~~ ms in case of an unknown target cell.

NF is the number of different frequencies in the monitored set. NF=3

T_{RA} The additional delay caused by the random access procedure. 35 ms is assumed in this test case

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 25.331 for a UTRAN cell (ms).1280 ms is assumed in this test case.~~Maximum repetition rate of relevant system information 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 ~~[~~4.115~~3.93]~~s, allow 4.2s in the test case.

3GPP TSG RAN WG4 Meeting #21 **R4-020196**

Sophia Antipolis, France 28th January - 1st February 2002

CR-Form-v6.1

CHANGE REQUEST

⌘ **25.123** **CR** **177** ⌘ **rev** **-** ⌘ Current version: **4.3.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	General corrections in section A4-A5 for 1.28 Mcps TDD option
Source:	⌘	RAN WG4
Work item code:	⌘	LCRTDD-RF
Date:	⌘	1/2/2002
Category:	⌘	**F**
Release:	⌘	Rel-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change:	⌘	1-The test sections A4 and A5 contain some ambiguities 2-The current value proposed for Qrxlevmin in cell re-selection delay test cases in idle mode is not valid according TS25.331.
Summary of change:	⌘	1-General corrections in test cases parameters: T_{SI} definition is updated, Typos are corrected, Sintersearch/Sintrasearch parameters are explicitly set to ''not sent'' when needed, square brackets are removed and timing issue concerning physical channel reconfiguration message in case of hard handover is clarified and aligned with TS25.133. 2-Qrxlevmin is corrected to a valid value (-103 dBm instead of –102 dBm).
Consequences if not approved:	⌘	Inconsistencies between TS25.123 and TS25.331and ambiguities in test cases remain. Isolated Impact Analysis: The CR corrects and clarifies test cases that are already inlined with the general requirements and therefore it does not impact implementation.

Clauses affected:	⌘	A.4.2.1.1.2, A.4.2.1.2.2, A.4.2.2.1.2, A.4.2.2.2.2, A.4.2.2A, A.4.2.3.1.2, A.4.2.3.2.2, A.5.1.2.1.1, A.5.1.2.2.1, A.5.4.2.2.1, A.5.4.2.2.2		
Other specs affected:	⌘	☐ Other core specifications ☒ Test specifications ☐ O&M Specifications	⌘	34.122
Other comments:	⌘			

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. 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 ftp://ftp.3gpp.org/specs/ 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.

Table A.4.1A: General test parameters for Cell Re-selection single carrier multi-cell case

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	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~~2~~	The value shall be used for all cells in the test.
Access Service Class (ASC#0) -– Persistence value		0..1	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 cycle length		s	1.28	The value shall be used for all cells in the test.
T1		s	15	
T2		s	15	

Table A.4.2A: Cell re-selection single carrier multi-cell case

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		DWPTS		0		DWPTS		0		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/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
$\hat{I}_{or}/I_{oc}$	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				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			
$Qhyst1_s$	dB	0				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
		Cell 4				Cell 5				Cell 6			
Timeslot		0		DWPTS		0		DWPTS		0		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/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
$\hat{I}_{or}/I_{oc}$	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				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				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
I_{oc}	dBm/1.28 MHz	-70											
Propagation Condition		AWGN											

A.4.2.1.2 Test Requirements

A.4.2.1.2.1 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 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: $T_{evaluateTDD} + T_{SI}$, where:

$T_{evaluateTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ TDD}$ of 6.4s according to Table 4.1 in section 4.2.2.7.

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.4.2.1.2.2 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 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:

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

$T_{evaluateNTDD}$: 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 4.1A in section 4.2.

T_{SI}: ~~Maximum~~ 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). ~~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.

----- NEXT 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. For this test purpose the broadcast repetition period of the target cell shall be [x] s. 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

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	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~~2~~	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.
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.4.4A: Cell re-selection multi carrier multi cell case

Parameter	Unit	Cell 1				Cell 2				Cell 3			
Timeslot Number		0		DWPTS		0		DWPTS		0		DWPTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
$\hat{I}_{or}/I_{oc}$	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				C2, C1: 0; C2, C3:0; C2,C4:0C2, C5:0; C2, C6:0				C3, C1: 0; C3, C2:0; C3,C4:0 C3, C5:0; C3, C6:0			
$Qhyst1_s$	dB	0				0				0			
Treselection	s	0				0				0			
~~Q~~Sintrasearch	dB	not sent				not sent				not sent			
$intersearch	dB	not sent				not sent				not sent			
		Cell 4				Cell 5				Cell 6			
Timeslot		0		DWPTS		0		DWPTS		0		DWPTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel				Channel 2				Channel			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
$\hat{I}_{or}/I_{oc}$	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				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				0			
Treselection	s	0				0				0			
~~Q~~Sintrasearch	dB	[not sent]				[not sent]				[not sent]			
$intersearch	dB	not sent				not sent				not sent			
I_{oc}	dBm/3, 84 MHz	-70											
Propagation Condition		AWGN											

A.4.2.2.2 Test Requirements

A.4.2.2.2.1 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 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: $T_{evaluateTDD} + T_{SI}$, where:

$T_{evaluateTDD}$ A DRX cycle length of 1280ms is assumed for this test case, this leads to a $T_{evaluate\ TDD}$ of 6.4s according to Table 4.1 in section 4.2.2.7.

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.4.2.2.2.2 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 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:

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

$T_{evaluateNTDD}$ 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 4.1A in section 4.2.

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).~~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.4.2.2A Scenario 2A: 3.84 Mcps TDD cell re-selection for 1.28 Mcps TDD UE

A.4.2.2A.1 Test Purpose and Environment

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

This scenario implies the presence of 1 low chip rate (1.28 Mcps TDD OPTION) and 1 high chip rate (TDD) cell as given in Table A.4.3B and A.4.4B.

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.4.3B: General test parameters for TDD low chip rate to TDD high chip rate cell re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	1.28 Mcps TDD OPTION cell
	Neighbour cell		Cell2	TDD cell
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.
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.
DRX cycle length		s	1,28	The value shall be used for all cells in the test.

Table A.4.4B: Test parameters for TDD low chip rate to TDD high chip rate cell re-selection

Parameter	Unit	Cell 1				Cell 2			
Timeslot Number		0		DwPts		0		8	
		T1	T2	T 1	T 2	T1	T2	T 1	T 2
UTRA RF Channel Number		Channel 1				Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0	n.a.		n.a.	
SCH_Ec/Ior	dB	n.a.		n.a.		-9	-9	-9	-9
SCH_t_{offset}		n.a.		n.a.		0	0	0	0
PICH_Ec/Ior	dB							-3	-3
OCNS_Ec/Ior	dB	n.a.		n.a.		-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	[10]	[7]			[7]	[10]	[7]	[10]
I_{oc}	dBm/3.84 MHz	-70							
PCCPCH_RSCP	dBm	[-63]	[-66]			[-66]	[-63]		
Qrxlevmin	dBm	-103~~2~~				-103~~2~~			
$Qoffset1_{s,n}$	dB	C1, C2: 0				C2, C1: 0			
$Qhyst1_s$	dB	0				0			
Treselection	s	0				0			
Propagation Condition		AWGN				AWGN			

----------NEXT SECTION----------

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 TDD and 1 FDD cell 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

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	1.28 Mcps TDD OPTION cell
	Neighbour cells		Cell2	FDD cell
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.
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.
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: Test parameters for the 1.28 Mcps TDD OPTION/FDD cell re-selection

Parameter	Unit	Cell 1				Cell 2	
Timeslot Number		0		DwPts		n.a.	
		T1	T2	T 1	T 2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2	
PCCPCH_Ec/Ior	dB	-3	-3			-12	-12
DwPCH_Ec/Ior	dB			0	0	n.a.	
CPICH_Ec/Ior	dB	n.a.		n.a.		-10	-10
SCH_Ec/Ior	dB	n.a.		n.a.		-12	-12
PICH_Ec/Ior	dB					-15	-15
OCNS_Ec/Ior	dB	n.a.		n.a.		-0,941	-0,941
$\hat{I}_{or}/I_{oc}$	dB	[ ]	[ ]			[ ]	[ ]
I_{oc}	dBm/1.28 MHz	-70					
PCCPCH_RSCP	dBm	[ ]	[ ]			n.a.	n.a.
CPICH_RSCP		n.a.				[ ]	[ ]
Cell_selection_and_reselection quality_measure		CPICH_RSCP				*CPICH_RSCP*	
Qrxlevmin	dBm	-103~~2~~				-115	
$Qoffset1_{s,n}$	dB	C1, C2: -12				C2, C1: +12	
$Qhyst1_{s}$	dB	0				0	
Treselection	s	0				0	
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:

$T_{evaluateFDD}$ See Table 4.1A in section 4.2.

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).~~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.

----------NEXT SECTION----------

A.5 UTRAN Connected Mode Mobility

A.5.1 TDD/TDD Handover

A.5.1.1 3.84Mcps TDD option

void

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 as reported in section 5.1.2.1.2.

The test parameters are given in Table A.5.1.1 and A.5.1.2 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. 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.5.1.1: General test parameters for intra-frequency handover

Parameter		Unit	Value	Comment
DPCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2.2
Power Control			On	
Target quality value on DPCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
O		dB	0	cell-individual-offset The value shall be used for all cells in the test.
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	
T1		s	5	
T2		s	5	
T3		s	5	

Table A.5.1.2: Cell specific test parameters for intra-frequency handover

Parameter	Unit	Cell 1						Cell 2					
Timeslot Number		0			5			0			5		
		T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
UTRA RF Channel Number		Channel 1						Channel 1					
PCCPCH_Ec/Ior	dB	-3						-3					
DPCH_Ec/Ior	dB				Note1		n.a.				n.a.		Note1
OCNS		Note2			Note2			Note2			Note2		
$\hat{I}_{or}/I_{oc}$	dB	3			[x]			-Inf.	5				[x]
I_{oc}	dBm/ 1.28 MHz	-70											
PCCPCH_RSCP	dBm	-70						-Inf.	-68				
Propagation Condition		AWGN											

Note 1: The DPCH level is controlled by the power control loop

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.

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 as reported in section 5.1.2.1.2.

The test consists of two successive time periods, with a time duration T1 and T2. The test parameters are given in tables A.5.1.3 and A.5.1.4 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 T2 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.5.1.3: General test parameters for inter-frequency handover

Parameter		Unit	Value	Comment
DPCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.102 section A.2.2.2
Power Control			On	
Target quality value on DPCH		BLER	0.01	
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Threshold non used frequency		dBm	-75	Absolute RSCP threshold for event 2C
O		dB	0	cell-individual-offset The value shall be used for all cells in the test.
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	
T1		s	10	
T2		s	5	

TableA.5.1.4: Cell Specific parameters for inter-frequency handover

Parameter	Unit	Cell 1				Cell 2			
Timeslot Number		**0**		**5**		**0**		**5**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1				Channel 2			
PCCPCH_Ec/Ior	dB	-3				-3			
DPCH_Ec/Ior	dB			Note1	n.a.			n.a.	Note1
OCNS		Note2		Note2		Note2		Note2	
$\hat{I}_{or}/I_{oc}$	dB	3		[x]		6			[x]
I_{oc}	dBm/1.28 MHz	-70							
PCCPCH_RSCP	dBm	-70				-67			
Propagation Condition		AWGN							

Note 1: The DPCH level is controlled by the power control loop

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.

----------NEXT SECTION---------

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:

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

where:

$T_{\text{Measurement Period Intra}}$ Specified in 8.4A.2.2.2 gives [200]ms 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).~~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.

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 1.55s, 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 5.4.2.1.2. 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 condition	Active cell		Cell1	
	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	10	
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	½
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		0		DWPTS		0		DWPTS		0		DWPTS	
		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1				Channel 2				Channel 1			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
$\hat{I}_{or}/I_{oc}$	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				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				0				0			
Treselection	s	0				0				0			
Sintrasearch	dB	not sent				not sent				not sent			
$intersearch	dB	not sent				not sent				not sent			
FACH measurement occasion info		not sent				not sent				not sent			
FACH measurement occasion cycle length		4				4				4			
Inter-frequency TDD measurement indicator		TRUE				TRUE				TRUE			
Inter-frequency FDD measurement indicator		FALSE				FALSE				FALSE			
		Cell 4				**Cell 5**				**Cell 6**			
Timeslot		**0**		**DWPTS**		**0**		**DWPTS**		**0**		**DWPTS**	
		T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel				Channel 2				Channel			
PCCPCH_Ec/Ior	dB	-3	-3			-3	-3			-3	-3		
DwPCH_Ec/Ior	dB			0	0			0	0			0	0
$\hat{I}_{or}/I_{oc}$	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,C3:0C4, C5:0; C4:C6:0				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				0				0			
Treselection	s	0				0				0			
Qsintrasearch	dB	not sent				not sent				not sent			
$intersearch	dB	not sent				not sent				not sent			
FACH measurement occasion info		not sent				not sent				not sent			
FACH measurement occasion cycle length		4				4				4			
Inter-frequency TDD measurement indicator		TRUE				TRUE				TRUE			
Inter-frequency FDD measurement indicator		FALSE				FALSE				FALSE			
I_{oc}	dBm/1.28 MHz	-70											
Propagation Condition		AWGN											

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

A.5.4.2.2.2 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:

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

where:

$T_{measurement\ inter}$ Specified in 8.4A.2.3.2 gives [480]ms 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).~~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.

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 1.84s, allow 2s in the test case.

3GPP TSG RAN WG4 Meeting #21 **R4-020195**

Sophia Antipolis, France 28th January - 1st February 2002

CR-Form-v6.1

CHANGE REQUEST

⌘ **25.123** **CR** **176** ⌘ **rev** **-** ⌘ Current version: **4.3.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network ☐

Title:	⌘	Section 4 and 5 wording clarification for 1.28 Mcps TDD option
Source:	⌘	RAN WG4
Work item code:	⌘	LCRTDD-RF
Date:	⌘	1/2/2002
Category:	⌘	**F**
Release:	⌘	Rel-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change: ⌘

1- The wording “detected” used in TS25.123 is not aligned with its definition given in TS25.331, section 8.4 (RRC specification).

A ‘’detected cell’’ refers to a cell that is detected by the UE but NOT belonging to its monitored set.

An ‘’identified cell’’ refers to a cell that is detected by the UE and belonging to its monitored set.

2-In section 4.2.2.7.2, Cell re-selection to a UTRAN cell or to an inter-Rat cell cases are not distinguished in the interruption time formula. Requirement assumptions are also clarified.

3-Wrong reference in section 5.4 concerning cell re-selection triggering source in Cell_FACH state.

4- Misaligment of T_{SI} definition within 25.123.

5- Missing T_{RA} definition in section 5.4.2.3.4

Summary of change: ⌘

1-Correction of the wording “detected cell’’ by ‘’identified cell’’ within section 4.

2-T_REP time is deleted. Cell re-selection to an UTRAN cell and to an inter-Rat cell cases are explicitly separated. Introduction of T_{SI} and T_{BCCH} definition. Clarification of requirement assumptions.

3-Deletion of a wrong reference.

4- Correction of T_{SI} definition.

5-Addition of missing T_{RA} definition.

6- Corrections agreed at the last RAN meeting #14 in doc RP-010786-CR139 are represented since they were taken into account at the implementation.

		➢ Section 5.4.3.2.1 Insertion of Tmeasurement_Period_Intra reference ➢ Section 5.4.2.3.4 Correction of the formula for GSM cell re-selection delay. ➢ deletion of T_{SI} definition Isolated Impact Analysis: Correction of some contradictions contained in the specification. Does not affect implementations behaving like indicated in the CR does affect implementations not behaving like indicated in the CR.
Consequences if not approved:	⌘	Inconsistencies between 25.123 and 25.331. Possible misinterpretation of "detectable" cell. Incorrect cell re-selection delay requirement remains

Clauses affected:	⌘	4.2.1, 4.2.2.2.2, 4.2.2.3.2, 4.2.2.3A, 4.2.2.4.2, 4.2.2.7.2, 5.4.1, 5.4.3.2, 5.4.2.3.2, 5.4.2.3.3, 5.4.2.3.4		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

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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.
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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.

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. This process allows the UE to select a suitable cell where to camp on in order to access available services. In this process the UE can use stored information (*Stored information cell selection*) or not (*Initial cell selection*).

4.2 Cell Re-selection

4.2.1 Introduction

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

When the UE is in *Normally Camped* state on a TDD cell, the UE shall attempt to identify~~detect~~, synchronise and monitor intra-frequency, inter-frequency and inter-RAT cells indicated in the measurement control system information of the serving cell. If the occasions/triggers occur, as specified in 25.304, the UE shall perform the Cell Reselection Evaluation process.

4.2.2 Requirements

4.2.2.1 Measurement and evaluation of cell selection criteria S_{rxlev} 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 for the serving cell at least once per 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_{rxlex}, 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.

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 once per 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} 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.

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 detected 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 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 ~~detected~~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 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 detected 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 detected inter-frequency cell has become better ranked than the serving cell within $(N_{carrier}-1) * T_{evaluateTDD}$ 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. For non-detected 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 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 cells that are ~~detected~~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 maximum number of carriers is [3] including the carrier the UE is camped on. 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 ~~detected~~identified inter-frequency 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 than the current serving cell provided that Treselection timer is set to zero. For non-~~detected~~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 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 TS25.304. The use of mapping functions is indicated in the broadcast.

The UE shall measure PCCPCH RSCP at least every $N_{TDDcarrier} * T_{measureTDD}$ (see table 4.1A) for inter-frequency cells that are ~~detected~~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 maximum number of carriers is 3.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-~~detected~~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 than the current serving cell provided that Treselection timer is set to zero.

4.2.2.4 Measurement of inter-frequency FDD cells

4.2.2.4.1 3.84 Mcps option

The UE shall measure the signal level 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, 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. The measurement samples for each cell shall be as far as possible uniformly distributed over the averaging period.

CPICH RSCP is used as basic measurement quantity for cell ranking, the filtering shall be such that the UE shall be capable of evaluating that an already detected 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 than the current serving cell provided that Treselection timer is set to zero. For non-detected 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 mode.

The UE shall measure the signal level 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, 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. The measurement samples for each cell shall be as far as possible uniformly distributed over the averaging period.

CPICH RSCP is used as basic measurement quantity for cell ranking, the filtering shall be such that the UE shall be capable of evaluating that an already ~~detected~~identified inter-frequency cell has become better ranked than the serving cell within $NFDD_{carrier} * T_{evaluateFDD}$ 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. For non-~~detected~~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 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.

----------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. The interruption time must not exceed T_REP + 50 ms. T_REP is the longest repetition period for the system information required to be read by the UE to camp on the cell.

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

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

DRX cycle length [s]	N_{serv} [number of successive measurements]	$T_{measureTDD}$ [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 cycles)	2.56 (32 DRX cycles)	0.64 (8 DRX cycles)	2.56 (32 DRX cycles)	2.56 (32 DRX 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)

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 ~~T~~the interruption time must not exceed T_{SI} ~~T_REP~~ + [50] ms. For inter-Rat cell re-selection the interruption time must not exceed T_{BCCH}+[50] ms. ~~T_REP is the longest repetition period for the system information required to be read by the UE to camp on the cell.~~

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 25.331 for a UTRAN cell.

T_{BCCH} is the maximum time allowed to read BCCH data from a GSM cell [20].

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.~~.~~

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

DRX cycle length [s]	N_{serv} [number of successive measurements]	$T_{measureNTDD}$ [s] (number of DRX cycles)	$T_{evaluateNTDD}$ [s] (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 cycles)	2.56 (32 DRX cycles)	0.64 (8 DRX cycles)	2.56 (32 DRX cycles)	0.64 (8 DRX cycles)	2.56 (32 DRX cycles)	2.56 (32 DRX 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)

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

--- NEXT SECTION---

5.4 Cell Re-selection in Cell_FACH

5.4.1 Introduction

~~When a Cell Re-selection process is triggered according to 25.331, t~~The UE shall evaluate the cell re-selection criteria specified in TS 25.304, based on radio measurements, and if a better cell is found that cell is selected.

--- NEXT SECTION---

5.4.3 Requirements for 1.28Mcps TDD option

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 re-selection to a FDD cell and GSM carrier RSSI shall be used for cell re-selection to a GSM cell. The accuracies of the measurements used for a cell-reselection in an AWGN environment shall comply with the requirements in chapter 9.

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 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 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 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 intra frequency cells shall be less than:

$$T_{reselection,\,intra} = T_{identify\ \ intra} + 40ms + T_{SI} + T_{RA}$$

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

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

where

$T_{identify\ intra}$ = Specified in 8.4A.2.2.1

$T_{Measurement\ Period\ Intra}$ = Specified in 8.4A.2.2.2

T_{SI} = 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. ~~Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell.~~

T_{RA} = 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.

5.4.2.3.2 Inter-frequency TDD cell re-selection

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

$$T_{reselection,\,TDD,inter} = T_{identify\ inter} + 40ms + T_{SI} + T_{RA}$$

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

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

where

$T_{identify\_inter}$ = Specified in 8.4A.2.3.1

$T_{measurement\ inter}$ = Specified in 8.4A.2.3.2

T_{SI} = 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. ~~Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell.~~

T_{RA} = 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.

5.4.2.3.3 Inter-frequency FDD cell re-selection

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

$$T_{reselection,\,FDD} = T_{identify\ FDD\ inter} + T_{SI} + T_{RA}$$

where

$T_{identify\ FDD\ inter}$ = Specified in 8.4A.2.4.1

T_{SI} = 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. ~~Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell.~~

T_{RA} = 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.

5.4.2.3.4 Inter-RAT cell re-selection

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

$$T_{reselection,\,GSM} = T_{identify\ GSM} + T_{Measurement\ GSM} + T_{BCCH} + T_{RA}$$

~~$$T_{reselection,\,GSM} = T_{identify\ GSM} + T_{Measurement\ GSM} + T_{SI}$$~~

where

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

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

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

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 section 8.4A.2.5.1.

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

~~T_{SI} = Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell.~~

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

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

--------- END OF CHANGES----------

3GPP TSG RAN WG4 Meeting #21 **R4-020153**

Sophia Antipolis, France 28th January - 1st February 2002

CR-Form-v3

CHANGE REQUEST

⌘ **25.123** **CR** **174** ⌘ rev **-** ⌘ Current version: **4.3.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network ☐ Core Network ☐

Title:	⌘	Correction of 1.28Mcps TDD GSM cell re-selection test case
Source:	⌘	RAN WG4
Work item code:	⌘	LCRTDD-RF
Date:	⌘	1/2/2002
Category:	⌘	**F**
Release:	⌘	Rel-4

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	The test case for 1.28Mcps TDD to GSM cell re-selection test case is incomplete.
Summary of change:	⌘	Removal of square brackets, clarification of the test case, update of parameters and introduction of an additional test case.
Consequences if not approved:	⌘	Incomplete test cases. Isolated Impact Analysis: Does not affect implementations behaving like indicated in the CR does affect implementations not behaving like indicated in the CR.

Clauses affected:	⌘	A4.2.4
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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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.
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 ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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 cycle length		s	1,28	UTRAN cell
BCCH repetition period (GSM cell)		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)
T1		s	15	
T2		s	15	

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

Parameter	Unit	Cell 1 (UTRA)			
Timeslot Number		**0**		**8**	
		T1	**T2**	**T1**	**T2**
UTRA RF Channel Number		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3	-3		
SCH_Ec/Ior	dB	-9	-9	-9	-9
SCH_t_{offset}		0	0	0	0
PICH_Ec/Ior	dB			-3	-3
OCNS_Ec/Ior	dB	-4,28	-4,28	-4,28	-4,28
$\hat{I}_{or}/I_{oc}$	dB	3	-2	3	-2
I_{oc}	dBm/3, 84 MHz	–70		–70	
PCCPCH RSCP	dBm	-70	-75		
Propagation Condition		AWGN		AWGN	
Treselection	s	0			
$Ssearch_{RAT}$	dB	not sent			

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

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

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.

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.

~~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 1.28 Mcps TDD OPTION cell 1 is better ranked as the GSM cell 2 during T1 and the GSM cell 2 is better ranked than the 1.28 Mcps TDD OPTION cell 1 during T2.~~

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	
	Neighbour cell		Cell2	
Final condition	Active cell		Cell2	
DRX cycle length		s	1,28	
T1		s	15	
T2		s	15	

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

Parameter	Unit	Cell 1 (UTRA)			
Timeslot Number		0		DwPTS	
		T1	T2	T1	T2
UTRA RF Channel Number		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3	-3		
DwPCH_Ec/Ior	dB			0	0
$\hat{I}_{or}/I_{oc}$	dB	13~~[9]~~	-1 ~~[7]~~	13~~[9]~~	-1 ~~[7]~~
I_{oc}	dBm/1.28 MHz	-80 ~~-70~~ ~~-70~~			
PCCPCH RSCP	dBm	~~[-64]~~ -70	~~[-66]~~ -84		
Propagation Condition		AWGN		AWGN	
~~Cell_selection_and_reselection_quality_measure~~		~~P-CCPCH RSCP~~			
Treselection	s	~~[~~ 0~~]~~			
$Ssearch_{RAT}$	dB	Not sent ~~[ ]~~			
Qrxlevmin	dBm	-103			
$Qoffset1_{s,n}$	dB	C1, C2: 0			
$Qhyst1_{s}$	dB	0			

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

Parameter	Unit	Cell 2 (GSM)	
		T1	T2
Absolute RF Channel Number		ARFCN 1	
RXLEV	dBm	-7580	-70
RXLEV_ACCESS_MIN	dBm	-1040	
MS_TXPWR_MAX_CCH	dBm	330	

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~~4 s + T_{BCCH} where T_{BCCH} is the maximum time allowed to read BCCH data from GSM cell [20].
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: 3*$T_{measureTDD}$ + T_{BCCH}, where:

$T_{measureTDD}$ Specified in 4.2.2.7.2 Table 4.1A.

T_{BCCH} Maximum time allowed to read BCCH data from GSM cell [20].

This gives a total of 3.84s +T_{BCCH}, thus allow 4s +T_{BCCH}.

~~The UE shall keep a running average of 4 measurements, thus gives 4*1280ms ($T_{measureGSM}$ Table 4.5), 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.4.2.4.3 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 Re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell1	
	Neighbour cell		Cell2	
Final condition	Active cell		Cell2	
DRX cycle length		s	1,28	
T1		s	25	
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		DwPTS	
		T1	T2	T1	T2
UTRA RF Channel Number		Channel 1		Channel 1	
PCCPCH_Ec/Ior	dB	-3	-3		
DwPCH_Ec/Ior	dB			0	0
$\hat{I}_{or}/I_{oc}$	dB	6	6	6	6
I_{oc}	dBm/1.28 MHz	-80			
PCCPCH RSCP	dBm	-77	-77		
Propagation Condition		AWGN		AWGN	
Treselection	s	0			
$Ssearch_{RAT}$	dB	Not sent			
Qrxlevmin	dBm	-103			
$Qoffset1_{s,n}$	dB	C1, C2: 0			
$Qhyst1_{s}$	dB	0			

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

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

A.4.2.4.3 Scenario 4A Requirements

A.4.2.4.3.1 void

A.4.2.4.3.2 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 [20].

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* $T_{measureGSM}$ +T_{BCCH}, where:

$T_{measureGSM}$ Specified in 4.2.2.7.2 Table 4.1A.

T_{BCCH} Maximum time allowed to read BCCH data from GSM cell [20].

This gives a total of 25.6s +T_{BCCH}, thus allow 26s +$T_{BCCH.}$

3GPP TSG RAN WG4 Meeting #21 R4-020152

Sophia Antipolis, France 28th January - 1st February 2002

CR-Form-v3

CHANGE REQUEST

⌘ 25.123 CR 173 ⌘ rev - ⌘ Current version: 4.3.0 ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network X Core Network ☐

Title:	⌘	Correction of NodeB Synchronisation mapping type 1 for 3.84Mcps TDD
Source:	⌘	RAN WG4
Work item code:	⌘	RANimp-NBsynch
Date:	⌘	1/2/2002
Category:	⌘	F
Release:	⌘	Rel-4

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	In the table of burst type Type 1 the Type 2 is used as the measured quantity.
Summary of change:	⌘	Replace expression on type 2 by type 1 in the table of type 1.
Consequences if not approved:	⌘	Mapping is unclear. Isolated Impact: Correction of the labeling does not effect impemanatations behaving like indicated in the CR.

Clauses affected:	⌘	9.2.11		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

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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.

9.2.1.11 Node B Synchronisation for 3.84 Mcps

Cell synchronisation burst timing is the time of start (defined by the first detected path in time) of the cell sync burst of a neighbouring cell. Type 1 is used for the initial phase of Node B synchronization. Type 2 is used for the steady-state phase of Node B synchronization. Both have different range.

The reference point for the cell sync burst timing measurement shall be the Rx antenna connector.

9.2.1.11.1 Cell Synchronisation burst timing Type1 and Type 2

Table 9.44C

Parameter	Unit	Accuracy [chip]	Conditions
Cell Synchronisation burst timing	chip	[+/-0,5 for both type 1 and type 2]	

9.2.1.11.2 Range/mapping Type 1

The reporting range for Cell Synchronisation burst timing type 1 is from -131072 to +131072 chips with 1/4 chip resolution.
In table 9.44D the mapping of measured quantity is defined for burst type 1.

Table 9.44D

Reported value	Measured quantity value	Unit
Burst_TIME__TYPE1_0000000	-131072 ≤ burst timing Type 1~~2~~< -131071.75	chip
Burst_TIME__TYPE1_0000001	-131071.75 ≤ burst timing Type 1~~2~~< -131071.5	chip
Burst_TIME__TYPE1_0000002	-131071.5 ≤ burst timing Type 1~~2~~< -131071.25	chip
…	…	…
Burst_TIME__TYPE1_1048473	131071.25 ≤ burst timing Type 1~~2~~< 131071.5	chip
Burst_TIME__TYPE1_1048574	131071.5 ≤ burst timing Type 1~~2~~< 131071.75	chip
Burst_TIME__TYPE1_1048575	131071.75 ≤ burst timing Type 1~~2~~< 131072	chip

9.2.1.11.3 Range/mapping Type 2

The reporting range for Cell Synchronisation burst timing type 2 is from –16 to +16 chips with 1/8 chip resolution. In table 9.44E the mapping of measured quantity is defined for burst type 2.

Table 9.44E

Reported value	Measured quantity value	Unit
Burst_TIME__TYPE2_0000	-16 ≤ burst timing Type 2< -15.875	chip
Burst_TIME__TYPE2_0001	-15.875 ≤ burst timing Type 2< -15.750	chip
Burst_TIME__TYPE2_0002	-15.750 ≤ burst timing Type 2< -15.625	chip
…	…	…
Burst_TIME__TYPE2_0253	15.625 ≤ burst timing Type 2< 15.750	chip
Burst_TIME__TYPE2_0254	15.750 ≤ burst timing Type 2< 15.875	chip
Burst_TIME__TYPE2_0255	15.875 ≤ burst timing Type 2< 16	chip

3GPP TSG RAN WG4 Meeting #21 **R4-020140**

Sophia Antipolis, France 28th January - 1st February 2002

CR-Form-v6.1

CHANGE REQUEST

⌘ **25.123** **CR** **172** ⌘ **rev** **-** ⌘ Current version: **4.3.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Section 9 corrections
Source:	⌘	RAN WG4
Work item code:	⌘	LCRTDD-RF
Date:	⌘	1/2/2002
Category:	⌘	**F**
Release:	⌘	Rel-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change:	⌘	At the RAN4, RAN2 and T1/RF joint meeting on RRM testing in Berlin 07/2001 it was agreed that Io conditions of accuracy requirements of some UE measurements e.g., P-CCPCH RSCP measurement needs to be clarified to avoid more misunderstandings.
Summary of change:	⌘	1) Io conditions have been clarified for the accuracy requirements of following measurements o P-CCPCH RSCP measurements o CPICH RSCP measurements o TS ISCP measurements o UTRA Carrier RSSI measurements Instead of having two ranges for Io conditions –94 dBm…-70dBm and –94 dbm…-50 dBm the new ranges are –94 dBm…–70 dBm and –70 dBm…50 dBm. 2) An obvious typo for Io conditions for UTRA Carrier RSSI relative measurements has been corrected from –94 dBm … -70 dBm to –94 dBm … -50 dBm.
Consequences if not approved:	⌘	Misunderstandings of Io conditions exists. Isolated Impact Analysis: The proposed corrections are testing related and they do not change the behaviour of the UE. Hence, the changes do not affect the implementation.

Clauses affected:	⌘	9.1.1.1.1, 9.1.1.2.1.1, 9.1.1.3.1, 9.1.1.4.1, 9.1.1.4.2		
Other specs affected:	⌘	☐ Other core specifications ☒ Test specifications	⌘	34.122

	☐ O&M Specifications	
Other comments:	⌘	

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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 Measurements performance requirements

One of the key services provided by the physical layer is the measurement of various quantities which are used to trigger or perform a multitude of functions. Both the UE and the UTRAN are required to perform a variety of measurements. The complete list of measurements is specified in 3GPP TS 25.302 "Services Provided by Physical Layer". The physical layer measurements for TDD are described and defined in 3GPP TS 25.225 "Physical layer – Measurements (TDD)". In this clause for TDD, per each measurement the relevant requirements on performance in terms of accuracy are reported.

Unless explicitly stated,

- Reported measurements shall be within defined range in 90 % of the cases.
- Measurement channel is 12,2 kbps as defined in 3GPP TS 25.102 annex A. This measurement channel is used both in active cell and cells to be measured.
- Physical channels used as defined in 3GPP TS 25.102 annex A.
- All requirements are defined when UE is in a CELL_DCH or CELL_FACH stage. The difference between modes are the reporting delay. Some of the measurements are not requested to be reported in both stages.
- Single task reporting.
- Power control is active.

9.1 Measurements performance for UE

The requirements in this clause are applicable for a UE:

- in state CELL_DCH and state CELL_FACH.
- performing measurements according to section 8.
- that is synchronised to the cell that is measured.

The reported measurement result after layer 1 filtering shall be an estimate of the average value of the measured quantity over the measurement period. The reference point for the measurement result after layer 1 filtering is referred to as point B in the measurement model described in TS25.302.

The accuracy requirements in this clause are valid for the reported measurement result after layer 1 filtering. The accuracy requirements are verified from the measurement report at point D in the measurement model having the layer 3 filtering disabled.

9.1.1 Performance for UE measurements in downlink (RX)

9.1.1.1 P-CCPCH RSCP (TDD)

These measurements consider *P-CCPCH RSCP* measurements for TDD cells.

The measurement period for CELL_DCH state can be found in section 8.

The accuracy requirements in table 9.1 are valid under the following conditions:

P-CCPCH RSCP ≥ -102 dBm.

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1.2.6

9.1.1.1.1 Absolute accuracy requirements

Table 9.1: P-CCPCH_RSCP absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
P-CCPCH_RSCP	dBm	± 6	± 9	-94...-70
	dBm	± 8	± 11	-9470...-50

9.1.1.1.2 Relative accuracy requirements

The P-CCPCH_RSCP intra-frequency relative accuracy is defined as the P-CCPCH_RSCP measured from one cell compared to the P-CCPCH_RSCP measured from another cell on the same frequency.

The accuracy requirements in table 9.2 are valid under the following conditions:

P-CCPCH RSCP1,2 ≥ -102 dBm.

$$\left|\text{P - CCPCH RSCP1}\big|_{in\ dB} - \text{P - CCPCH RSCP2}\big|_{in\ dB}\right| \le 20dB$$

Relative Io difference [dB] ≤ relative RSCP difference [dB]

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1.2.6

It is assumed that the measurements of P-CCPCH RSCP1 and P-CCPCH RSCP2 can be performed within 20ms due to slot allocations in the cells concerned.

Table 9.2: P-CCPCH_RSCP intra-frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions	
		Normal condition	Extreme condition	Io [dBm]	relative RSCP difference [dbB]
P-CCPCH_RSCP	dBm	±1	±1	-94...-50	<2
		±2	±2		2...14
		±3	± 3		>14

The P-CCPCH_RSCP inter-frequency relative accuracy is defined as the P-CCPCH_RSCP measured from one cell compared to the P-CCPCH_RSCP measured from another cell on a different frequency.

The accuracy requirements in table 9.3 are valid under the following conditions:

P-CCPCH RSCP1,2 ≥ -102 dBm.

$$\left|\text{P - CCPCH RSCP1}\big|_{in\ dB} - \text{P - CCPCH RSCP2}\big|_{in\ dB}\right| \le 20dB$$

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1.2.6

Table 9.3: P-CCPCH_RSCP inter-frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
P-CCPCH_RSCP	dBm	± 6	± 6	-94...-50

9.1.1.1.3 Range/mapping

The reporting range for *P-CCPCH RSCP* is from -115 ...-25 dBm.

In table 9.4 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.4

Reported value	Measured quantity value	Unit
P-CCPCH RSCP_LEV _00	P-CCPCH RSCP <–115	dBm
P-CCPCH RSCP_LEV _01	-115 ≤ P-CCPCH RSCP < –114	dBm
P-CCPCH RSCP_LEV _02	-114 ≤ P-CCPCH RSCP < –113	dBm
…	…	…
P-CCPCH RSCP_LEV _89	-27 ≤ P-CCPCH RSCP < -26	dBm
P-CCPCH RSCP_LEV _90	-26 ≤ P-CCPCH RSCP < -25	dBm
P-CCPCH RSCP_LEV _91	-25 ≤ P-CCPCH RSCP	dBm

9.1.1.2 CPICH measurements (FDD)

Note: This measurement is used for handover between UTRA TDD and UTRA FDD.

These measurements consider *CPICH RSCP* and *CPICH Ec/Io* measurements. The requirements in this section are valid for terminals supporting this capability.

The measurement period for CELL_DCH state and CELL_FACH state can be found in section 8.

9.1.1.2.1 CPICH RSCP

9.1.1.2.1.1 Inter frequency measurement absolute accuracy requirement

The accuracy requirements in table 9.5 are valid under the following conditions:

CPICH_RSCP1$|_{dBm}$ ≥ -114 dBm.

$$\left.\frac{I_o}{\left(\hat{I}_{or}\right)}\right|_{in\ dB} - \left(\frac{CPICH\_E_c}{I_{or}}\right)_{in\ dB} \leq 20dB$$

Table 9.5: CPICH_RSCP Inter frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
CPICH_RSCP	dBm	± 6	± 9	-94...-70
	dBm	± 8	± 11	-9470...-50

9.1.1.2.1.2 Range/mapping

The reporting range for *CPICH RSCP* is from -115 ...-25 dBm.

In table 9.6 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.6

Reported value	Measured quantity value	Unit
CPICH_RSCP_LEV _00	CPICH RSCP <–115	dBm
CPICH_RSCP_LEV _01	-115 ≤ CPICH RSCP < –114	dBm
CPICH_RSCP_LEV _02	-114 ≤ CPICH RSCP < –113	dBm
…	…	…
CPICH_RSCP_LEV _89	-27 ≤ CPICH RSCP < -26	dBm
CPICH_RSCP_LEV _90	-26 ≤ CPICH RSCP < -25	dBm
CPICH_RSCP_LEV _91	-25 ≤ CPICH RSCP	dBm

9.1.1.2.2 CPICH Ec/Io

9.1.1.2.2.1 Inter frequency measurement relative accuracy requirement

The relative accuracy of CPICH Ec/Io is defined as the CPICH Ec/Io measured from one cell compared to the CPICH Ec/Io measured from another cell on a different frequency.

The accuracy requirements in table 9.7 are valid under the following conditions:

CPICH_RSC1,2 ≥ -114 dBm.

$$\left| CPICH\_RSCP1\big|_{in\ dB} - CPICH\_RSCP2\big|_{in\ dB} \right| \le 20dB$$

| *Channel 1_Io -Channel 2_Io*| ≤ 20 dB.

$$\left| \frac{I_o}{\left(\hat{I}_{or}\right)}\right|_{in\ dB} - \left(\frac{CPICH\_E_c}{I_{or}}\right)_{in\ dB} \le 20dB$$

Table 9.7: CPICH Ec/Io Inter frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
CPICH_Ec/Io	dB	± 1.5 for -14 ≤ CPICH Ec/Io ± 2 for -16 ≤ CPICH Ec/Io < -14 ± 3 for -20 ≤ CPICH Ec/Io < -16	± 3	-94...-50

9.1.1.2.2.2 Range/mapping

The reporting range for *CPICH Ec/Io* is from -24 ...0 dB.

In table 9.8 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.8

Reported value	Measured quantity value	Unit
CPICH_Ec/Io _00	CPICH Ec/Io < –24	dB
CPICH_Ec/Io _01	-24 ≤ CPICH Ec/Io < –23.5	dB
CPICH_Ec/Io _02	-23.5 ≤ CPICH Ec/Io < –23	dB
…	…	…
CPICH_Ec/Io _47	-1 ≤ CPICH Ec/Io < -0.5	dB
CPICH_Ec/Io _48	-0.5 ≤ CPICH Ec/Io < 0	dB
CPICH_Ec/Io _49	0 ≤ CPICH Ec/Io	dB

9.1.1.3 Timeslot ISCP

The measurement period for CELL_DCH state can be found in section 8.

9.1.1.3.1 Absolute accuracy requirements

Table 9.9: Timeslot_ISCP Intra frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
Timeslot_ISCP	dB	± 6	± 9	-94...-70
	dB	± 8	± 11	-~~94~~70...-50

9.1.1.3.2 Range/mapping

The reporting range for *Timeslot ISCP* is from -115...-25 dBm.

In table 9.10 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.10

Reported value	Measured quantity value	Unit
UE_TS_ISCP_LEV_00	Timeslot_ISCP < –115	dBm
UE_TS_ISCP_LEV_01	-115 ≤ Timeslot_ISCP < –114	dBm
UE_TS_ISCP_LEV_02	-114 ≤ Timeslot_ISCP < –113	dBm
…	…	…
UE_TS_ISCP_LEV_89	-27 ≤ Timeslot_ISCP < -26	dBm
UE_TS_ISCP_LEV_90	-26 ≤ Timeslot_ISCP < -25	dBm
UE_TS_ISCP_LEV_91	-25 ≤ Timeslot_ISCP	dBm

9.1.1.4 UTRA carrier RSSI

Note: The purpose of measurement is for Inter-frequency handover evaluation.

The measurement period for CELL_DCH state can be found in section 8.

9.1.1.4.1 Absolute accuracy requirement

Absolute accuracy case only one carrier is applied.

Table 9.11: UTRA carrier RSSI Inter frequency absolute accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
UTRA Carrier RSSI	dB	± 4	± 7	-94...-70
	dB	± 6	± 9	-~~94~~70...-50

9.1.1.4.2 Relative accuracy requirement

Relative accuracy requirement is defined as active cell frequency UTRAN RSSI compared to measured other frequency UTRAN RSSI level

The accuracy requirements in table 9.12 are valid under the following conditions:

| Channel 1_Io -Channel 2_Io | < 20 dB.

Table 9.12: UTRA carrier RSSI Inter frequency relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm]
UTRA Carrier RSSI	dB	± 7	± 11	-94...-~~70~~50

9.1.1.4.3 Range/mapping

The reporting range for *UTRA carrier RSSI* is from -100 ...-25 dBm.

In table 9.13 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.13

Reported value	Measured quantity value	Unit
UTRA_carrier_RSSI_LEV _00	UTRA carrier RSSI < –100	dBm
UTRA_carrier_RSSI_LEV _01	-100 ≤ UTRA carrier RSSI < –99	dBm
UTRA_carrier_RSSI_LEV _02	-99 ≤ UTRA carrier RSSI < –98	dBm
…	…	…
UTRA_carrier_RSSI_LEV _74	-27 ≤ UTRA carrier RSSI < -26	dBm
UTRA_carrier_RSSI_LEV _75	-26 ≤ UTRA carrier RSSI < -25	dBm
UTRA_carrier_RSSI_LEV _76	-25 ≤ UTRA carrier RSSI	dBm

3GPP TSG RAN WG4 Meeting #21 **R4-020139**

Sophia Antipolis, France 28th January - 1st February 2002

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CHANGE REQUEST

⌘ **25.123** **CR** **171** ⌘ **rev** **-** ⌘ Current version: **4.3.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	Section 8 corrections for measurements in Cell-FACH state
Source:	⌘	RAN WG4
Work item code:	⌘	LCRTDD-RF
Date:	⌘	1/2/2002
Category:	⌘	**F**
Release:	⌘	Rel-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change: ⌘ Most of the figures are still in square brackets. The requirements for the UE shall be capable of monitoring are not consistant in the requirements. Currently there are incorrect performance requirements for reporting of FDD and TDD cells.

Summary of change: ⌘

- All square brackets in sections 8.4A.2.1, 8.4A.2.2, 8.4A.2.3, 8.4A.2.4, 8.4A.2.5 are removed
- A consistant text desiption for the UE shall be capable of monitoring is provided for the common part.
- Requirements for TDD synchronisation to new cells are copied from section 8.1A.2.6 to the sections 8.4A.2.2.1 and 8.4A.2.3.1 (inserted as side condition) to have consitence to other specifications. Square brackets for this side conditions are also removed.
- For TDD, FDD and GSM measurements requirements on reporting of measurements are corrected to improve consistence with RRC protocol specifications.
- Requirments for interfrequency measurements are corrected by introduction of value $X_{\text{basic measurement TDDinter}}$ (referrenced to section 8.1A.2.3.2) and section 8.4A.2.3.2 is renamed to 'UE P-CCPCH measurement capability'.
- Requirments for interfrequency measurements are corrected by introduction of value $X_{\text{basic measurement FDDinter}}$ (referrenced to section 8.1A.2.4.2) and section 8.4A.2.4.2 is renamed to 'UE CPICH measurement capability'.
- For GSM measurements requirements are split for UE requiring idle intervals or measurement occasions to perform measurements and UE that do not require idle intervals or measurement occasions to perform the GSM measurements and this is further detailed in the sub-sections for GSM RSSI measurement and BSIC verification
- New section 'Capabilities for Support of Event Triggering and Reporting Criteria in CELL_FACH state (1.28 Mcps option)' is included listing 'traffic volume measurements' for requirements for reporting criteria per measurement category.

Consequences if not approved:	⌘	Non-uniform behaviour of the UE. Requirements for the reporting of measurements on TDD and FDD cells will be incorrect. Isolated Impact Analysis: Correction of a requirement where the specification was ambiguous or not sufficiently explicit. Would not affect implementations behaving like indicated in the CR, would affect implementations that do not behave like indicated in the CR.

Clauses affected:	⌘	8.4A.2.1, 8.4A.2.2, 8.4A.2.3, 8.4A.2.4, 8.4A.2.5, 8.5A (new)		
Other specs affected:	⌘	[ ] Other core specifications [X] Test specifications [ ] O&M Specifications	⌘	34.122
Other comments:	⌘			

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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.

8.4A Measurements in CELL_FACH State (1.28 Mcps option)

8.4A.1 Introduction

This section contains requirements on the UE regarding measurement reporting in CELL_FACH state. The measurements are defined in TS 25.225, the measurement model is defined in TS 25.302 and measurement accuracies are specified in section 9. Control of measurement reporting is specified in TS 25.331 and parallel measurements are specified in section 8.2. For the description of the idle intervals see TS 25.225, Annex A.

8.4A.2 Requirements

8.4A.2.1 UE Measurement Capability

The UE shall be able to monitor up to

- 32 intra frequency TDD cells, and
- 32 inter frequency cells, including
  - TDD ~~mode~~ cells distributed on up to [x] additional TDD carriers and
  - Depending on UE capability, FDD ~~mode~~ cells, distributed on up to 3 FDD carriers~~.~~and
- Depending on UE capability~~, the UE shall also in addition be able to support and process at least~~ 32 GSM cells distributed on up to 32 GSM carriers.

The requirements in section 9 on P-CCPCH RSCP measurements are applicable for a UE performing measurements according to this section. For inter-frequency FDD, TDD and GSM cell re-selection, measurement occasions as specified in TS 25.331 and, in addition, idle intervals as described in TS 25.225 are used to find and measure on these cells.

It is defined below how the measurements on different systems and modes are performed given the time allocated to that system. The time during the measurement occasions and idle intervals that is allocated to each of the different modes and systems shall be equally shared by the modes which the UE has capability for and that are in the monitored set signalled by the network.

The UE is required to measure periodically once every time period T_{meas} on each of the modes and systems, FDD interfrequency cells, TDD interfrequency cells and GSM carriers, for which the corresponding parameter N_{FDD}, N_{TDD} and N_{GSM} is set to 1, within the measurement time T_{meas}

$$T_{meas} = \left[\left(N_{FDD} + N_{TDD} + N_{GSM}\right) \cdot N_{TTI} \cdot \text{M\_REP} \cdot 10\right] \text{ms}$$

where the following parameters are defined:

N_{TDD}	= 0 or 1. If there are inter-frequency TDD cells in the neighbour list N_{TDD}=1, otherwise N_{TDD}=0.
N_{FDD}	= 0 or 1. If the UE is capable of FDD and there are FDD cells in the neighbour list N_{FDD}=*1* otherwise N_{FDD}=0.
N_{GSM}	= 0 or 1. If the UE is capable of GSM and there are GSM cells in the neighbour list, N_{GSM}=*1*, otherwise N_{GSM}=0.
M_REP	is the Measurement Occasion cycle length in number of frames as specified in TS 25.331.
N_{TTI}	is the number of frames in each measurement occasion, equal to the length of the largest TTI on the SCCPCH monitored by the UE.

8.4A.2.2 TDD intra frequency measurements

During the CELL_FACH state the UE shall continuously measure ~~detected~~ identified intra frequency cells and search for new intra frequency cells in the monitoring set. I~~n case the network requests the UE to report unlisted cells, the UE~~

~~shall also search for intra frequency cells outside the monitored set.~~ Intra frequency measurements can be performed (simultaneously to data reception from the active cell) in all time slots not used for inter frequency measurements.

8.4A.2.2.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

~~$$T_{identify\ intra} = Max\left\{[800], T_{basic\ identify\ TDD,\ intra} \cdot \frac{T_{Measurement\ Period,\ Intra}}{T_{Intra}}\right\} ms$$~~

$$T_{identify\ intra} = Max\left\{800, T_{basic\ identify\ TDD,\ intra} \cdot \frac{T_{Measurement\ Period,\ Intra}}{T_{Intra}}\right\} ms$$

A cell shall be considered detectable when P-CCPCH Ec/Io > -8 dB, DwPCH_Ec/Io > -5 dB.

8.4A.2.2.2 UE P-CCPCH measurement capability

In the CELL_FACH state the measurement period for intra frequency measurements is ~~[~~200~~]~~ ms. When no inter frequency measurement is scheduled, the UE shall be capable of performing P-CCPCH measurements for ~~[~~6~~]~~ ~~detected~~ identified intra-frequency cells of the monitored set and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of ~~[~~200~~]~~ ms. When inter-frequency measurements are required by the network, the UE shall be capable of performing P-CCPCH measurements for at least $Y_{measurement\ intra}$ cells , where $Y_{measurement\ intra}$ is defined in the following equation. ~~The detectable cells, that were not measured during that measurement period, shall be measured in the following measurement periods.~~ The measurement accuracy for all measured cells shall be as specified in the section 9. If the UE has identified more than $Y_{measurement\ intra}$ cells, the UE shall perform measurements of all identified cells but the reporting rate of P-CCPCH measurements of cells from UE physical layer to higher layers may be decreased.

$$Y_{measurement\ intra} = Floor\left\{X_{basic\ measurement\ TDD} \cdot \frac{T_{Intra}}{T_{Measurement\ Period,\ Intra}}\right\}$$

whereby function Floor(x) takes the integer part of x.

$X_{basic\ measurement\ TDD}$ is specified in section 8.1A.2.2.2

$T_{Measurement\_Period,\ Intra}$ is specified in section 8.1A.2.2.2

T_{Intra} : is specified in section 8.1A.2.2.2

$T_{basic\_identify\_TDD,\ intra}$ is specified in section 8.1A.2.2.2

8.4A.2.2.3 ~~Periodic~~ RACH Reporting

Reported measurements in the measurement reports sent on the RACH ~~contained in periodically triggered measurement reports~~ shall meet the requirements in section 9.

~~8.4A.2.2.4 Event Triggered Reporting~~

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

~~In CELL_FACH event triggered reporting can only be set for Traffic Volume measurements defined in TS 25.331.~~

8.4A.2.3 TDD inter frequency measurements

When signalled by the network during CELL_FACH state, the UE shall continuously measure ~~detected~~ identified inter frequency cells and search for new inter frequency cells indicated in the measurement control information.

8.4A.2.3.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

~~$$T_{identify\ inter} = Max\left\{[5000], T_{basic\ identify\ TDD,inter} \cdot \frac{T_{Measurement\ Period,\ Inter}}{T_{Inter\ FACH}} \cdot N_{Freq}\right\} ms$$~~

$$T_{identify\ inter} = Max\left\{5000, T_{basic\ identify\ TDD,inter} \cdot \frac{T_{Measurement\ Period,\ Inter}}{T_{Inter\ FACH}} \cdot N_{Freq}\right\} ms$$

A cell shall be considered detectable when P-CCPCH Ec/Io > -8 dB, DwPCH Ec/Io > -5 dB.

8.4A.2.3.2 ~~Measurement period~~UE P-CCPCH measurement capability

When TDD inter frequency measurements are scheduled, the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in section 9 with measurement period given by

~~$$T_{measurement\ inter} = Max\left\{[480], T_{basic\ measurement\ TDD\ inter} \cdot \frac{T_{Measurement\ Period,\ Inter}}{T_{Inter\ FACH}} \cdot N_{Freq}\right\} ms$$~~

$$T_{measurement\ inter} = Max\left\{T_{Measurement\ Period,\ Inter}, T_{basic\ measurement\ TDD\ inter} \cdot \frac{T_{Measurement\ Period,\ Inter}}{T_{Inter\ FACH}} \cdot N_{Freq}\right\} ms$$

where

$T_{Measurement\_Period\ Inter}$ is specified in section 8.1A.2.3.2

$T_{Inter\ FACH}$: This is the minimum time that is available for the inter frequency measurements during the period $T_{Measurement\_Period\ inter}$ with an arbitrarily chosen timing. The minimum time depends on the channel allocation and on measurement occasions during CELL_FACH state and is calculated by assuming [2*0.1] ms for implementation margin (for the description of the idle intervals see Annex A of 25.225 and for definition of measurement occasions during CELL_FACH state given by M_REP and TTI see TS 25.331). It is assumed for the requirement that the slot allocation allows measurement windows in the idle periods to be of minimum duration necessary to perform the measurements. During the measurement occasions for CELL_FACH state the UE shall measure primarily cells that can not be measured in the idle intervalls.

$T_{basic\_identify\_TDD,inter}$ is specified in section 8.1A.2.3.2

$T_{basic\_measurement\_TDD\ inter}$ is specified in section 8.1A.2.3.2

N_{Freq} is specified in section 8.1A.2.3.2

If the UE does not need measurement occasions to perform inter-frequency measurements, the measurement period for inter frequency measurements is ~~[~~480~~]~~ms.

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

$X_{basic\ measurement\ TDDinter}$ is defined in section 8.1A.2.3.2.

~~8.4A.2.3.3 Periodic Reporting~~

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

~~8.4A.2.3.4 Event Triggered Reporting~~

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

~~In CELL_FACH event triggered reporting can only be set for Traffic Volume measurements defined in TS 25.331.~~

8.4A.2.4 FDD measurements

The requirements in this section apply only to UE supporting FDD mode.

In the CELL_FACH state when FDD inter frequency measurements are scheduled the UE shall continuously measure ~~detected~~ identified inter frequency FDD cells and search for new inter frequency cells indicated in the measurement control information.

~~The UE shall be capable of measuring the requested measurement quantity of at least 32 cells on a maximum of 3 frequencies.~~

8.4A.2.4.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

~~$$T_{identify\ FDD\ inter} = Max\left\{[5000], T_{basic\ identify\ FDD\ inter} \cdot \frac{T_{Measurement\ Period\ FDD\ inter}}{T_{Inter\ FACH}} \cdot N_{Freq}\right\} ms$$~~

$$T_{identify\ FDD\ inter} = Max\left\{5000, T_{basic\ identify\ FDD\ inter} \cdot \frac{T_{Measurement\ Period\ FDD\ inter}}{T_{Inter\ FACH}} \cdot N_{Freq}\right\} ms$$

when CPICH Ec/Io ≥ -20 dB, SCH_Ec/Io ≥ -17 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. ~~When L3 filtering is used an additional delay can be expected.~~

8.4A.2.4.2 UE CPICH measurement capability~~Measurement period~~

When FDD inter frequency measurements are scheduled, the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9 with measurement period given by

$$T_{measurement\ FDD\ inter} = Max\left\{T_{Measurement\ Period\ FDD\ inter}, T_{basic\ measurement\ FDD\ inter} \cdot \frac{T_{Measurement\ Period\ FDD\ inter}}{T_{Inter\ FACH}} \cdot N_{Freq}\right\} ms$$

$T_{Measurement\_Period\ FDD\ inter}$ is specified in section 8.1A.2.4.2

$T_{Inter\ FACH:}$ is specified in section 8.4A.2.3.2

$T_{basic\_identify\_FDD,inter}$ is specified in section 8.1A.2.4.2

$T_{basic\_measurement\_FDD\ inter}$ is specified in section 8.1A.2.4.2.

N_{Freq} is specified in section 8.1A.2.4.2

If the UE does not need measurement occasions to perform inter-frequency measurements, the measurement period for FDD measurements is 480 ms.

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

$X_{basic\ measurement\ FDDinter}$ is defined in section 8.1A.2.4.2

~~8.4A.2.4.3 Periodic Reporting~~

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

~~8.4A.2.4.4 Event Triggered Reporting~~

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

~~In CELL_FACH event triggered reporting can only be set for Traffic Volume measurements defined in TS 25.331.~~

8.4A.2.5 GSM measurements

The requirements in this section applies only to UE supporting GSM.

To support cell reselection the UE shall always perform BSIC verification in Cell FACH state.

1) For a UE requiring idle intervals or measurement occasions to perform GSM measurements. When signalled by UTRAN during CELL_FACH state, the UE shall continuously measure GSM cells and search for new GSM cells given in the monitored set.

~~Measurements on a GSM cell can be requested with BSIC verified or BSIC non-verified.~~

~~If BSIC verified is requested for a GSM cell the UE shall only report measurement quantities for that GSM cell with a BSIC "verified". If BSIC verification is not required for a GSM cell the UE shall report measurement quantities for that GSM cell irrespectively if the BSIC has been verified or not verified.~~

In section 8.4A.2.1 the split of measurements between different modes and systems is defined. Every second measurement window due to idle intervals and measurements occasions scheduled for GSM measurements, as given by 8.4A.2.1 shall be allocated for GSM initial BSIC identification.

The remaining measurement windows due to idle intervals and measurements occasions used for GSM measurements shall be scheduled as follows. 3 occasions out of 4 shall be allocated for GSM carrier RSSI measurements and 1 out of 4 shall be allocated for GSM BSIC reconfirmation. The scheduling of measurement windows between GSM carrier RSSI measurements and GSM BSIC reconfirmation is up to the UE.

2) For a UE not requiring idle intervals or measurement occasions to perform GSM measurements:

- the UE shall measure all GSM cells present in the monitored set
- the relevant requirements for GSM dedicated mode when a TCH channel is assigned in TS 45.008 shall apply. This is further detailed in the following sub-sections.

~~For the UE performing GSM measurements, the requirements in TS 45.008 shall apply.~~

8.4A.2.5.1 GSM carrier RSSI

1) For a UE requiring idle intervals or measurement occasions to perform GSM measurements.

An UE supporting GSM measurements shall meet the minimum number of GSM carrier RSSI measurements specified in table 8.8. This measurement shall be based on measurement occasions allocated for GSM carrier RSSI measurements as described in 8.4A.2.5. In the CELL_FACH state the measurement period for the GSM carrier RSSI measurement is ~~[~~480~~]~~ ms.

The UE shall meet the measurement accuracy requirements stated for RXLEV in TS 45.008, when the given measurement time allows the UE to take at least ~~[~~3~~]~~ GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

Table 8.8

Measurement Window Length (slots)	Number of GSM carrier RSSI measurements.
3	[1]
4	[2]
5	[3]
7	[6]
15	[16]
30	[32]
60	[64]
120	[128]

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least [3] samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods. This means that, in this particular case, the L1 reporting period to higher layers of a GSM neighbour can be a multiple of the measurement period.

2) For a UE not requiring idle intervals or measurement occasions to perform GSM measurements:

The samples allocated to each carrier shall as far as possible be uniformly distributed over each measurement period. At least 3 received signal level measurement samples are required per RSSI value. The measurement period is 480 ms.

In case UTRA RACH procedure prevents the UE from acquiring the required number of samples per GSM carrier during one measurement period, the GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods.

8.4A.2.5.2 BSIC verification

1) For a UE requiring idle intervals or measurement occasions to perform GSM measurements.

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

~~1)~~ Initial BSIC identification
Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the TDD and GSM cell. The UE shall trigger the initial BSIC identification within 50% of the available measurement windows. The requirements for Initial BSIC identification can be found in 8.4A.2.5.2.1 Initial BSIC identification

~~2)~~ BSIC re-confirmation
Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The UE shall trigger the BSIC re-confirmation within the available measurement windows. The requirements for Initial BSIC identification can be found in 8.4A.2.5.2.2BSIC re-confirmation.

Measurements on a GSM cell can be requested with BSIC verified or BSIC non-verified. If GSM measurements are requested with BSIC verified the UE shall be able to report the GSM cells with BSIC verified for those cells where the verification of BSIC has been successful.

The BSIC of a GSM cell is considered to be "verified" if the UE has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification) and from that moment the BSIC shall be re-confirmed at least once every 6 times $T_{\text{re-confirm abort}}$ seconds. Otherwise the BSIC of the GSM cell is considered as "non-verified". The time requirement for initial BSIC identification, $T_{\text{identify abort}}$, and the BSIC re-confirmation interval $T_{\text{re-confirm abort}}$ can be found in the sections below.

The worst-case time for identification of one previously not identified GSM cell measurement is specified in TS 25.225, Annex A.

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 45.005.

2) For a UE not requiring idle intervals or measurement occasions to perform GSM measurements:

The UE shall attempt to check the BSIC for at least the 6 strongest GSM carriers at least every 10 seconds, to confirm that it is monitoring the same cell, as far as UTRA RACH procedure does not prevent UE from decoding BSIC.

If a BSIC is decoded and matches the expected value, it is considered as "verified", else it is considered as "non verified".

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 45.005.

8.4A.2.5.2.1 Initial BSIC identification

This measurement is performed in the measurement windows as described in 8.4A.2.5.

For GSM cells that are requested with BSIC verified the UE shall attempt to decode the SCH on the BCCH carrier of the ~~[~~8~~]~~ strongest BCCH carriers of the GSM cells indicated in the measurement control information. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BSIC carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value after layer 3 filtering.

When the UE attempts to decode the BSIC of one GSM BCCH carrier with unknown BSIC, the UE shall use all available measurements occasions allocated for GSM initial BSIC identification according section 8.4A.2.5 to attempt to decode the BSIC from that GSM BCCH carrier.

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

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

The UE shall be able to perform initial BSIC identification on one new GSM cell within the time specified in Annex A in TS 25.225.

When N new GSM cells are to be BSIC identified the time is changed to N *$T_{identify\ abort}$, with

$T_{identify\ abort}$ is specified in section 8.1A.2.5.

8.4A.2.5.2.2 BSIC re-confirmation

The requirements of this section are applicable for BSIC re-confirmation.

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

For each measurement window allocated for GSM BSIC reconfirmation as described in 8.4A.2.5, the UE shall attempt to decode the BSIC falling within the effective idle interval duration. If more than one BSIC can be decoded within the same measurement window, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts or if the UE has not been able to re-confirm the BSIC for a GSM cell within $T_{re\text{-}confirm\_abort}$ seconds, the UE shall abort the BSIC re-confirmation attempts for that GSM cell. The GSM cell shall be treated as a new GSM cell with unidentified BSIC and the GSM cell shall be moved to the initial BSIC identification procedure, see section 8.4A.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the ~~[~~8~~]~~ strongest GSM cells in the monitored list.

The time requirement for BSIC re-confirmation is specified in Annex A in TS 25.225.

$T_{re\text{-}confirm\ abort}$ is specified in section 8.1A.2.5.

It is assumed for the requirement that the measurement windows possible due to higher layer parameters are of minimum duration necessary to perform the measurements.

8.5A Capabilities for Support of Event Triggering and Reporting Criteria in CELL_FACH state (1.28 Mcps option)

8.5A.1 Introduction

This section contains requirements on UE capabilities for support of event triggering and reporting criteria.

8.5A.2 Requirements

In this section reporting criteria can be either event triggered reporting criteria or periodic reporting criteria.

Table 8.9: Requirements for reporting criteria per measurement category

Measurement category	E_{cat}	Note
Traffic volume measurements	[]	