**TSG RAN Meeting #15** **RP-020021**

**Cheju, Korea, 5 - 8 March 2002**

**Title:** **CRs (R'99 and Rel-4/Rel-5 Category A) to TS 25.133 (2)**

**Source:** **TSG RAN WG4**

**Agenda Item:** **7.4.3**

| RAN4 Tdoc | Spec | CR | Rev | Phase | Title | Cat | Curr Ver | New Ver |
|---|---|---|---|---|---|---|---|---|
| R4-020451 | 25.133 | 250 | 1 | R99 | FDD/FDD Soft Handover delay test case | F | 3.8.0 | 3.9.0 |
| R4-020452 | 25.133 | 251 | 1 | Rel-4 | FDD/FDD Soft Handover delay test case | A | 4.3.0 | 4.4.0 |
| R4-020453 | 25.133 | 252 | 1 | Rel-5 | FDD/FDD Soft Handover delay test case | A | 5.1.0 | 5.2.0 |
| R4-020454 | 25.133 | 253 | 1 | R99 | Inter-frequency hard handover test case | F | 3.8.0 | 3.9.0 |
| R4-020455 | 25.133 | 254 | 1 | Rel-4 | Inter-frequency hard handover test case | A | 4.3.0 | 4.4.0 |
| R4-020456 | 25.133 | 255 | 1 | Rel-5 | Inter-frequency hard handover test case | A | 5.1.0 | 5.2.0 |
| R4-020457 | 25.133 | 262 | 1 | R99 | Inter-frequency measurements in CELL_FACH | F | 3.8.0 | 3.9.0 |
| R4-020458 | 25.133 | 263 | 1 | Rel-4 | Inter-frequency measurements in CELL_FACH | A | 4.3.0 | 4.4.0 |
| R4-020459 | 25.133 | 264 | 1 | Rel-5 | Inter-frequency measurements in CELL_FACH | A | 5.1.0 | 5.2.0 |
| R4-020478 | 25.133 | 277 | 1 | R99 | Corrections to RRC connection re-establishment requirement | F | 3.8.0 | 3.9.0 |
| R4-020479 | 25.133 | 278 | 1 | Rel-4 | Corrections to RRC connection re-establishment requirement | A | 4.3.0 | 4.4.0 |
| R4-020486 | 25.133 | 279 | 1 | Rel-5 | Corrections to RRC connection re-establishment requirement | A | 5.1.0 | 5.2.0 |
| R4-020480 | 25.133 | 280 | 1 | R99 | Corrections to RRC connection re-establishment test cases | F | 3.8.0 | 3.9.0 |
| R4-020481 | 25.133 | 281 | 1 | Rel-4 | Corrections to RRC connection re-establishment test cases | A | 4.3.0 | 4.4.0 |
| R4-020482 | 25.133 | 282 | 1 | Rel-5 | Corrections to RRC connection re-establishment test cases | A | 5.1.0 | 5.2.0 |
| R4-020483 | 25.133 | 283 | 1 | R99 | Correction of hard handover test cases | F | 3.8.0 | 3.9.0 |
| R4-020484 | 25.133 | 284 | 1 | Rel-4 | Correction of hard handover test cases | A | 4.3.0 | 4.4.0 |
| R4-020485 | 25.133 | 285 | 1 | Rel-5 | Correction of hard handover test cases | A | 5.1.0 | 5.2.0 |

**3GPP TSG RAN WG4 Meeting #21** **R4-020451**

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

*CR-Form-v5*

# CHANGE REQUEST

⌘ **25.133** **CR** **250** ⌘ **rev** **1** ⌘ Current version: **3.8.0** ⌘

*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:*** | ⌘ | FDD/FDD Soft Handover delay test case |
| ***Source:*** | ⌘ | RAN WG4 |
| ***Work item code:*** | ⌘ | ***Date:*** ⌘ 1/2/2002 |
| ***Category:*** | ⌘ | **F** ***Release:*** ⌘ R99 |

*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:*** | ⌘ | Currently there is no test setup defined for the FDD/FDD Soft handover delay requirement in annex A of 25.133. It is belived important that the requirement is also tested and as TSG T WG1 shall follow the annex in 25.133 when defining the tests in 34.121 the test set-up needs to be defined in the annex A of 25.133. |
| ***Summary of change:*** | ⌘ | A test set-up and procedure is defined for the FDD/FDD Soft handover delay requirement.<br><br>Isolated Impact Analysis: Addition of a test case. Change in the test cases does not affect the function or the requirement. |
| ***Consequences if not approved:*** | ⌘ | The requirements on the FDD/FDD Soft handover delay requirement will not be tested. |

| | | | | |
|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | A.5.1 | | |
| ***Other specs affected:*** | ⌘ | [ ] Other core specifications<br>[X] Test specifications<br>[ ] O&M Specifications | ⌘ | 34.121 |
| ***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.5.1 FDD/FDD Soft Handover

~~NOTE: This section is included for consistency with numbering with section 5; currently no test covering requirements in sections 5.1.2.1 and 5.1.2.2 exists.~~

## A.5.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the soft handover delay in CELL_DCH state specified in section 5.1.2.

The test parameters are given in Table A.x and A.y below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A shall be used, and that CPICH Ec/Io and SFN-CFN observed time difference shall be reported together with Event 1A. The test consists of five successive time periods, with a time duration of T1, T2, T3, T4 and T5 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

**Table A.x: General test parameters for Soft handover**

| Parameter | | Unit | Value | Comment |
|---|---|---|---|---|
| DCH parameters | | | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.101 section A.3.1 |
| Power Control | | | On | |
| Target quality value on DTCH | | BLER | 0.01 | |
| Initial conditions | Active cell | | Cell 1 | |
| | Neighbouring cell | | Cell 2 | |
| Final condition | Active cell | | Cell 2 | |
| Reporting range | | dB | 3 | Applicable for event 1A and 1B |
| Hysteresis | | dB | 0 | |
| W | | | 1 | Applicable for event 1A and 1B |
| Reporting deactivation threshold | | | 0 | Applicable for event 1A |
| Time to Trigger | | ms | 0 | |
| Filter coefficient | | | 0 | |
| T1 | | s | 5 | |
| T2 | | s | 3 | |
| T3 | | s | 0.5 | |
| T4 | | ms | 60 | This is the requirement on active set update delay, see section 5.1.2.2, where KC=1 and OC=0. |
| T5 | | s | 2 | |

**Table A.y: Cell specific test parameters for Soft handover**

| Parameter | Unit | Cell 1 | | | | | Cell 2 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | T1 | T2 | T3 | T4 | T5 | T1 | T2 | T3 | T4 | T5 |
| CPICH_Ec/Ior | dB | -10 | | | | | -10 | | | | |
| PCCPCH_Ec/Ior | dB | -12 | | | | | -12 | | | | |
| SCH_Ec/Ior | dB | -12 | | | | | -12 | | | | |
| PICH_Ec/Ior | dB | -15 | | | | | -15 | | | | |
| DPCH_Ec/Ior | dB | Note1 | Note1 | Note1 | | N/A | N/A | N/A | Note3 | Note1 | |
| OCNS | | Note2 | Note2 | Note2 | | -0.941 | -0.941 | -0.941 | Note2 | Note2 | |
| $\hat{I}_{or}/I_{oc}$ | dB | 0 | 2.91 | 2.91 | | 2.91 | -Inf | 2.91 | 2.91 | 2.91 | |
| $I_{oc}$ | dBm/ 3.84 MHz | -70 | | | | | | | | | |
| CPICH_Ec/Io | dB | -13 | -14 | -14 | | -14 | -Inf | -14 | -14 | -14 | |
| Propagation Condition | | AWGN | | | | | | | | | |

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

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

Note 3: The DPCH level is controlled by the power control loop. The initial power shall be set equal to the DPCH_Ec/Ior of Cell 1 at the end of T2.

**Test procedure**

1) The test is started at the beginining of T1.

2) During time period T2 an Event 1A triggered measurement report shall be sent by the UE containing the CFN-SFN observed time difference between cell 1 and cell 2.

3) At the beginning of T3 the downlink DPCH of cell 2 shall be activated.

4) UTRAN shall send a Active Set Update command with activation time now adding cell 2 to the active set. The Active Set Update message shall be sent to the UE so that the whole message is available at the UE at the beginning of T4.

5) At the beginning of T5 the DPCH from cell 1 shall be switched off.

## A.5.1.2 Test Requirements

The UE downlink BLER shall not exceed the downlink BLER target, i.e. 1%, during time period T5.

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

**3GPP TSG RAN WG4 Meeting #21** **R4-020485**

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

CR-Form-v5

# CHANGE REQUEST

⌘ **25.133** **CR** **285** ⌘ **rev** **1** ⌘ Current version: **5.1.0** ⌘

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

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

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Correction of hard handover test cases |
| ***Source:*** | ⌘ | RAN WG4 |
| ***Work item code:*** | ⌘ | TEI |
| ***Date:*** | ⌘ | 1/2/2002 |
| ***Category:*** | ⌘ | **A** |
| ***Release:*** | ⌘ | Rel-5 |

*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:*** | ⌘ | In case of hard handover the resources in the prior serving cell are released. In table A5.0A and A5.0C a Note states, that the DPCH in the prior serving cell is still power controlled after the handover execution. |
| ***Summary of change:*** | ⌘ | Correction of the Note on the power control of the DPCH related to the prior serving cell for the time period after the HO execution. |
| ***Consequences if not approved:*** | ⌘ | Test cases will be incorrect and technically not feasible.<br>Isolated Impact Analysis: This CR does not affect implementations, because it is a correction of test cases where the test cases were in contradiction to the general requirement or technically not feasible. |

| | | | | |
|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | A5.2 | | |
| ***Other specs affected:*** | ⌘ | ☐ Other core specifications<br>**X** Test specifications<br>**-** O&M Specifications | ⌘ | 34.121 |
| ***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://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.5.2 FDD/FDD Hard Handover

### A.5.2.1 Handover to intra-frequency cell

#### A.5.2.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the hard handover delay in CELL_DCH state in the single carrier case reported in section 5.2.2.1.
The test parameters are given in Table A.5.0 and A.5.0A below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 1B shall be used, and that CPICH Ec/Io and SFN-CFN observed timed difference shall be reported together with Event 1A. 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.5.0: General test parameters for Handover to intra-frequency cell**

| Parameter | | Unit | Value | Comment |
|---|---|---|---|---|
| DCH parameters | | | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.101 section A.3.1 |
| Power Control | | | On | |
| Target quality value on DTCH | | BLER | 0.01 | |
| Initial conditions | Active cell | | Cell 1 | |
| | Neighbouring cell | | Cell 2 | |
| Final condition | Active cell | | Cell 2 | |
| Reporting range | | dB | 3 | Applicable for event 1A and 1B |
| Hysteresis | | dB | 0 | |
| W | | | 1 | Applicable for event 1A and 1B |
| Reporting deactivation threshold | | | 0 | Applicable for event 1A |
| Time to Trigger | | ms | 0 | |
| Filter coefficient | | | 0 | |
| T1 | | s | 5 | |
| T2 | | s | 5 | |
| T3 | | s | 5 | |

**Table A.5.0A: Cell specific test parameters for Handover to intra-frequency cell**

| Parameter | Unit | Cell 1 | | | Cell 2 | | |
|---|---|---|---|---|---|---|---|
| | | T1 | T2 | T3 | T1 | T2 | T3 |
| CPICH_Ec/Ior | dB | -10 | | | -10 | | |
| PCCPCH_Ec/Ior | dB | -12 | | | -12 | | |
| SCH_Ec/Ior | dB | -12 | | | -12 | | |
| PICH_Ec/Ior | dB | -15 | | | -15 | | |
| DPCH_Ec/Ior | dB | Note1 | Note1 | Note~~1~~3 | N/A | N/A | Note1 |
| OCNS | | Note2 | Note2 | Note2 | -0.941 | -0.941 | Note2 |
| $\hat{I}_{or}/I_{oc}$ | dB | 0 | 6.97 | | -Infinity | 5.97 | |
| $I_{oc}$ | dBm/ 3.84 MHz | -70 | | | | | |
| CPICH_Ec/Io | dB | -13 | | | -Infinity | -14 | |
| Propagation Condition | | AWGN | | | | | |
| Note 1: The DPCH level is controlled by the power control loop<br>Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{or}$.<br>Note 3: The DPCH no more needs to be power controlled by the power control loop. | | | | | | | |

### A.5.2.1.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 70 ms from the beginning of time period T3.
The rate of correct handovers observed during repeated tests shall be at least 90%.

## A.5.2.2 Handover to inter-frequency cell

### A.5.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the hard handover delay in CELL_DCH state in the dual carrier case reported in section 5.2.2.1.
The test consists of two successive time periods, with a time duration T1 and T2. The test parameters are given in tables A.5.0B and A.5.0C below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 2C shall be used. The CPICH Ec/I0 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 one 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 T2. The RRC procedure delay is defined [16].

**Table A.5.0B: General test parameters for Handover to inter-frequency cell**

| Parameter | | Unit | Value | Comment |
|---|---|---|---|---|
| DCH parameters | | | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.101 section A.3.1 |
| Power Control | | | On | |
| Target quality value on DTCH | | BLER | 0.01 | |
| Compressed mode | | | A.22 set 1 | As specified in TS 25.101 section A.5. |
| Initial conditions | Active cell | | Cell 1 | |
| | Neighbour cell | | Cell 2 | |
| Final conditions | Active cell | | Cell 2 | |
| Threshold non used frequency | | dB | -18 | Absolute Ec/I0 threshold for event 2C |
| Reporting range | | dB | 4 | Applicable for event 1A |
| Hysteresis | | dB | 0 | |
| W | | | 1 | Applicable for event 1A |
| W non-used frequency | | | 1 | Applicable for event 2C |
| Reporting deactivation threshold | | | 0 | Applicable for event 1A |
| Time to Trigger | | ms | 0 | |
| Filter coefficient | | | 0 | |
| T1 | | s | 10 | |
| T2 | | s | 5 | |

**TableA.5.0C: Cell Specific parameters for Handover to inter-frequency cell**

| Parameter | Unit | Cell 1 | | Cell 2 | |
|---|---|---|---|---|---|
| | | T1 | T2 | T1 | T2 |
| UTRA RF Channel Number | | Channel 1 | | Channel 2 | |
| CPICH_Ec/Ior | dB | -10 | | -10 | |
| PCCPCH_Ec/Ior | dB | -12 | | -12 | |
| SCH_Ec/Ior | dB | -12 | | -12 | |
| PICH_Ec/Ior | dB | -15 | | -15 | |
| DPCH_Ec/Ior | dB | Note1 | Note 3 | N/A | Note1 |
| OCNS | | Note 2 | | -0.941 | Note 2 |
| $\hat{I}_{or}/I_{oc}$ | dB | 0 | 0 | -1.8 | -1.8 |
| $I_{oc}$ | dBm/3.84 MHz | -70 | | | |
| CPICH_Ec/Io | dB | -13 | -13 | -14 | -14 |
| Propagation Condition | | AWGN | | | |
| Note 1: The DPCH level is controlled by the power control loop<br>Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{or}$.<br>Note 3: The DPCH no more needs to be power controlled by the power control loop. | | | | | |

### A.5.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 100 ms from the beginning of time period T2.

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

**3GPP TSG RAN WG4 Meeting #21** **R4-020484**

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

CR-Form-v5

# CHANGE REQUEST

⌘ **25.133** **CR** **284** ⌘ **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 ☐ Core Network ☐

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Correction of hard handover test cases |
| ***Source:*** | ⌘ | RAN WG4 |
| ***Work item code:*** | ⌘ | TEI |
| ***Date:*** | ⌘ | 1/2/2002 |
| ***Category:*** | ⌘ | **A** |
| ***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:*** | ⌘ | In case of hard handover the resources in the prior serving cell are released. In table A5.0A and A5.0C a Note states, that the DPCH in the prior serving cell is still power controlled after the handover execution. |
| ***Summary of change:*** | ⌘ | Deleting of the Note on the power control of the DPCH related to the prior serving cell for the time period after the HO execution. |
| ***Consequences if not approved:*** | ⌘ | Test cases will be incorrect and technically not feasible.<br>Isolated Impact Analysis: This CR does not affect implementations, because it is a correction of test cases where the test cases were in contradiction to the general requirement or technically not feasible. |

| | | | | |
|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | A5.2 | | |
| ***Other specs affected:*** | ⌘ | ☐ Other core specifications<br>**X** Test specifications<br>**-** O&M Specifications | ⌘ | 34.121 |
| ***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://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.5.2 FDD/FDD Hard Handover

### A.5.2.1 Handover to intra-frequency cell

#### A.5.2.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the hard handover delay in CELL_DCH state in the single carrier case reported in section 5.2.2.1.
The test parameters are given in Table A.5.0 and A.5.0A below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 1B shall be used, and that CPICH Ec/Io and SFN-CFN observed timed difference shall be reported together with Event 1A. 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.5.0: General test parameters for Handover to intra-frequency cell**

| Parameter | | Unit | Value | Comment |
|---|---|---|---|---|
| DCH parameters | | | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.101 section A.3.1 |
| Power Control | | | On | |
| Target quality value on DTCH | | BLER | 0.01 | |
| Initial conditions | Active cell | | Cell 1 | |
| | Neighbouring cell | | Cell 2 | |
| Final condition | Active cell | | Cell 2 | |
| Reporting range | | dB | 3 | Applicable for event 1A and 1B |
| Hysteresis | | dB | 0 | |
| W | | | 1 | Applicable for event 1A and 1B |
| Reporting deactivation threshold | | | 0 | Applicable for event 1A |
| Time to Trigger | | ms | 0 | |
| Filter coefficient | | | 0 | |
| T1 | | s | 5 | |
| T2 | | s | 5 | |
| T3 | | s | 5 | |

**Table A.5.0A: Cell specific test parameters for Handover to intra-frequency cell**

| Parameter | Unit | Cell 1 | | | Cell 2 | | |
|---|---|---|---|---|---|---|---|
| | | T1 | T2 | T3 | T1 | T2 | T3 |
| CPICH_Ec/Ior | dB | -10 | | | -10 | | |
| PCCPCH_Ec/Ior | dB | -12 | | | -12 | | |
| SCH_Ec/Ior | dB | -12 | | | -12 | | |
| PICH_Ec/Ior | dB | -15 | | | -15 | | |
| DPCH_Ec/Ior | dB | Note1 | Note1 | Note3~~1~~ | N/A | N/A | Note1 |
| OCNS | | Note2 | Note2 | Note2 | -0.941 | -0.941 | Note2 |
| $\hat{I}_{or}/I_{oc}$ | dB | 0 | 6.97 | | -Infinity | 5.97 | |
| $I_{oc}$ | dBm/ 3.84 MHz | -70 | | | | | |
| CPICH_Ec/Io | dB | -13 | | | -Infinity | -14 | |
| Propagation Condition | | AWGN | | | | | |
| Note 1: The DPCH level is controlled by the power control loop<br>Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{or}$.<br>Note 3: The DPCH may not be power controlled by the power control loop. | | | | | | | |

### A.5.2.1.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 70 ms from the beginning of time period T3.
The rate of correct handovers observed during repeated tests shall be at least 90%.

## A.5.2.2 Handover to inter-frequency cell

### A.5.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the hard handover delay in CELL_DCH state in the dual carrier case reported in section 5.2.2.1.
The test consists of two successive time periods, with a time duration T1 and T2. The test parameters are given in tables A.5.0B and A.5.0C below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 2C shall be used. The CPICH Ec/I0 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 one 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 T2. The RRC procedure delay is defined [16].

**Table A.5.0B: General test parameters for Handover to inter-frequency cell**

| Parameter | | Unit | Value | Comment |
|---|---|---|---|---|
| DCH parameters | | | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.101 section A.3.1 |
| Power Control | | | On | |
| Target quality value on DTCH | | BLER | 0.01 | |
| Compressed mode | | | A.22 set 1 | As specified in TS 25.101 section A.5. |
| Initial conditions | Active cell | | Cell 1 | |
| | Neighbour cell | | Cell 2 | |
| Final conditions | Active cell | | Cell 2 | |
| Threshold non used frequency | | dB | -18 | Absolute Ec/I0 threshold for event 2C |
| Reporting range | | dB | 4 | Applicable for event 1A |
| Hysteresis | | dB | 0 | |
| W | | | 1 | Applicable for event 1A |
| W non-used frequency | | | 1 | Applicable for event 2C |
| Reporting deactivation threshold | | | 0 | Applicable for event 1A |
| Time to Trigger | | ms | 0 | |
| Filter coefficient | | | 0 | |
| T1 | | s | 10 | |
| T2 | | s | 5 | |

**TableA.5.0C: Cell Specific parameters for Handover to inter-frequency cell**

| Parameter | Unit | Cell 1 | | Cell 2 | |
|---|---|---|---|---|---|
| | | T1 | T2 | T1 | T2 |
| UTRA RF Channel Number | | Channel 1 | | Channel 2 | |
| CPICH_Ec/Ior | dB | -10 | | -10 | |
| PCCPCH_Ec/Ior | dB | -12 | | -12 | |
| SCH_Ec/Ior | dB | -12 | | -12 | |
| PICH_Ec/Ior | dB | -15 | | -15 | |
| DPCH_Ec/Ior | dB | Note1 | Note 3 | N/A | Note1 |
| OCNS | | Note 2 | | -0.941 | Note 2 |
| $\hat{I}_{or}/I_{oc}$ | dB | 0 | 0 | -1.8 | -1.8 |
| $I_{oc}$ | dBm/3.84 MHz | -70 | | | |
| CPICH_Ec/Io | dB | -13 | -13 | -14 | -14 |
| Propagation Condition | | AWGN | | | |
| Note 1: The DPCH level is controlled by the power control loop<br>Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{or}$.<br>Note 3: The DPCH may not be power controlled by the power control loop. | | | | | |

### A.5.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 100 ms from the beginning of time period T2.

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

**3GPP TSG RAN WG4 Meeting #21** **R4-020483**

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

CR-Form-v5

# CHANGE REQUEST

⌘ **25.133** **CR** **283** ⌘ **rev** **1** ⌘ Current version: **3.8.0** ⌘

*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 hard handover test cases |
| ***Source:*** | ⌘ | RAN WG4 |
| ***Work item code:*** | ⌘ | ***Date:*** ⌘ 1/2/2002 |
| ***Category:*** | ⌘ | **F** ***Release:*** ⌘ R99 |

*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:*** | ⌘ | In case of hard handover the resources in the prior serving cell are released. In table A5.0A and A5.0C a Note states, that the DPCH in the prior serving cell is still power controlled after the handover execution. |
| ***Summary of change:*** | ⌘ | Correction of the Note on the power control of the DPCH related to the prior serving cell for the time period after the HO execution. |
| ***Consequences if not approved:*** | ⌘ | Test cases will be incorrect and technically not feasible.<br>Isolated Impact Analysis: This CR does not affect implementations, because it is a correction of test cases where the test cases were in contradiction to the general requirement or technically not feasible. |

| | | | | |
|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | A5.2 | | |
| ***Other specs affected:*** | ⌘ | ☐ Other core specifications<br>**X** Test specifications<br>**-** O&M Specifications | ⌘ | 34.121 |
| ***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://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.5.2 FDD/FDD Hard Handover

### A.5.2.1 Handover to intra-frequency cell

#### A.5.2.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the hard handover delay in CELL_DCH state in the single carrier case reported in section 5.2.2.1.
The test parameters are given in Table A.5.0 and A.5.0A below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 1B shall be used, and that CPICH Ec/Io and SFN-CFN observed timed difference shall be reported together with Event 1A. 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.5.0: General test parameters for Handover to intra-frequency cell**

| Parameter | | Unit | Value | Comment |
|---|---|---|---|---|
| DCH parameters | | | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.101 section A.3.1 |
| Power Control | | | On | |
| Target quality value on DTCH | | BLER | 0.01 | |
| Initial conditions | Active cell | | Cell 1 | |
| | Neighbouring cell | | Cell 2 | |
| Final condition | Active cell | | Cell 2 | |
| Reporting range | | dB | 3 | Applicable for event 1A and 1B |
| Hysteresis | | dB | 0 | |
| W | | | 1 | Applicable for event 1A and 1B |
| Reporting deactivation threshold | | | 0 | Applicable for event 1A |
| Time to Trigger | | ms | 0 | |
| Filter coefficient | | | 0 | |
| T1 | | s | 5 | |
| T2 | | s | 5 | |
| T3 | | s | 5 | |

**Table A.5.0A: Cell specific test parameters for Handover to intra-frequency cell**

| Parameter | Unit | Cell 1 | | | Cell 2 | | |
|---|---|---|---|---|---|---|---|
| | | T1 | T2 | T3 | T1 | T2 | T3 |
| CPICH_Ec/Ior | dB | -10 | | | -10 | | |
| PCCPCH_Ec/Ior | dB | -12 | | | -12 | | |
| SCH_Ec/Ior | dB | -12 | | | -12 | | |
| PICH_Ec/Ior | dB | -15 | | | -15 | | |
| DPCH_Ec/Ior | dB | Note1 | Note1 | Note3~~1~~ | N/A | N/A | Note1 |
| OCNS | | Note2 | Note2 | Note2 | -0.941 | -0.941 | Note2 |
| $\hat{I}_{or}/I_{oc}$ | dB | 0 | 6.97 | | -Infinity | 5.97 | |
| $I_{oc}$ | dBm/ 3.84 MHz | -70 | | | | | |
| CPICH_Ec/Io | dB | -13 | | | -Infinity | -14 | |
| Propagation Condition | | AWGN | | | | | |
| Note 1: The DPCH level is controlled by the power control loop<br>Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{or}$.<br>Note 3: The DPCH may not be power controlled by the power control loop. | | | | | | | |

### A.5.2.1.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 70 ms from the beginning of time period T3.
The rate of correct handovers observed during repeated tests shall be at least 90%.

## A.5.2.2 Handover to inter-frequency cell

### A.5.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the hard handover delay in CELL_DCH state in the dual carrier case reported in section 5.2.2.1.
The test consists of two successive time periods, with a time duration T1 and T2. The test parameters are given in tables A.5.0B and A.5.0C below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 2C shall be used. The CPICH Ec/I0 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 one 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 T2. The RRC procedure delay is defined [16].

**Table A.5.0B: General test parameters for Handover to inter-frequency cell**

| Parameter | | Unit | Value | Comment |
|---|---|---|---|---|
| DCH parameters | | | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.101 section A.3.1 |
| Power Control | | | On | |
| Target quality value on DTCH | | BLER | 0.01 | |
| Compressed mode | | | A.22 set 1 | As specified in TS 25.101 section A.5. |
| Initial conditions | Active cell | | Cell 1 | |
| | Neighbour cell | | Cell 2 | |
| Final conditions | Active cell | | Cell 2 | |
| Threshold non used frequency | | dB | -18 | Absolute Ec/I0 threshold for event 2C |
| Reporting range | | dB | 4 | Applicable for event 1A |
| Hysteresis | | dB | 0 | |
| W | | | 1 | Applicable for event 1A |
| W non-used frequency | | | 1 | Applicable for event 2C |
| Reporting deactivation threshold | | | 0 | Applicable for event 1A |
| Time to Trigger | | ms | 0 | |
| Filter coefficient | | | 0 | |
| T1 | | s | 10 | |
| T2 | | s | 5 | |

**TableA.5.0C: Cell Specific parameters for Handover to inter-frequency cell**

| Parameter | Unit | Cell 1 | | Cell 2 | |
|---|---|---|---|---|---|
| | | T1 | T2 | T1 | T2 |
| UTRA RF Channel Number | | Channel 1 | | Channel 2 | |
| CPICH_Ec/Ior | dB | -10 | | -10 | |
| PCCPCH_Ec/Ior | dB | -12 | | -12 | |
| SCH_Ec/Ior | dB | -12 | | -12 | |
| PICH_Ec/Ior | dB | -15 | | -15 | |
| DPCH_Ec/Ior | dB | Note1 | Note 3 | N/A | Note1 |
| OCNS | | Note 2 | | -0.941 | Note 2 |
| $\hat{I}_{or}/I_{oc}$ | dB | 0 | 0 | -1.8 | -1.8 |
| $I_{oc}$ | dBm/3.84 MHz | -70 | | | |
| CPICH_Ec/Io | dB | -13 | -13 | -14 | -14 |
| Propagation Condition | | AWGN | | | |
| Note 1: The DPCH level is controlled by the power control loop<br>Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{or}$.<br>Note 3: The DPCH may not be power controlled by the power control loop. | | | | | |

### A.5.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 100 ms from the beginning of time period T2.

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

**3GPP TSG RAN WG4 Meeting #21** **R4-020482**

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

CR-Form-v5

# CHANGE REQUEST

⌘ **25.133** **CR** **282** ⌘ **rev** **1** ⌘ Current version: **5.1.0** ⌘

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

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

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Corrections to RRC connection re-establishment test cases |
| ***Source:*** | ⌘ | RAN WG4 |
| ***Work item code:*** | ⌘ | TEI |
| ***Date:*** | ⌘ | 1/2/2002 |
| ***Category:*** | ⌘ | **A** |
| ***Release:*** | ⌘ | Rel-5 |

*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 RRC test cases contain some ambiguity.<br>-Clarification of the parameters $N_{313}$ and $N_{315}$.<br>-The value for RRC re-establishment delay is not correct.<br>-The definition of $T_{SI}$ is not inline with the definition used in the general requirement.<br>- Contradictory statement related to cell 2in Test2.<br>- The final status of the test is not clear. |
| ***Summary of change:*** | ⌘ | Clarification of the general test parameters including $N_{313}$ and $N_{315}$. The values for the RRC re-establisment delay are updated, in addition a NOTE on the calculation is added. The wording of $T_{SI}$ is updated. RF parameter of Cell1 during T2 are modified.<br>Add implementation margin into the test cases. |
| ***Consequences if not approved:*** | ⌘ | Unclear definitions and ambiguity remaining in the test cases. Contradiction between TS25.133 and the description of this procedure in TS25.214 and TS25.331.<br>Isolated Impact Analysis: This CR does not affect implementations, because it is a correction of the test cases. |

| | | | | |
|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | A6 | | |
| ***Other specs affected:*** | ⌘ | ☐ Other core specifications<br>**X** Test specifications<br>**-** O&M Specifications | ⌘ | 34.121 |
| ***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://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.6 RRC Connection Control

## A.6.1 RRC Re-establishment delay

### A.6.1.1 Test Purpose and Environment

The purpose is to verify that the RRC re-establishment delay is within the specified limits. These tests will verify the requirements in section 6.1.2.

#### A.6.1.1.1 TEST 1

The test parameters are given in table A.6.1 and table A.6.2 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.6.1 General test parameters for RRC re-establishment delay, Test 1**

| Parameter | Unit | Value | Comment |
|---|---|---|---|
| DCH Parameters | | DL Reference measurement channel 12.2 kbps | As specified in TS 25.101, section A.3.1 |
| Power Control | | On | |
| Active cell: Initial condition | | Cell 1 | |
| Active cell: 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).~~Maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell. For information on the system information blocks that needs to be received by the UE, see TS 25.331.~~<br><br>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~~ | Included in the monitored set. |
| Reporting frequency | Seconds | 4 | |
| T1 | s | 10 | |
| T2 | s | 6 | |

**Table A.6.2 Cell specific parameters for RRC re-establishment delay test, Test 1**

| Parameter | Unit | Cell 1 | | Cell 2 | |
|---|---|---|---|---|---|
| | | T1 | T2 | T1 | T2 |
| Cell Frequency | ChNr | 1 | | 1 | |
| CPICH_Ec/Ior | dB | -10 | | -10 | |
| PCCPCH_Ec/Ior | dB | -12 | | -12 | |
| SCH_Ec/Ior | dB | -12 | | -12 | |
| PICH_Ec/Ior | dB | -15 | | -15 | |
| DCH_Ec/Ior | dB | -17 | -Infinity | Not applicable | |
| OCNS_Ec/Ior | dB | -1.049 | -0.941 | -0.941 | |
| $\hat{I}_{or}/I_{oc}$ | dB | 2,39 | -Infinity | 4,39 | |
| $I_{oc}$ | dBm/ 3.84 MHz | -70 | | | |
| CPICH_Ec/Io | dB | -15 | -Infinity | -13 | |
| Propagation Condition | | AWGN | | | |

## A.6.1.1.2 TEST 2

The test parameters are given in table A.6.3 and table A.6.4 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.6.3 General test parameters for RRC re-establishment delay, Test 2**

| Parameter | | Unit | Value | Comment |
|---|---|---|---|---|
| DCH Parameters | | | DL Reference measurement channel 12.2 kbps | As specified in TS 25.101, section A.3.1 |
| 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).~~Maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell. For information on the system information blocks that needs to be received by the UE, see TS 25.331.~~<br><br>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 include 2 additional frequencies. |
| Cell 2 ~~included in monitored set~~ | | | ~~Not Included~~ | Cell 2 is not included in the monitored set. Cell 2 is located on one of the 2 additional frequencies of the monitored set. |
| Reporting frequency | | Seconds | 4 | |
| T1 | | s | 10 | |
| T2 | | s | 6 | |

**Table A.6.4 Cell specific parameters for RRC re-establishment delay test, Test 2**

| Parameter | Unit | Cell 1 | | Cell 2 | |
|---|---|---|---|---|---|
| | | T1 | T2 | T1 | T2 |
| Cell Frequency | ChNr | 1 | | 2 | |
| CPICH_Ec/Ior | dB | -10 | | -10 | |
| PCCPCH_Ec/Ior | dB | -12 | | -12 | |
| SCH_Ec/Ior | dB | -12 | | -12 | |
| PICH_Ec/Ior | dB | -15 | | -15 | |
| DCH_Ec/Ior | dB | -17 | -Infinity | Not applicable | |
| OCNS_Ec/Ior | dB | -1.049 | -0.941 | -0.941 | |
| $\hat{I}_{or}/I_{oc}$ | dB | -3,35 | -Infinity | -Infinity | 0,02 |
| $I_{oc}$ | dBm/ 3.84 MHz | -70 | | | |
| CPICH_Ec/Io | dB | -15 | -Infinity | -Infinity | -13 |
| Propagation Condition | | AWGN | | | |

## A.6.1.2 Test Requirements

### A.6.1.2.1 Test 1

The~~RRC~~ R~~r~~e-establishment delay $T_{RE\text{-}ESTABLISH}$ to a known cell shall be less than ~~1670~~1.9 ~~m~~s.
The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The Re-establishment delay in this case can be expressed 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+$T_{313}$

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

$N_{313}$=20

$T_{313}$=0s

$T_{search}$=100ms

$T_{RA}$ = The additional delay caused by the random access procedure. 40 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.

This gives a total of 1820ms, allow 1.9s in the test case.

### A.6.1.2.2 Test 2

The ~~RRC~~ R~~r~~e-establishment delay to an unknown cell shall be less than ~~3970~~4.2 ~~m~~s.
The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

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

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

Where

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

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

$N_{313} = 20$

$T_{313} = 0s$

$T_{search} = 800ms$

*NF* is the number of different frequencies in the monitored set. 3 frequencies are assumed in this test case.

$T_{RA}$ = The additional delay caused by the random access procedure. 40 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.

This gives a total of 4120ms, allow 4.2s in the test case.

**3GPP TSG RAN WG4 Meeting #21** **R4-020481**

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

CR-Form-v5

# CHANGE REQUEST

⌘ **25.133** **CR** **281** ⌘ **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 ☐ Core Network ☐

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Corrections to RRC connection re-establishment test cases |
| ***Source:*** | ⌘ | RAN WG4 |
| ***Work item code:*** | ⌘ | TEI |
| ***Date:*** | ⌘ | 1/2/2002 |
| ***Category:*** | ⌘ | **A** |
| ***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 RRC test cases contain some ambiguity.<br>-Clarification of the parameters $N_{313}$ and $N_{315}$.<br>-The value for RRC re-establishment delay is not correct.<br>-The definition of $T_{SI}$ is not inline with the definition used in the general requirement.<br>- Contradictory statement related to cell 2in Test2.<br>- The final status of the test is not clear. |
| ***Summary of change:*** | ⌘ | Clarification of the general test parameters including $N_{313}$ and $N_{315}$. The values for the RRC re-establisment delay are updated, in addition a NOTE on the calculation is added. The wording of $T_{SI}$ is updated. RF parameter of Cell1 during T2 are modified.<br>Add implementation margin into the test cases. |
| ***Consequences if not approved:*** | ⌘ | Unclear definitions and ambiguity remaining in the test cases. Contradiction between TS25.133 and the description of this procedure in TS25.214 and TS25.331.<br>Isolated Impact Analysis: This CR does not affect implementations, because it is a correction of the test cases. |

| | | | | |
|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | A6 | | |
| ***Other specs affected:*** | ⌘ | ☐ Other core specifications<br>**X** Test specifications<br>**-** O&M Specifications | ⌘ | 34.121 |
| ***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://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.6 RRC Connection Control

## A.6.1 RRC Re-establishment delay

### A.6.1.1 Test Purpose and Environment

The purpose is to verify that the RRC re-establishment delay is within the specified limits. These tests will verify the requirements in section 6.1.2.

#### A.6.1.1.1 TEST 1

The test parameters are given in table A.6.1 and table A.6.2 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.6.1 General test parameters for RRC re-establishment delay, Test 1**

| Parameter | Unit | Value | Comment |
|---|---|---|---|
| DCH Parameters | | DL Reference measurement channel 12.2 kbps | As specified in TS 25.101, section A.3.1 |
| Power Control | | On | |
| Active cell: Initial condition | | Cell 1 | |
| Active cell: 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).~~Maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell. For information on the system information blocks that needs to be received by the UE, see TS 25.331.~~<br><br>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~~ | Included in the monitored set. |
| Reporting frequency | Seconds | 4 | |
| T1 | s | 10 | |
| T2 | s | 6 | |

**Table A.6.2 Cell specific parameters for RRC re-establishment delay test, Test 1**

| Parameter | Unit | Cell 1 | | Cell 2 | |
|---|---|---|---|---|---|
| | | T1 | T2 | T1 | T2 |
| Cell Frequency | ChNr | 1 | | 1 | |
| CPICH_Ec/Ior | dB | -10 | | -10 | |
| PCCPCH_Ec/Ior | dB | -12 | | -12 | |
| SCH_Ec/Ior | dB | -12 | | -12 | |
| PICH_Ec/Ior | dB | -15 | | -15 | |
| DCH_Ec/Ior | dB | -17 | -Infinity | Not applicable | |
| OCNS_Ec/Ior | dB | -1.049 | -0.941 | -0.941 | |
| $\hat{I}_{or}/I_{oc}$ | dB | 2,39 | -Infinity | 4,39 | |
| $I_{oc}$ | dBm/ 3.84 MHz | -70 | | | |
| CPICH_Ec/Io | dB | -15 | -Infinity | -13 | |
| Propagation Condition | | AWGN | | | |

## A.6.1.1.2 TEST 2

The test parameters are given in table A.6.3 and table A.6.4 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.6.3 General test parameters for RRC re-establishment delay, Test 2**

| Parameter | | Unit | Value | Comment |
|---|---|---|---|---|
| DCH Parameters | | | DL Reference measurement channel 12.2 kbps | As specified in TS 25.101, section A.3.1 |
| 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).~~Maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell. For information on the system information blocks that needs to be received by the UE, see TS 25.331.~~<br><br>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 include 2 additional frequencies. |
| Cell 2 ~~included in monitored set~~ | | | ~~Not Included~~ | Cell 2 is not included in the monitored set. Cell 2 is located on one of the 2 additional frequencies of the monitored set. |
| Reporting frequency | | Seconds | 4 | |
| T1 | | s | 10 | |
| T2 | | s | 6 | |

**Table A.6.4 Cell specific parameters for RRC re-establishment delay test, Test 2**

| Parameter | Unit | Cell 1 | | Cell 2 | |
|---|---|---|---|---|---|
| | | T1 | T2 | T1 | T2 |
| Cell Frequency | ChNr | 1 | | 2 | |
| CPICH_Ec/Ior | dB | -10 | | -10 | |
| PCCPCH_Ec/Ior | dB | -12 | | -12 | |
| SCH_Ec/Ior | dB | -12 | | -12 | |
| PICH_Ec/Ior | dB | -15 | | -15 | |
| DCH_Ec/Ior | dB | -17 | -Infinity | Not applicable | |
| OCNS_Ec/Ior | dB | -1.049 | -0.941 | -0.941 | |
| $\hat{I}_{or}/I_{oc}$ | dB | -3,35 | -Infinity | -Infinity | 0,02 |
| $I_{oc}$ | dBm/ 3.84 MHz | -70 | | | |
| CPICH_Ec/Io | dB | -15 | -Infinity | -Infinity | -13 |
| Propagation Condition | | AWGN | | | |

## A.6.1.2 Test Requirements

### A.6.1.2.1 Test 1

The ~~RRC~~ R~~r~~e-establishment delay $T_{RE\text{-}ESTABLISH}$ to a known cell shall be less than ~~1670~~1.9 ~~m~~s.
The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

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

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

Where

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

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

$N_{313}=20$

$T_{313}=0s$

$T_{search}=100ms$

$T_{RA}$ = The additional delay caused by the random access procedure. 40 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.

This gives a total of 1820ms, allow 1.9s in the test case.

### A.6.1.2.2 Test 2

The ~~RRC~~ R~~r~~e-establishment delay to an unknown cell shall be less than ~~3970~~4.2 ~~m~~s.
The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

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

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

Where

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

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

$N_{313} = 20$

$T_{313} = 0s$

$T_{search} = 800ms$

*NF* is the number of different frequencies in the monitored set. 3 frequencies are assumed in this test case.

$T_{RA}$ = The additional delay caused by the random access procedure. 40 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.

This gives a total of 4120ms, allow 4.2s in the test case.

**3GPP TSG RAN WG4 Meeting #21** **R4-020480**

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

CR-Form-v5

# CHANGE REQUEST

⌘ **25.133** **CR** **280** ⌘ **rev** **1** ⌘ Current version: **3.8.0** ⌘

*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:*** | ⌘ | Corrections to RRC connection re-establishment test cases |
| ***Source:*** | ⌘ | RAN WG4 |
| ***Work item code:*** | ⌘ | ***Date:*** ⌘ 1/2/2002 |
| ***Category:*** | ⌘ **F** | ***Release:*** ⌘ R99 |

*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 RRC test cases contain some ambiguity.
-Clarification of the parameters $N_{313}$ and $N_{315}$.
-The value for RRC re-establishment delay is not correct.
-The definition of $T_{SI}$ is not inline with the definition used in the general requirement.
- Contradictory statement related to cell 2in Test2.
- The final status of the test is not clear.

***Summary of change:*** ⌘ Clarification of the general test parameters including $N_{313}$ and $N_{315}$. The values for the RRC re-establisment delay are updated, in addition a NOTE on the calculation is added. The wording of $T_{SI}$ is updated. RF parameter of Cell1 during T2 are modified.
Add implementation margin into the test cases.

***Consequences if not approved:*** ⌘ Unclear definitions and ambiguity remaining in the test cases. Contradiction between TS25.133 and the description of this procedure in TS25.214 and TS25.331.

Isolated Impact Analysis: This CR does not affect implementations, because it is a correction of the test cases.

***Clauses affected:*** ⌘ A6

***Other specs affected:*** ⌘

| | | |
|---|---|---|
| ☐ | Other core specifications | ⌘ |
| **X** | Test specifications | 34.121 |
| **-** | O&M Specifications | |

***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://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.6 RRC Connection Control

## A.6.1 RRC Re-establishment delay

### A.6.1.1 Test Purpose and Environment

The purpose is to verify that the RRC re-establishment delay is within the specified limits. These tests will verify the requirements in section 6.1.2.

#### A.6.1.1.1 TEST 1

The test parameters are given in table A.6.1 and table A.6.2 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.6.1 General test parameters for RRC re-establishment delay, Test 1**

| Parameter | Unit | Value | Comment |
|---|---|---|---|
| DCH Parameters | | DL Reference measurement channel 12.2 kbps | As specified in TS 25.101, section A.3.1 |
| Power Control | | On | |
| Active cell: Initial condition | | Cell 1 | |
| Active cell: 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).~~Maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell. For information on the system information blocks that needs to be received by the UE, see TS 25.331.~~<br><br>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~~ | Included in the monitored set. |
| Reporting frequency | Seconds | 4 | |
| T1 | s | 10 | |
| T2 | s | 6 | |

**Table A.6.2 Cell specific parameters for RRC re-establishment delay test, Test 1**

| Parameter | Unit | Cell 1 | | Cell 2 | |
|---|---|---|---|---|---|
| | | T1 | T2 | T1 | T2 |
| Cell Frequency | ChNr | 1 | | 1 | |
| CPICH_Ec/Ior | dB | -10 | | -10 | |
| PCCPCH_Ec/Ior | dB | -12 | | -12 | |
| SCH_Ec/Ior | dB | -12 | | -12 | |
| PICH_Ec/Ior | dB | -15 | | -15 | |
| DCH_Ec/Ior | dB | -17 | -Infinity | Not applicable | |
| OCNS_Ec/Ior | dB | -1.049 | -0.941 | -0.941 | |
| $\hat{I}_{or}/I_{oc}$ | dB | 2,39 | -Infinity | 4,39 | |
| $I_{oc}$ | dBm/ 3.84 MHz | -70 | | | |
| CPICH_Ec/Io | dB | -15 | -Infinity | -13 | |
| Propagation Condition | | AWGN | | | |

## A.6.1.1.2 TEST 2

The test parameters are given in table A.6.3 and table A.6.4 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.6.3 General test parameters for RRC re-establishment delay, Test 2**

| Parameter | | Unit | Value | Comment |
|---|---|---|---|---|
| DCH Parameters | | | DL Reference measurement channel 12.2 kbps | As specified in TS 25.101, section A.3.1 |
| 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).~~Maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell. For information on the system information blocks that needs to be received by the UE, see TS 25.331.~~<br><br>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 include 2 additional frequencies. |
| Cell 2 ~~included in monitored set~~ | | | ~~Not Included~~ | Cell 2 is not included in the monitored set. Cell 2 is located on one of the 2 additional frequencies of the monitored set. |
| Reporting frequency | | Seconds | 4 | |
| T1 | | s | 10 | |
| T2 | | s | 6 | |

**Table A.6.4 Cell specific parameters for RRC re-establishment delay test, Test 2**

| Parameter | Unit | Cell 1 | | Cell 2 | |
|---|---|---|---|---|---|
| | | T1 | T2 | T1 | T2 |
| Cell Frequency | ChNr | 1 | | 2 | |
| CPICH_Ec/Ior | dB | -10 | | -10 | |
| PCCPCH_Ec/Ior | dB | -12 | | -12 | |
| SCH_Ec/Ior | dB | -12 | | -12 | |
| PICH_Ec/Ior | dB | -15 | | -15 | |
| DCH_Ec/Ior | dB | -17 | -Infinity | Not applicable | |
| OCNS_Ec/Ior | dB | -1.049 | -0.941 | -0.941 | |
| $\hat{I}_{or}/I_{oc}$ | dB | -3,35 | -Infinity | -Infinity | 0,02 |
| $I_{oc}$ | dBm/ 3.84 MHz | -70 | | | |
| CPICH_Ec/Io | dB | -15 | -Infinity | -Infinity | -13 |
| Propagation Condition | | AWGN | | | |

## A.6.1.2 Test Requirements

### A.6.1.2.1 Test 1

The~~RRC~~ R~~r~~e-establishment delay $T_{RE\text{-}ESTABLISH}$ to a known cell shall be less than ~~1670~~1.9 ~~m~~s.
The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The Re-establishment delay in this case can be expressed 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+$T_{313}$

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

$N_{313}$=20

$T_{313}$=0s

$T_{search}$=100ms

$T_{RA}$ = The additional delay caused by the random access procedure. 40 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.

This gives a total of 1820ms, allow 1.9s in the test case.

### A.6.1.2.2 Test 2

The ~~RRC~~ R~~r~~e-establishment delay to an unknown cell shall be less than ~~3970~~4.2 ~~m~~s.
The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

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

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

Where

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

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

$N_{313} = 20$

$T_{313} = 0s$

$T_{search} = 800ms$

*NF* is the number of different frequencies in the monitored set. 3 frequencies are assumed in this test case.

$T_{RA}$ = The additional delay caused by the random access procedure. 40 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.

This gives a total of 4120ms, allow 4.2s in the test case.

**3GPP TSG RAN WG4 Meeting #21** **R4-020486**

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

CR-Form-v5

# CHANGE REQUEST

⌘ **25.133** **CR** **279** ⌘ **rev** **1** ⌘ Current version: **5.1.0** ⌘

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

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

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Corrections to RRC connection re-establishment requirement |
| ***Source:*** | ⌘ | RAN WG4 |
| ***Work item code:*** | ⌘ | TEI |
| ***Date:*** | ⌘ | 1/2/2002 |
| ***Category:*** | ⌘ | **A** |
| ***Release:*** | ⌘ | Rel-5 |

*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 definition of RRC re-establishment contains some ambiguity. The formulas used in section 6.1.2 describe the delay requirements for the "actions" that needs to be performed by the UE in case of a radio link failure.<br>The definition does not mention the effect of T313 or N313 on the Re-establishment delay, but T313 and N313 are already included in the corresponding test cases. |
| ***Summary of change:*** | ⌘ | Update definition of the RRC re-establishment delay split the delay into the delay caused by the RRC procedure and the delay caused by the Re-establishment requirement for the UE. |
| ***Consequences if not approved:*** | ⌘ | Unclear definition of the RRC Re-establishment delay, not inline with description in TS25.331.<br>Isolated Impact Analysis: 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:*** | ⌘ | 6 |
| ***Other specs affected:*** | ⌘ | ☐ Other core specifications ⌘<br>- Test specifications<br>- O&M Specifications |
| ***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://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.

# 6 RRC Connection Control

## 6.1 RRC Re-establishment

### 6.1.1 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 ~~of~~ TS 25.331.

### 6.1.2 Requirements

The requirements in this section are applicable when the UE performs a RRC Re-establishment to a cell belonging to any of the frequencies present in the previous (old) 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.

$T_{RE\text{-}ESTABLISH}$ equals the RRC procedure delay ($T_{RRC\text{-}RE\text{-}ESTABLISH}$) according to TS25.331 plus the UE Re-establishment delay ($T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ}$), specified in 6.1.2.1.

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

#### 6.1.2.1 UE Re-establishment delay requirement

The UE ~~RRC~~ Re-establishment delay requirement ($T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ}$) is defined as the time between the moment when radio link failure ~~occurred~~ is considered by the UE, to when the UE starts to send preambles on the PRACH.
$T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ}$ 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 radio links connected to the cell in the previous (old) active set
- the cell has been measured by the UE during the last 5 seconds.

And the phase reference is the primary CPICH.
The ~~RRC~~ UE R~~r~~e-establishment delay requirement $T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ}$ 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, 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 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.
where $T_{SI}$ 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).
$T_{RA}$ = 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.

**3GPP TSG RAN WG4 Meeting #21** **R4-020479**

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

CR-Form-v5

# CHANGE REQUEST

⌘ **25.133** **CR** **278** ⌘ **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 ☐ Core Network ☐

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Corrections to RRC connection re-establishment requirement |
| ***Source:*** | ⌘ | RAN WG4 |
| ***Work item code:*** | ⌘ | TEI |
| ***Date:*** | ⌘ | 1/2/2002 |
| ***Category:*** | ⌘ | **A** |
| ***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 definition of RRC re-establishment contains some ambiguity. The formulas used in section 6.1.2 describe the delay requirements for the "actions" that needs to be performed by the UE in case of a radio link failure.<br>The definition does not mention the effect of T313 or N313 on the Re-establishment delay, but T313 and N313 are already included in the corresponding test cases. |
| ***Summary of change:*** | ⌘ | Update definition of the RRC re-establishment delay split the delay into the delay caused by the RRC procedure and the delay caused by the Re-establishment requirement for the UE. |
| ***Consequences if not approved:*** | ⌘ | Unclear definition of the RRC Re-establishment delay, not inline with description in TS25.331.<br>Isolated Impact Analysis: 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:*** | ⌘ | 6 |
| ***Other specs affected:*** | ⌘ | ☐ Other core specifications ⌘<br>- Test specifications<br>- O&M Specifications |
| ***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://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.

# 6 RRC Connection Control

## 6.1 RRC Re-establishment

### 6.1.1 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 ~~of~~ TS 25.331.

### 6.1.2 Requirements

The requirements in this section are applicable when the UE performs a RRC Re-establishment to a cell belonging to any of the frequencies present in the previous (old) 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.

$T_{RE\text{-}ESTABLISH}$ equals the RRC procedure delay ($T_{RRC\text{-}RE\text{-}ESTABLISH}$) according to TS25.331 plus the UE Re-establishment delay ($T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ}$), specified in 6.1.2.1.

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

#### 6.1.2.1 UE Re-establishment delay requirement

The UE ~~RRC~~ Re-establishment delay requirement ($T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ}$) is defined as the time between the moment when radio link failure ~~occurred~~ is considered by the UE, to when the UE starts to send preambles on the PRACH. $T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ}$ 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 radio links connected to the cell in the previous (old) active set
- the cell has been measured by the UE during the last 5 seconds.

And the phase reference is the primary CPICH.
The ~~RRC~~ UE R~~r~~e-establishment delay requirement $T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ}$ 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, 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 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.
where $T_{SI}$ 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).
$T_{RA}$ = 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.

**3GPP TSG RAN WG4 Meeting #21** **R4-020478**

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

CR-Form-v5

# CHANGE REQUEST

⌘ **25.133** **CR** **277** ⌘ **rev** **1** ⌘ Current version: **3.8.0** ⌘

*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:*** | ⌘ | Corrections to RRC connection re-establishment requirement |
| ***Source:*** | ⌘ | RAN WG4 |
| ***Work item code:*** | ⌘ | ***Date:*** ⌘ 1/2/2002 |
| ***Category:*** | ⌘ | **F** ***Release:*** ⌘ R99 |

*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 definition of RRC re-establishment contains some ambiguity. The formulas used in section 6.1.2 describe the delay requirements for the "actions" that needs to be performed by the UE in case of a radio link failure.<br>The definition does not mention the effect of T313 or N313 on the Re-establishment delay, but T313 and N313 are already included in the corresponding test cases. |
| ***Summary of change:*** | ⌘ | Update definition of the RRC re-establishment delay split the delay into the delay caused by the RRC procedure and the delay caused by the Re-establishment requirement for the UE. |
| ***Consequences if not approved:*** | ⌘ | Unclear definition of the RRC Re-establishment delay, not inline with description in TS25.331.<br>Isolated Impact Analysis: 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:*** | ⌘ | 6 |
| ***Other specs affected:*** | ⌘ | ☐ Other core specifications ⌘<br>- Test specifications<br>- O&M Specifications |
| ***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://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.

# 6 RRC Connection Control

## 6.1 RRC Re-establishment

### 6.1.1 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 ~~of~~ TS 25.331.

### 6.1.2 Requirements

The requirements in this section are applicable when the UE performs a RRC Re-establishment to a cell belonging to any of the frequencies present in the previous (old) 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.

$T_{RE\text{-}ESTABLISH}$ equals the RRC procedure delay ($T_{RRC\text{-}RE\text{-}ESTABLISH}$) according to TS25.331 plus the UE Re-establishment delay ($T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ}$), specified in 6.1.2.1.

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

#### 6.1.2.1 UE Re-establishment delay requirement

The UE ~~RRC~~ Re-establishment delay requirement ($T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ}$) is defined as the time between the moment when radio link failure ~~occurred~~ is considered by the UE, to when the UE starts to send preambles on the PRACH.
$T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ}$ 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 radio links connected to the cell in the previous (old) active set
- the cell has been measured by the UE during the last 5 seconds.

And the phase reference is the primary CPICH.
The ~~RRC~~ UE R~~r~~e-establishment delay requirement $T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ}$ 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, 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 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.

where $T_{SI}$ 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).
$T_{RA}$ = 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.

# 3GPP TSG RAN WG4 Meeting #21 R4-020459

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

*CR-Form-v4*

## CHANGE REQUEST

⌘ **25.133** **CR** **264** ⌘ ev **1** ⌘ Current version: **5.1.0** ⌘

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

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

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Inter-frequency measurements in Cell-FACH |
| ***Source:*** | ⌘ | RAN WG4 |
| ***Work item code:*** | ⌘ | TEI |
| ***Date:*** | ⌘ | 1/2/2002 |
| ***Category:*** | ⌘ | **A** |
| ***Release:*** | ⌘ | Rel-5 |

*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:*** ⌘

In 25.133, section 8.4.2 the measurement capabilities in the measurement occasions are specified. In that section it is required that $M\_REP=2^k$ where k=0..6. In 25.331, section 10.3.7.8 "FACH measurement occasion info", the signalling allows k to be between 1 and 12. Thus, there is an inconsistency between 25.331 and 25.133 which should be changed in 25.133.

Furthermore with k=1, there will be a measurement occasion of lenght 1 TTI every second TTI. With a TTI of length 10 ms this means that every second frame in the downlink is used as a measurement occasion. Thereby, if the measurement shall be prioritised higher than RACH transmissions, meaning that the UE shall fulfill the measurement performance requirements defined in 25.133, there is no possibility to send a RACH, even with a TTI = 10 ms in the uplink and no time to read SFN.

Also for some values of K and Ntti this would lead to lead to significant time between measurement periods used for re-selection, for example the current requirements proposes measurements which extend the measurement period to 5.12 sec (GSM by contrast has a single value of 480 ms)

Long periods between measurement period for reselection would impact system performance and particular if this would allow to send RACH transmission on the wrong cells (if re-selection measurement are not up to date) and would reduce system capacity and interference performance.

In general the network address this issue by not ensuring this long periods are used and so reduce the interference and then this would be an option the UE would need to support even if this is not used. However to support this un-used capability would require additional UE complexity

***Summary of change:*** ⌘

The usage of the parameter k for Measurement Occasions in Cell FACH is limited as shown in the table below

| NTTI | k | $T_{meas}$ for each k value |
|---|---|---|
| 1 | 3,4,5,6 | 80ms, 160ms, 320ms and 640 ms |
| 2 | 2,3,4,5 | 80ms, 160ms, 320ms and 640 ms |
| 4 | 2,3,4 | 160ms, 320 ms and 640 ms |
| 8 | 1,2,3 | 160ms, 320 ms and 640 ms |

| | | |
|---|---|---|
| | | The tables 8.13 and 8.14 for GSM BSIC identification and reconfirmation are changed since the minimum Tmeas now is increased<br><br>Isolated Impact: There is an isolated impact of the scheduling of the measurements in Cell_FACH. |
| ***Consequences if not approved:*** | ⌘ | It is not clear how to prioritise the RACH transmissions in relation with the measurements on other frequencies. |

| | | | | |
|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | 8.4.2 | | |
| ***Other specs affected:*** | ⌘ | ☐ Other core specifications<br>☐ Test specifications<br>☐ O&M Specifications | ⌘ | |
| ***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.

## 8.4.2 Requirements

### 8.4.2.1 UE Measurement Capability

In CELL_FACH state, the UE shall be able to monitor up to

- 32 intra frequency FDD cells and
- 32 inter frequency cells, including
  - FDD cells distributed on up to 2 additional FDD carriers and
  - Depending on UE Capability, TDD mode cells, distributed on up to 3 TDD carriers, and
- Depending on UE capability, 32 GSM cells distributed on up to 32 GSM carriers.

The requirements in section 9 on CPICH Ec/Io and 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 are used to find and measure on other cells.

It is defined below how the measurements on different systems and modes are performed given the time allocated to that system. The requirements in this section are based on an assumption that the time during the measurement occasions 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.

For this three parameters are defined:

$N_{FDD}$ is 0 or 1. If there are inter-frequency FDD cells in the neighbour list $N_{FDD}$=1, otherwise $N_{FDD}$=0.

$N_{TDD}$ is 0 or 1. If the UE is capable of TDD and there are TDD cells in the neighbour list $N_{TDD}$=*1* otherwise $N_{TDD}$ =0.

$N_{GSM}$ is 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.

The measurement time $T_{meas}$ is then defined as

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

where

- M_REP is the Measurement Occasion cycle length where~~n~~ K is is given in Table X. ~~0,.. 6~~. K is the FACH measurement occasion length cofficient as specified in TS25.331
- The FACH Measurement Occasion of $N_{TTI}$ frames will be repeated every $N_{TTI}$ * M_REP frame.
- $N_{TTI}$ is the number of frames in each measurement occasion, equal to the length of the largest TTI on the SCCPCH monitored by the UE.

**Table X**

| $N_{TTI}$ | K |
|---|---|
| 1 | 3,4,5,6 |
| 2 | 2,3,4,5 |
| 4 | 2,3,4 |
| 8 | 1,2,3 |

The UE is assumed 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.

### 8.4.2.2 FDD intra frequency measurements

During the CELL_FACH state the UE shall continuously measure identified intra frequency cells and search for new intra frequency cells in the monitoring set. If a measurement occasion is activated, intra frequency measurements can be performed between the measurement occasions.

#### 8.4.2.2.1 Identification of a new cell

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

$$T_{identify,intra} = Max\left\{800, Ceil\left\{\frac{T_{basic\ identify\ FDD,intra}}{N_{TTI}\cdot(M\_REP-1)\cdot 10}\right\}\cdot N_{TTI}\cdot M\_REP\cdot 10\right\}\ ms$$

where

$T_{basic\_identify\_FDD,\ intra}$ is specified in section 8.1.2.2.2,

$N_{TTI}$ and M_REP is specified in section 8.4.2.1.

A cell shall be considered detectable when CPICH Ec/Io $\geq$ -20 dB, SCH_Ec/Io $\geq$ -20 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

#### 8.4.2.2.2 UE CPICH measurement capability

In the CELL_FACH state the measurement period for intra frequency measurements is 200 ms. When no measurement occasion cycle is activated, the UE shall be capable of performing CPICH measurements for 8 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 a measurement occasion cycle is activated, the UE shall be capable of performing CPICH measurements for the $Y_{measurement\ intra}$ strongest cells , where $Y_{measurement\ intra}$ is defined in the following equation. The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.1 and 9.1.2. 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 CPICH measurements of cells from UE physical layer to higher layers may be decreased.

$$Y_{measurement\ intra} = Floor\left\{X_{basic\ measurement\ FDD}\cdot\frac{T_{Measurement\_Period\ Intra} - Ceil\left\{\frac{T_{Measurement\_Period\ Intra}}{N_{TTI}\cdot M\_REP\cdot 10\,ms}\right\}\cdot N_{TTI}\cdot 10\,ms}{T_{Measurement\_Period\ Intra}}\right\}$$

cells

where

$X_{basic\ measurement\ FDD}$ is specified in section 8.1.2.2.2,

$T_{Measurement\_Period\ Intra}$ is specified in section 8.1.2.2.2,

M_REP and $N_{TTI}$ is specified in section 8.4.2.1.

#### 8.4.2.2.3 RACH reporting

Reporting measurements in the measurement reports sent on the RACH shall meet the requirements in section 9.

### 8.4.2.3 FDD inter frequency measurements

In the CELL_FACH state when a measurement occasion cycle is provided by the network the UE shall continuously measure identified inter frequency cells and search for new inter frequency cells indicated in the measurement control information.

#### 8.4.2.3.1 Identification of a new cell

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

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

where

$T_{basic\_identify\_FDD,inter}$ is specified in 8.1.2.3.2.

$N_{Freq,FDD}$: Number of FDD frequencies in the Inter-frequency cell info list

$T_{Meas}$ and M_REP are specified in 8.4.2.1.

$T_{Inter\ FACH} = (N_{TTI}*10 - 2*0.5)$ ms

A cell shall be considered detectable when CPICH Ec/Io $\geq$ -20 dB, SCH_Ec/Io $\geq$ -17 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

#### 8.4.2.3.2 UE CPICH measurement capability

When a measurement occasion cycle is scheduled for FDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.2 with measurement period is given by

$$T_{measurement\ inter} = Max\left\{T_{Measurement\_Period\ Inter}, 2 \cdot T_{meas}, Ceil\left\{\frac{T_{basic\ measurement\ FDD\ inter}}{T_{Inter\ FACH}}\right\} \cdot T_{meas} \cdot N_{Freq,FDD}\right\} \text{ ms}$$

where

$T_{basic\_measurement\_FDD,inter}$ is specified in section 8.1.2.3.2.

$T_{Measurement\_Period\ Inter}$ is specified in section 8.1.2.3.2.

$T_{Meas}$ is specified in section 8.4.2.1.

$N_{Freq,FDD}$ and $T_{Inter\ FACH}$ are specified in section 8.4.2.3.1

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 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 8.1.2.3.2

### 8.4.2.4 TDD measurements

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

In the CELL_FACH state when a measurement occasion cycle is provided by the network the UE shall continuously measure detected inter frequency TDD cells and search for new TDD cells indicated in the measurement control information.

#### 8.4.2.4.1 Identification of a new cell

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

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

$T_{basic\_identify\_TDD,inter}$ is specified in 8.1.2.4.2.

$N_{Freq,TDD}$: Number of TDD frequencies in the Inter-frequency cell info list

$T_{Meas}$ is specified in section 8.4.2.1.

$T_{Inter\ FACH}$ is specified in section 8.4.2.3.1

#### 8.4.2.4.2 Measurement period

When a measurement occasion cycle as previously described is scheduled for TDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.1 and 9.1.2 with measurement period is given by

$$T_{measurement\ TDD} = Max\left\{T_{Measurement\_Period\ TDD\ inter}, 2 \cdot T_{meas}, Ceil\left\{\frac{T_{basic\ measurement\ TDD\ inter}}{T_{Inter\ FACH}}\right\} \cdot T_{meas} \cdot N_{Freq,TDD}\right\}$$

where

$T_{basic\_measurement\_TDD\ inter}$ is specified in section 8.1.2.4.2.

$T_{Measurement\_Period\ TDD\ inter}$ is specified in section 8.1.2.4.2.

$T_{Meas}$ is specified in section 8.4.2.1.

$T_{Inter\ FACH}$ is specified in section 8.4.2.3.1

$N_{Freq,TDD}$ is specified in section 8.4.2.4.1

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

### 8.4.2.5 GSM measurements

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

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

1) In CELL_FACH state when measurement occasions are provided by the UTRAN the UE shall continuously measure GSM cells and search for new GSM cells given in the monitored set.

In section 8.4.2.1 the split of measurements between different modes and systems is defined. Every second measurement occasion scheduled for GSM measurements, as given by 8.4.2.1 shall be allocated for GSM initial BSIC identification.

The remaining measurements occasions scheduled for GSM measurements shall be used 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 occasions between GSM carrier RSSI measurements and GSM BSIC reconfirmation is up to the UE.

2) If the UE does not need 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.

#### 8.4.2.5.1 GSM carrier RSSI

1) For a UE requiring measurement occasions.

A UE supporting GSM measurements using measurement occasions shall meet the minimum number of GSM carrier RSSI measurements specified in Table 8.11. This measurement shall be based on measurement occasions allocated for GSM carrier RSSI measurements as described in 8.4.2.5. 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 8.11**

| Length of measurement occasion (frames) | Number of GSM carrier RSSI samples in each measurement occasion, $N_{GSM\ carrier\ RSSI}$. |
|---|---|
| 1 | 16 |
| 2 | 32 |
| 4 | 64 |
| 8 | 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.

2) For a UE not requiring measurement occasions

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.

#### 8.4.2.5.2 BSIC verification

1) For a UE requiring measurement occasions.

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

Initial BSIC identification
: Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the FDD and GSM cell. The UE shall trigger the initial BSIC identification within 50% of the available measurement occasions used for GSM measurements as specified in 8.4.2.1. The requirements for Initial BSIC identification can be found in 8.4.2.5.2.1.

BSIC re-confirmation
: Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The UE shall trigger the BSIC re-confirmation within the available measurement occasions used for GSM as specified in 8.4.2.1. The requirements for BSIC re-confirmation can be found in 8.4.2.5.2.2.

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

$T_{re\text{-}confirm\_GSM}$ indicates the maximum time allowed for the re-confirmation of the BSIC of one GSM cell in the BSIC re-confirmation procedure according to section 8.4.2.5.2.2.

The UE shall be able to decode a BSIC within a measurement occasion when the time difference between the middle of the received GSM synchronisation burst at the UE and the middle of the measurement occasion is within the limits specified in table 8.12.

**Table 8.12: The measurement occasion length and maximum time difference for BSIC verification**

| Measurement occasion length [frames] | Maximum time difference [μs] |
|---|---|
| 1 | ± 4100 |
| 2 | ± 9100 |
| 4 | ± 19100 |
| 8 | ± 39100 |

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 measurement occasions

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.

#### 8.4.2.5.2.1 Initial BSIC identification

This measurement shall be based on the measurement occasions allocated for Initial BSIC identification as described in 8.4.2.5.

The UE shall continuously attempt to decode the BSIC of SCH on the BCCH carrier of the 6 strongest BCCH carriers of the GSM cells indicated in the Inter-RAT cell info list. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BCCH carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value.

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 8.4.2.5 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 decoded the BSIC of the GSM BCCH carrier within $T_{identify, GSM}$ ms, the UE shall abort the BSIC identification attempts for that GSM BCCH carrier. The UE shall continue to try to perform BSIC identification of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC identification failed shall not be re-considered for BSIC identification until BSIC identification attempts have been made for all the rest of the 6 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

$T_{identify\_GSM}$ is given for the combinations of $T_{meas}$ and $N_{TTI}$ that are given in table 8.13. The values given in table 8.13 represent the number of patterns required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier.

**Table 8.13: The worst-case time for identification of one previously not identified GSM cell**

| T_meas (ms) | N_TTI=1 frame $T_{identify,GSM}$(ms) | N_TTI=2 frames $T_{identify,GSM}$(ms) | N_TTI=4 frames $T_{identify,GSM}$(ms) | N_TTI=8 frames $T_{identify,GSM}$(ms) |
|---|---|---|---|---|
| ~~20~~ | ~~1040~~ | - | - | - |
| ~~40~~ | ~~1600~~ | ~~800~~ | - | - |
| ~~60~~ | ~~2880~~ | - | - | - |
| 80 | 2880 | 1280 | ~~640~~ | - |
| 120 | 5280 | 2640 | - | - |
| 160 | 7680 | 2880 | 1280 | 640 |
| 240 | 29760 | 5280 | 1920 | - |
| 320 | 14080 | 6400 | 2560 | 1280 |
| 480 | 34560 | 12480 | 3840 | 1920 |
| 640 | 34560 | 12800 | 5120 | 2560 |
| 960 | | 24960 | 5760 | 2840 |
| 1280 | | 20480 | 10240 | 5120 |
| 1920 | | | 15360 | 5680 |
| 2560 | | | | 10240 |
| 3840 | | | | 15360 |

8.4.2.5.2.2 BSIC re-confirmation

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

The UE shall maintain the timing information of 6 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 occasion allocated for GSM BSIC reconfirmation as described in 8.4.2.5, the UE shall attempt to decode the BSIC falling within the measurement occasion duration according to table 8.12. When the UE has to select one out of several possible GSM cells to reconfirm within the possible allocation of measurement occasions, according to 8.4.2.5, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts 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 8.4.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 6 strongest GSM cells in the monitored list.

$T_{re\text{-}confirm\_GSM}$ is given for the combinations of $T_{meas}$ and $N_{TTI}$ that are given in table 8.14. The values given in table 8.14 represent the number of patterns required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier. Different values for $T_{re\text{-}confirm\ GSM}$ might apply when more than one GSM cell is in the BSIC reconfirmation procedure at the same time.

**Table 8.14: The worst-case time for reconfirmation of one previously identified GSM cell**

| T_meas (ms) | N_TTI=1 frame $T_{re\text{-}confirm,GSM}$ (ms) | N_TTI=2 frames $T_{re\text{-}confirm,GSM}$ (ms) | N_TTI=4 frames $T_{re\text{-}confirm,GSM}$ (ms) | N_TTI=8 frames $T_{re\text{-}confirm,GSM}$ (ms) |
|---|---|---|---|---|
| ~~20~~ | ~~800~~ | - | - | - |
| ~~40~~ | ~~1360~~ | ~~640~~ | - | - |
| ~~60~~ | ~~2640~~ | - | - | - |
| 80 | 2880 | 1280 | ~~1280~~ | - |
| 120 | 5040 | 2400 | - | - |
| 160 | 6400 | 2880 | 2560 | 2560 |
| 240 | 17280 | 4800 | 3840 | - |
| 320 | 10880 | 6400 | 5120 | 5120 |
| 480 | 22080 | 9600 | 7680 | 7680 |
| 640 | 26880 | 12800 | 10240 | 10240 |
| 960 | | 17280 | 15360 | 15360 |
| 1280 | | 20480 | 20480 | 20480 |
| 1920 | | | 30720 | 30720 |
| 2560 | | | | 40960 |
| 3840 | | | | 61440 |

# 3GPP TSG RAN WG4 Meeting #21 R4-020458

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

*CR-Form-v4*

## CHANGE REQUEST

⌘ **25.133** **CR** **263** ⌘ ev **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:*** | ⌘ | Inter-frequency measurements in Cell-FACH |
| ***Source:*** | ⌘ | RAN WG4 |
| ***Work item code:*** | ⌘ | TEI |
| ***Date:*** | ⌘ | 1/2/2002 |
| ***Category:*** | ⌘ | **A** |
| ***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:*** ⌘

In 25.133, section 8.4.2 the measurement capabilities in the measurement occasions are specified. In that section it is required that $M\_REP=2^k$ where k=0..6. In 25.331, section 10.3.7.8 "FACH measurement occasion info", the signalling allows k to be between 1 and 12. Thus, there is an inconsistency between 25.331 and 25.133 which should be changed in 25.133.

Furthermore with k=1, there will be a measurement occasion of lenght 1 TTI every second TTI. With a TTI of length 10 ms this means that every second frame in the downlink is used as a measurement occasion. Thereby, if the measurement shall be prioritised higher than RACH transmissions, meaning that the UE shall fulfill the measurement performance requirements defined in 25.133, there is no possibility to send a RACH, even with a TTI = 10 ms in the uplink and no time to read SFN.

Also for some values of K and Ntti this would lead to lead to significant time between measurement periods used for re-selection, for example the current requirements proposes measurements which extend the measurement period to 5.12 sec (GSM by contrast has a single value of 480 ms)

Long periods between measurement period for reselection would impact system performance and particular if this would allow to send RACH transmission on the wrong cells (if re-selection measurement are not up to date) and would reduce system capacity and interference performance.

In general the network address this issue by not ensuring this long periods are used and so reduce the interference and then this would be an option the UE would need to support even if this is not used. However to support this un-used capability would require additional UE complexity

***Summary of change:*** ⌘

The usage of the parameter k for Measurement Occasions in Cell FACH is limited as shown in the table below

| NTTI | k | $T_{meas}$ for each k value |
|---|---|---|
| 1 | 3,4,5,6 | 80ms, 160ms, 320ms and 640 ms |
| 2 | 2,3,4,5 | 80ms, 160ms, 320ms and 640 ms |
| 4 | 2,3,4 | 160ms, 320 ms and 640 ms |
| 8 | 1,2,3 | 160ms, 320 ms and 640 ms |

| | | |
|---|---|---|
| | | The tables 8.13 and 8.14 for GSM BSIC identification and reconfirmation are changed since the minimum Tmeas now is increased<br><br>Isolated Impact: There is an isolated impact of the scheduling of the measurements in Cell_FACH. |
| ***Consequences if not approved:*** | ⌘ | It is not clear how to prioritise the RACH transmissions in relation with the measurements on other frequencies. |

| | | | | |
|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | 8.4.2 | | |
| ***Other specs affected:*** | ⌘ | ☐ Other core specifications<br>☐ Test specifications<br>☐ O&M Specifications | ⌘ | |
| ***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.

## 8.4.2 Requirements

### 8.4.2.1 UE Measurement Capability

In CELL_FACH state, the UE shall be able to monitor up to

- 32 intra frequency FDD cells and
- 32 inter frequency cells, including
  - FDD cells distributed on up to 2 additional FDD carriers and
  - Depending on UE Capability, TDD mode cells, distributed on up to 3 TDD carriers, and
- Depending on UE capability, 32 GSM cells distributed on up to 32 GSM carriers.

The requirements in section 9 on CPICH Ec/Io and 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 are used to find and measure on other cells.

It is defined below how the measurements on different systems and modes are performed given the time allocated to that system. The requirements in this section are based on an assumption that the time during the measurement occasions 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.

For this three parameters are defined:

$N_{FDD}$ is 0 or 1. If there are inter-frequency FDD cells in the neighbour list $N_{FDD}$=1, otherwise $N_{FDD}$=0.

$N_{TDD}$ is 0 or 1. If the UE is capable of TDD and there are TDD cells in the neighbour list $N_{TDD}$=*1* otherwise $N_{TDD}$ =0.

$N_{GSM}$ is 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.

The measurement time $T_{meas}$ is then defined as

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

where

- M_REP is the Measurement Occasion cycle length where~~n~~ K is given in Table X~~, 0,.. 6~~. K is the FACH measurement occasion length cofficient as specified in TS25.331
- The FACH Measurement Occasion of $N_{TTI}$ frames will be repeated every $N_{TTI}$ * M_REP frame.
- $N_{TTI}$ is the number of frames in each measurement occasion, equal to the length of the largest TTI on the SCCPCH monitored by the UE.

**Table X**

| $N_{TTI}$ | K |
|---|---|
| 1 | 3,4,5,6 |
| 2 | 2,3,4,5 |
| 4 | 2,3,4 |
| 8 | 1,2,3 |

The UE is assumed 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.

### 8.4.2.2 FDD intra frequency measurements

During the CELL_FACH state the UE shall continuously measure identified intra frequency cells and search for new intra frequency cells in the monitoring set. If a measurement occasion is activated, intra frequency measurements can be performed between the measurement occasions.

#### 8.4.2.2.1 Identification of a new cell

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

$$T_{identify,intra} = Max\left\{800, Ceil\left\{\frac{T_{basic\ identify\ FDD,intra}}{N_{TTI}\cdot(M\_REP-1)\cdot 10}\right\}\cdot N_{TTI}\cdot M\_REP\cdot 10\right\}\ ms$$

where

$T_{basic\_identify\_FDD,\ intra}$ is specified in section 8.1.2.2.2,

$N_{TTI}$ and M_REP is specified in section 8.4.2.1.

A cell shall be considered detectable when CPICH Ec/Io $\geq$ -20 dB, SCH_Ec/Io $\geq$ -20 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

#### 8.4.2.2.2 UE CPICH measurement capability

In the CELL_FACH state the measurement period for intra frequency measurements is 200 ms. When no measurement occasion cycle is activated, the UE shall be capable of performing CPICH measurements for 8 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 a measurement occasion cycle is activated, the UE shall be capable of performing CPICH measurements for the $Y_{measurement\ intra}$ strongest cells , where $Y_{measurement\ intra}$ is defined in the following equation. The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.1 and 9.1.2. 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 CPICH measurements of cells from UE physical layer to higher layers may be decreased.

$$Y_{measurement\ intra} = Floor\left\{X_{basic\ measurement\ FDD}\cdot\frac{T_{Measurement\_Period\ Intra} - Ceil\left\{\frac{T_{Measurement\_Period\ Intra}}{N_{TTI}\cdot M\_REP\cdot 10\,ms}\right\}\cdot N_{TTI}\cdot 10\,ms}{T_{Measurement\_Period\ Intra}}\right\}$$

cells

where

$X_{basic\ measurement\ FDD}$ is specified in section 8.1.2.2.2,

$T_{Measurement\_Period\ Intra}$ is specified in section 8.1.2.2.2,

M_REP and $N_{TTI}$ is specified in section 8.4.2.1.

#### 8.4.2.2.3 RACH reporting

Reporting measurements in the measurement reports sent on the RACH shall meet the requirements in section 9.

### 8.4.2.3 FDD inter frequency measurements

In the CELL_FACH state when a measurement occasion cycle is provided by the network the UE shall continuously measure identified inter frequency cells and search for new inter frequency cells indicated in the measurement control information.

#### 8.4.2.3.1 Identification of a new cell

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

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

where

$T_{basic\_identify\_FDD,inter}$ is specified in 8.1.2.3.2.

$N_{Freq,FDD}$: Number of FDD frequencies in the Inter-frequency cell info list

$T_{Meas}$ and M_REP are specified in 8.4.2.1.

$T_{Inter\ FACH} = (N_{TTI}*10 - 2*0.5)$ ms

A cell shall be considered detectable when CPICH Ec/Io $\geq$ -20 dB, SCH_Ec/Io $\geq$ -17 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

#### 8.4.2.3.2 UE CPICH measurement capability

When a measurement occasion cycle is scheduled for FDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.2 with measurement period is given by

$$T_{measurement\ inter} = Max\left\{T_{Measurement\_Period\ Inter}, 2 \cdot T_{meas}, Ceil\left\{\frac{T_{basic\ measurement\ FDD\ inter}}{T_{Inter\ FACH}}\right\} \cdot T_{meas} \cdot N_{Freq,FDD}\right\} \text{ ms}$$

where

$T_{basic\_measurement\_FDD,inter}$ is specified in section 8.1.2.3.2.

$T_{Measurement\_Period\ Inter}$ is specified in section 8.1.2.3.2.

$T_{Meas}$ is specified in section 8.4.2.1.

$N_{Freq,FDD}$ and $T_{Inter\ FACH}$ are specified in section 8.4.2.3.1

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 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 8.1.2.3.2

### 8.4.2.4 TDD measurements

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

In the CELL_FACH state when a measurement occasion cycle is provided by the network the UE shall continuously measure detected inter frequency TDD cells and search for new TDD cells indicated in the measurement control information.

#### 8.4.2.4.1 Identification of a new cell

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

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

$T_{basic\_identify\_TDD,inter}$ is specified in 8.1.2.4.2.

$N_{Freq,TDD}$: Number of TDD frequencies in the Inter-frequency cell info list

$T_{Meas}$ is specified in section 8.4.2.1.

$T_{Inter\ FACH}$ is specified in section 8.4.2.3.1

#### 8.4.2.4.2 Measurement period

When a measurement occasion cycle as previously described is scheduled for TDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.1 and 9.1.2 with measurement period is given by

$$T_{measurement\ TDD} = Max\left\{T_{Measurement\_Period\ TDD\ inter}, 2 \cdot T_{meas}, Ceil\left\{\frac{T_{basic\ measurement\ TDD\ inter}}{T_{Inter\ FACH}}\right\} \cdot T_{meas} \cdot N_{Freq,TDD}\right\}$$

where

$T_{basic\_measurement\_TDD\ inter}$ is specified in section 8.1.2.4.2.

$T_{Measurement\_Period\ TDD\ inter}$ is specified in section 8.1.2.4.2.

$T_{Meas}$ is specified in section 8.4.2.1.

$T_{Inter\ FACH}$ is specified in section 8.4.2.3.1

$N_{Freq,TDD}$ is specified in section 8.4.2.4.1

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

### 8.4.2.5 GSM measurements

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

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

1) In CELL_FACH state when measurement occasions are provided by the UTRAN the UE shall continuously measure GSM cells and search for new GSM cells given in the monitored set.

In section 8.4.2.1 the split of measurements between different modes and systems is defined. Every second measurement occasion scheduled for GSM measurements, as given by 8.4.2.1 shall be allocated for GSM initial BSIC identification.

The remaining measurements occasions scheduled for GSM measurements shall be used 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 occasions between GSM carrier RSSI measurements and GSM BSIC reconfirmation is up to the UE.

2) If the UE does not need 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.

#### 8.4.2.5.1 GSM carrier RSSI

1) For a UE requiring measurement occasions.

A UE supporting GSM measurements using measurement occasions shall meet the minimum number of GSM carrier RSSI measurements specified in Table 8.11. This measurement shall be based on measurement occasions allocated for GSM carrier RSSI measurements as described in 8.4.2.5. 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 8.11**

| Length of measurement occasion (frames) | Number of GSM carrier RSSI samples in each measurement occasion, $N_{GSM\ carrier\ RSSI}$. |
|---|---|
| 1 | 16 |
| 2 | 32 |
| 4 | 64 |
| 8 | 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.

2) For a UE not requiring measurement occasions

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.

#### 8.4.2.5.2 BSIC verification

1) For a UE requiring measurement occasions.

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

Initial BSIC identification
: Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the FDD and GSM cell. The UE shall trigger the initial BSIC identification within 50% of the available measurement occasions used for GSM measurements as specified in 8.4.2.1. The requirements for Initial BSIC identification can be found in 8.4.2.5.2.1.

BSIC re-confirmation
: Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The UE shall trigger the BSIC re-confirmation within the available measurement occasions used for GSM as specified in 8.4.2.1. The requirements for BSIC re-confirmation can be found in 8.4.2.5.2.2.

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

$T_{re\text{-}confirm\_GSM}$ indicates the maximum time allowed for the re-confirmation of the BSIC of one GSM cell in the BSIC re-confirmation procedure according to section 8.4.2.5.2.2.

The UE shall be able to decode a BSIC within a measurement occasion when the time difference between the middle of the received GSM synchronisation burst at the UE and the middle of the measurement occasion is within the limits specified in table 8.12.

**Table 8.12: The measurement occasion length and maximum time difference for BSIC verification**

| Measurement occasion length [frames] | Maximum time difference [μs] |
|---|---|
| 1 | ± 4100 |
| 2 | ± 9100 |
| 4 | ± 19100 |
| 8 | ± 39100 |

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 measurement occasions

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.

#### 8.4.2.5.2.1 Initial BSIC identification

This measurement shall be based on the measurement occasions allocated for Initial BSIC identification as described in 8.4.2.5.

The UE shall continuously attempt to decode the BSIC of SCH on the BCCH carrier of the 6 strongest BCCH carriers of the GSM cells indicated in the Inter-RAT cell info list. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BCCH carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value.

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 8.4.2.5 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 decoded the BSIC of the GSM BCCH carrier within $T_{identify, GSM}$ ms, the UE shall abort the BSIC identification attempts for that GSM BCCH carrier. The UE shall continue to try to perform BSIC identification of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC identification failed shall not be re-considered for BSIC identification until BSIC identification attempts have been made for all the rest of the 6 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

$T_{identify\_GSM}$ is given for the combinations of $T_{meas}$ and $N_{TTI}$ that are given in table 8.13. The values given in table 8.13 represent the number of patterns required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier.

**Table 8.13: The worst-case time for identification of one previously not identified GSM cell**

| T_meas (ms) | N_TTI=1 frame $T_{identify,GSM}$(ms) | N_TTI=2 frames $T_{identify,GSM}$(ms) | N_TTI=4 frames $T_{identify,GSM}$(ms) | N_TTI=8 frames $T_{identify,GSM}$(ms) |
|---|---|---|---|---|
| ~~20~~ | ~~1040~~ | - | - | - |
| ~~40~~ | ~~1600~~ | ~~800~~ | - | - |
| ~~60~~ | ~~2880~~ | - | - | - |
| 80 | 2880 | 1280 | ~~640~~ | - |
| 120 | 5280 | 2640 | - | - |
| 160 | 7680 | 2880 | 1280 | 640 |
| 240 | 29760 | 5280 | 1920 | - |
| 320 | 14080 | 6400 | 2560 | 1280 |
| 480 | 34560 | 12480 | 3840 | 1920 |
| 640 | 34560 | 12800 | 5120 | 2560 |
| 960 | | 24960 | 5760 | 2840 |
| 1280 | | 20480 | 10240 | 5120 |
| 1920 | | | 15360 | 5680 |
| 2560 | | | | 10240 |
| 3840 | | | | 15360 |

8.4.2.5.2.2 BSIC re-confirmation

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

The UE shall maintain the timing information of 6 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 occasion allocated for GSM BSIC reconfirmation as described in 8.4.2.5, the UE shall attempt to decode the BSIC falling within the measurement occasion duration according to table 8.12. When the UE has to select one out of several possible GSM cells to reconfirm within the possible allocation of measurement occasions, according to 8.4.2.5, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts 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 8.4.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 6 strongest GSM cells in the monitored list.

$T_{re\text{-}confirm\_GSM}$ is given for the combinations of $T_{meas}$ and $N_{TTI}$ that are given in table 8.14. The values given in table 8.14 represent the number of patterns required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier. Different values for $T_{re\text{-}confirm\ GSM}$ might apply when more than one GSM cell is in the BSIC reconfirmation procedure at the same time.

**Table 8.14: The worst-case time for reconfirmation of one previously identified GSM cell**

| T_meas (ms) | N_TTI=1 frame $T_{re\text{-}confirm,GSM}$ (ms) | N_TTI=2 frames $T_{re\text{-}confirm,GSM}$ (ms) | N_TTI=4 frames $T_{re\text{-}confirm,GSM}$ (ms) | N_TTI=8 frames $T_{re\text{-}confirm,GSM}$ (ms) |
|---|---|---|---|---|
| ~~20~~ | ~~800~~ | - | - | - |
| ~~40~~ | ~~1360~~ | ~~640~~ | - | - |
| ~~60~~ | ~~2640~~ | - | - | - |
| 80 | 2880 | 1280 | ~~1280~~ | - |
| 120 | 5040 | 2400 | - | - |
| 160 | 6400 | 2880 | 2560 | 2560 |
| 240 | 17280 | 4800 | 3840 | - |
| 320 | 10880 | 6400 | 5120 | 5120 |
| 480 | 22080 | 9600 | 7680 | 7680 |
| 640 | 26880 | 12800 | 10240 | 10240 |
| 960 | | 17280 | 15360 | 15360 |
| 1280 | | 20480 | 20480 | 20480 |
| 1920 | | | 30720 | 30720 |
| 2560 | | | | 40960 |
| 3840 | | | | 61440 |

**3GPP TSG RAN WG4 Meeting #21** **R4-020457**

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

*CR-Form-v4*

# CHANGE REQUEST

⌘ **25.133 CR 262** ⌘ ev **1** ⌘ Current version: **3.8.0** ⌘

*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:*** | ⌘ | Inter-frequency measurements in Cell-FACH |
| ***Source:*** | ⌘ | RAN WG4 |
| ***Work item code:*** | ⌘ | ***Date:*** ⌘ 1/2/2002 |
| ***Category:*** | ⌘ | **F** ***Release:*** ⌘ R99 |

*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:*** ⌘

In 25.133, section 8.4.2 the measurement capabilities in the measurement occasions are specified. In that section it is required that $M\_REP=2^k$ where k=0..6. In 25.331, section 10.3.7.8 "FACH measurement occasion info", the signalling allows k to be between 1 and 12. Thus, there is an inconsistency between 25.331 and 25.133 which should be changed in 25.133.

Furthermore with k=1, there will be a measurement occasion of lenght 1 TTI every second TTI. With a TTI of length 10 ms this means that every second frame in the downlink is used as a measurement occasion. Thereby, if the measurement shall be prioritised higher than RACH transmissions, meaning that the UE shall fulfill the measurement performance requirements defined in 25.133, there is no possibility to send a RACH, even with a TTI = 10 ms in the uplink and no time to read SFN.

Also for some values of K and Ntti this would lead to lead to significant time between measurement periods used for re-selection, for example the current requirements proposes measurements which extend the measurement period to 5.12 sec (GSM by contrast has a single value of 480 ms)

Long periods between measurement period for reselection would impact system performance and particular if this would allow to send RACH transmission on the wrong cells (if re-selection measurement are not up to date) and would reduce system capacity and interference performance.

In general the network address this issue by not ensuring this long periods are used and so reduce the interference and then this would be an option the UE would need to support even if this is not used. However to support this un-used capability would require additional UE complexity

***Summary of change:*** ⌘

The usage of the parameter k for Measurement Occasions in Cell FACH is limited as shown in the table below

| NTTI | k | $T_{meas}$ for each k value |
|---|---|---|
| 1 | 3,4,5,6 | 80ms, 160ms, 320ms and 640 ms |
| 2 | 2,3,4,5 | 80ms, 160ms, 320ms and 640 ms |
| 4 | 2,3,4 | 160ms, 320 ms and 640 ms |
| 8 | 1,2,3 | 160ms, 320 ms and 640 ms |

| | | |
|---|---|---|
| | | The tables 8.13 and 8.14 for GSM BSIC identification and reconfirmation are changed since the minimum Tmeas now is increased<br><br>Isolated Impact: There is an isolated impact of the scheduling of the measurements in Cell_FACH. |
| ***Consequences if not approved:*** | ⌘ | It is not clear how to prioritise the RACH transmissions and SFN decoding in relation with the measurements on other frequencies. |

| | | | | |
|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | 8.4.2 | | |
| ***Other specs affected:*** | ⌘ | ☐ Other core specifications<br>☐ Test specifications<br>☐ O&M Specifications | ⌘ | |
| ***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.

## 8.4.2 Requirements

### 8.4.2.1 UE Measurement Capability

In CELL_FACH state, the UE shall be able to monitor up to

- 32 intra frequency FDD cells and
- 32 inter frequency cells, including
  - FDD cells distributed on up to 2 additional FDD carriers and
  - Depending on UE Capability, TDD mode cells, distributed on up to 3 TDD carriers, and
- Depending on UE capability, 32 GSM cells distributed on up to 32 GSM carriers.

The requirements in section 9 on CPICH Ec/Io and 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 are used to find and measure on other cells.

It is defined below how the measurements on different systems and modes are performed given the time allocated to that system. The requirements in this section are based on an assumption that the time during the measurement occasions 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.

For this three parameters are defined:

$N_{FDD}$ is 0 or 1. If there are inter-frequency FDD cells in the neighbour list $N_{FDD}$=1, otherwise $N_{FDD}$=0.

$N_{TDD}$ is 0 or 1. If the UE is capable of TDD and there are TDD cells in the neighbour list $N_{TDD}$=*1* otherwise $N_{TDD}$ =0.

$N_{GSM}$ is 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.

The measurement time $T_{meas}$ is then defined as

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

where

- M_REP is the Measurement Occasion cycle length where ~~a~~ K is given in Table X. ~~0,.. 6.~~ K is the FACH measurement occasion length cofficient as specified in TS25.331
- The FACH Measurement Occasion of $N_{TTI}$ frames will be repeated every $N_{TTI}$ * M_REP frame.
- $N_{TTI}$ is the number of frames in each measurement occasion, equal to the length of the largest TTI on the SCCPCH monitored by the UE.

**Table X**

| $N_{TTI}$ | K |
|---|---|
| 1 | 3,4,5,6 |
| 2 | 2,3,4,5 |
| 4 | 2,3,4 |
| 8 | 1,2,3 |

The UE is assumed 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.

### 8.4.2.2 FDD intra frequency measurements

During the CELL_FACH state the UE shall continuously measure identified intra frequency cells and search for new intra frequency cells in the monitoring set. If a measurement occasion is activated, intra frequency measurements can be performed between the measurement occasions.

#### 8.4.2.2.1 Identification of a new cell

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

$$T_{identify,intra} = Max\left\{800, Ceil\left\{\frac{T_{basic\ identify\ FDD,intra}}{N_{TTI}\cdot(M\_REP-1)\cdot 10}\right\}\cdot N_{TTI}\cdot M\_REP\cdot 10\right\}\ \text{ms}$$

where

$T_{basic\_identify\_FDD,\ intra}$ is specified in section 8.1.2.2.2,

$N_{TTI}$ and M_REP is specified in section 8.4.2.1.

A cell shall be considered detectable when CPICH Ec/Io $\geq$ -20 dB, SCH_Ec/Io $\geq$ -20 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

#### 8.4.2.2.2 UE CPICH measurement capability

In the CELL_FACH state the measurement period for intra frequency measurements is 200 ms. When no measurement occasion cycle is activated, the UE shall be capable of performing CPICH measurements for 8 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 a measurement occasion cycle is activated, the UE shall be capable of performing CPICH measurements for the $Y_{measurement\ intra}$ strongest cells , where $Y_{measurement\ intra}$ is defined in the following equation. The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.1 and 9.1.2. 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 CPICH measurements of cells from UE physical layer to higher layers may be decreased.

$$Y_{measurement\ intra} = Floor\left\{X_{basic\ measurement\ FDD}\cdot\frac{T_{Measurement\_Period\ Intra} - Ceil\left\{\frac{T_{Measurement\_Period\ Intra}}{N_{TTI}\cdot M\_REP\cdot 10\,\text{ms}}\right\}\cdot N_{TTI}\cdot 10\,\text{ms}}{T_{Measurement\_Period\ Intra}}\right\}$$

cells

where

$X_{basic\ measurement\ FDD}$ is specified in section 8.1.2.2.2,

$T_{Measurement\_Period\ Intra}$ is specified in section 8.1.2.2.2,

M_REP and $N_{TTI}$ is specified in section 8.4.2.1.

#### 8.4.2.2.3 RACH reporting

Reporting measurements in the measurement reports sent on the RACH shall meet the requirements in section 9.

### 8.4.2.3 FDD inter frequency measurements

In the CELL_FACH state when a measurement occasion cycle is provided by the network the UE shall continuously measure identified inter frequency cells and search for new inter frequency cells indicated in the measurement control information.

#### 8.4.2.3.1 Identification of a new cell

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

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

where

$T_{basic\_identify\_FDD,inter}$ is specified in 8.1.2.3.2.

$N_{Freq,FDD}$: Number of FDD frequencies in the Inter-frequency cell info list

$T_{Meas}$ and M_REP are specified in 8.4.2.1.

$T_{Inter\ FACH} = (N_{TTI}*10 - 2*0.5)$ ms

A cell shall be considered detectable when CPICH Ec/Io $\geq$ -20 dB, SCH_Ec/Io $\geq$ -17 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

#### 8.4.2.3.2 UE CPICH measurement capability

When a measurement occasion cycle is scheduled for FDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.2 with measurement period is given by

$$T_{measurement\ inter} = Max\left\{T_{Measurement\_Period\ Inter}, 2 \cdot T_{meas}, Ceil\left\{\frac{T_{basic\ measurement\ FDD\ inter}}{T_{Inter\ FACH}}\right\} \cdot T_{meas} \cdot N_{Freq,FDD}\right\} \text{ ms}$$

where

$T_{basic\_measurement\_FDD,inter}$ is specified in section 8.1.2.3.2.

$T_{Measurement\_Period\ Inter}$ is specified in section 8.1.2.3.2.

$T_{Meas}$ is specified in section 8.4.2.1.

$N_{Freq,FDD}$ and $T_{Inter\ FACH}$ are specified in section 8.4.2.3.1

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 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 8.1.2.3.2

### 8.4.2.4 TDD measurements

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

In the CELL_FACH state when a measurement occasion cycle is provided by the network the UE shall continuously measure detected inter frequency TDD cells and search for new TDD cells indicated in the measurement control information.

#### 8.4.2.4.1 Identification of a new cell

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

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

$T_{basic\_identify\_TDD,inter}$ is specified in 8.1.2.4.2.

$N_{Freq,TDD}$: Number of TDD frequencies in the Inter-frequency cell info list

$T_{Meas}$ is specified in section 8.4.2.1.

$T_{Inter\ FACH}$ is specified in section 8.4.2.3.1

#### 8.4.2.4.2 Measurement period

When a measurement occasion cycle as previously described is scheduled for TDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.1 and 9.1.2 with measurement period is given by

$$T_{measurement\ TDD} = Max\left\{T_{Measurement\_Period\ TDD\ inter}, 2 \cdot T_{meas}, Ceil\left\{\frac{T_{basic\ measurement\ TDD\ inter}}{T_{Inter\ FACH}}\right\} \cdot T_{meas} \cdot N_{Freq,TDD}\right\}$$

where

$T_{basic\_measurement\_TDD\ inter}$ is specified in section 8.1.2.4.2.

$T_{Measurement\_Period\ TDD\ inter}$ is specified in section 8.1.2.4.2.

$T_{Meas}$ is specified in section 8.4.2.1.

$T_{Inter\ FACH}$ is specified in section 8.4.2.3.1

$N_{Freq,TDD}$ is specified in section 8.4.2.4.1

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

### 8.4.2.5 GSM measurements

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

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

a) In CELL_FACH state when measurement occasions are provided by the UTRAN the UE shall continuously measure GSM cells and search for new GSM cells given in the monitored set.

In section 8.4.2.1 the split of measurements between different modes and systems is defined. Every second measurement occasion scheduled for GSM measurements, as given by 8.4.2.1 shall be allocated for GSM initial BSIC identification.

The remaining measurements occasions scheduled for GSM measurements shall be used 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 occasions between GSM carrier RSSI measurements and GSM BSIC reconfirmation is up to the UE.

b) If the UE does not need 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 05.08 shall apply. This is further detailed in the following sub-sections.

#### 8.4.2.5.1 GSM carrier RSSI

a) For a UE requiring measurement occasions.

A UE supporting GSM measurements using measurement occasions shall meet the minimum number of GSM carrier RSSI measurements specified in Table 8.11. This measurement shall be based on measurement occasions allocated for GSM carrier RSSI measurements as described in 8.4.2.5. 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 05.08, 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 8.11**

| Length of measurement occasion (frames) | Number of GSM carrier RSSI samples in each measurement occasion, $N_{GSM\ carrier\ RSSI}$. |
|---|---|
| 1 | 16 |
| 2 | 32 |
| 4 | 64 |
| 8 | 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.

b) For a UE not requiring measurement occasions

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.

#### 8.4.2.5.2 BSIC verification

a) For a UE requiring measurement occasions.

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

Initial BSIC identification
: Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the FDD and GSM cell. The UE shall trigger the initial BSIC identification within 50% of the available measurement occasions used for GSM measurements as specified in 8.4.2.1. The requirements for Initial BSIC identification can be found in 8.4.2.5.2.1.

BSIC re-confirmation
: Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The UE shall trigger the BSIC re-confirmation within the available measurement occasions used for GSM as specified in 8.4.2.1. The requirements for BSIC re-confirmation can be found in 8.4.2.5.2.2.

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

$T_{re\text{-}confirm\_GSM}$ indicates the maximum time allowed for the re-confirmation of the BSIC of one GSM cell in the BSIC re-confirmation procedure according to section 8.4.2.5.2.2.

The UE shall be able to decode a BSIC within a measurement occasion when the time difference between the middle of the received GSM synchronisation burst at the UE and the middle of the measurement occasion is within the limits specified in table 8.12.

**Table 8.12: The measurement occasion length and maximum time difference for BSIC verification**

| Measurement occasion length [frames] | Maximum time difference [μs] |
|---|---|
| 1 | ± 4100 |
| 2 | ± 9100 |
| 4 | ± 19100 |
| 8 | ± 39100 |

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 05.05.

b) For a UE not requiring measurement occasions

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 05.05.

#### 8.4.2.5.2.1 Initial BSIC identification

This measurement shall be based on the measurement occasions allocated for Initial BSIC identification as described in 8.4.2.5.

The UE shall continuously attempt to decode the BSIC of SCH on the BCCH carrier of the 6 strongest BCCH carriers of the GSM cells indicated in the Inter-RAT cell info list. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BCCH carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value.

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 8.4.2.5 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 decoded the BSIC of the GSM BCCH carrier within $T_{identify, GSM}$ ms, the UE shall abort the BSIC identification attempts for that GSM BCCH carrier. The UE shall continue to try to perform BSIC identification of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC identification failed shall not be re-considered for BSIC identification until BSIC identification attempts have been made for all the rest of the 6 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

$T_{identify\_GSM}$ is given for the combinations of $T_{meas}$ and $N_{TTI}$ that are given in table 8.13. The values given in table 8.13 represent the number of patterns required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier.

**Table 8.13: The worst-case time for identification of one previously not identified GSM cell**

| T_meas (ms) | N_TTI=1 frame $T_{identify,GSM}$(ms) | N_TTI=2 frames $T_{identify,GSM}$(ms) | N_TTI=4 frames $T_{identify,GSM}$(ms) | N_TTI=8 frames $T_{identify,GSM}$(ms) |
|---|---|---|---|---|
| ~~20~~ | ~~1040~~ | ~~-~~ | ~~-~~ | ~~-~~ |
| ~~40~~ | ~~1600~~ | ~~800~~ | - | - |
| ~~60~~ | ~~2880~~ | - | - | - |
| 80 | 2880 | 1280 | ~~640~~ | - |
| 120 | 5280 | 2640 | - | - |
| 160 | 7680 | 2880 | 1280 | 640 |
| 240 | 29760 | 5280 | 1920 | - |
| 320 | 14080 | 6400 | 2560 | 1280 |
| 480 | 34560 | 12480 | 3840 | 1920 |
| 640 | 34560 | 12800 | 5120 | 2560 |
| 960 | | 24960 | 5760 | 2840 |
| 1280 | | 20480 | 10240 | 5120 |
| 1920 | | | 15360 | 5680 |
| 2560 | | | | 10240 |
| 3840 | | | | 15360 |

#### 8.4.2.5.2.2 BSIC re-confirmation

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

The UE shall maintain the timing information of 6 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 occasion allocated for GSM BSIC reconfirmation as described in 8.4.2.5, the UE shall attempt to decode the BSIC falling within the measurement occasion duration according to table 8.12. When the UE has to select one out of several possible GSM cells to reconfirm within the possible allocation of measurement occasions, according to 8.4.2.5, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts 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 8.4.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 6 strongest GSM cells in the monitored list.

$T_{re\text{-}confirm\_GSM}$ is given for the combinations of $T_{meas}$ and $N_{TTI}$ that are given in table 8.14. The values given in table 8.14 represent the number of patterns required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier. Different values for $T_{re\text{-}confirm\ GSM}$ might apply when more than one GSM cell is in the BSIC reconfirmation procedure at the same time.

**Table 8.14: The worst-case time for reconfirmation of one previously identified GSM cell**

| T_meas (ms) | N_TTI=1 frame $T_{re\text{-}confirm,GSM}$ (ms) | N_TTI=2 frames $T_{re\text{-}confirm,GSM}$ (ms) | N_TTI=4 frames $T_{re\text{-}confirm,GSM}$ (ms) | N_TTI=8 frames $T_{re\text{-}confirm,GSM}$ (ms) |
|---|---|---|---|---|
| ~~20~~ | ~~800~~ | ~~-~~ | ~~-~~ | ~~-~~ |
| ~~40~~ | ~~1360~~ | ~~640~~ | - | - |
| ~~60~~ | ~~2640~~ | - | - | - |
| 80 | 2880 | 1280 | ~~1280~~ | - |
| 120 | 5040 | 2400 | - | - |
| 160 | 6400 | 2880 | 2560 | 2560 |
| 240 | 17280 | 4800 | 3840 | - |
| 320 | 10880 | 6400 | 5120 | 5120 |
| 480 | 22080 | 9600 | 7680 | 7680 |
| 640 | 26880 | 12800 | 10240 | 10240 |
| 960 | | 17280 | 15360 | 15360 |
| 1280 | | 20480 | 20480 | 20480 |
| 1920 | | | 30720 | 30720 |
| 2560 | | | | 40960 |
| 3840 | | | | 61440 |

**3GPP TSG RAN WG4 Meeting #21** **R4-020456**

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

*CR-Form-v5*

# CHANGE REQUEST

⌘ **25.133** **CR** **255** ⌘ **rev** **1** ⌘ Current version: **5.1.0** ⌘

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

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

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Inter-frequency hard handover test case |
| ***Source:*** | ⌘ | RAN WG4 |
| ***Work item code:*** | ⌘ | TEI |
| ***Date:*** | ⌘ | 1/2/2002 |
| ***Category:*** | ⌘ | **A** |
| ***Release:*** | ⌘ | Rel-5 |

*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:*** | ⌘ | Depending on initial conditions when performing the inter-frequency hard handover test case, event 2C may not be triggered during time period T1. It is proposed to align the test set-up with the test of intra-frequency hard handover by adding a time period before T1 where the initial conditions are set to gurantee that event 2C will be triggered during the test. |
| ***Summary of change:*** | ⌘ | Addition of a time period before T1 to set the initial conditions.<br><br>Isolated Impact Analysis: Modification of a test case. Change in the test cases does not affect the function or the requirement. |
| ***Consequences if not approved:*** | ⌘ | Depending on initial conditions the test case may not work properly. |

| | | | | |
|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | A.5.2.2. | | |
| ***Other specs affected:*** | ⌘ | ☐ Other core specifications<br>☒ Test specifications<br>☐ O&M Specifications | ⌘ | 34.121 |
| ***Other comments:*** | ⌘ | Corresponding R99 CR is in Tdoc R4-020454 | | |

**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.5.2.2 Handover to inter-frequency cell

### A.5.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter-frequency hard handover delay in CELL_DCH state ~~in the dual carrier case reported~~ as specified in section 5.2.2.1.

The test consists of three~~wo~~ successive time periods, with a time duration T1, T2 and T3~~2~~. The test parameters are given in tables A.5.0B and A.5.0C below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 2C shall be used. The CPICH Ec/I0 of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time at beginning of -T3~~2~~ with one 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~~2~~. The RRC procedure delay is defined [16].

**Table A.5.0B: General test parameters for Handover to inter-frequency cell**

| Parameter | | Unit | Value | Comment |
|---|---|---|---|---|
| DCH parameters | | | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.101 section A.3.1 |
| Power Control | | | On | |
| Target quality value on DTCH | | BLER | 0.01 | |
| Compressed mode | | | A.22 set 1 | As specified in TS 25.101 section A.5. |
| Initial conditions | Active cell | | Cell 1 | |
| | Neighbour cell | | Cell 2 | |
| Final conditions | Active cell | | Cell 2 | |
| Threshold non used frequency | | dB | -18 | Absolute Ec/I0 threshold for event 2C |
| Reporting range | | dB | 4 | Applicable for event 1A |
| Hysteresis | | dB | 0 | |
| W | | | 1 | Applicable for event 1A |
| W non-used frequency | | | 1 | Applicable for event 2C |
| Reporting deactivation threshold | | | 0 | Applicable for event 1A |
| Time to Trigger | | ms | 0 | |
| Filter coefficient | | | 0 | |
| T1 | | s | 5 | |
| T2~~1~~ | | s | 10 | |
| T3~~2~~ | | s | 5 | |

**TableA.5.0C: Cell Specific parameters for Handover to inter-frequency cell**

| Parameter | Unit | Cell 1 | | | Cell 2 | | |
|---|---|---|---|---|---|---|---|
| | | T1 | T2 | T3~~2~~ | T1 | T2 | T3~~2~~ |
| UTRA RF Channel Number | | Channel 1 | | | Channel 2 | | |
| CPICH_Ec/Ior | dB | -10 | | | -10 | | |
| PCCPCH_Ec/Ior | dB | -12 | | | -12 | | |
| SCH_Ec/Ior | dB | -12 | | | -12 | | |
| PICH_Ec/Ior | dB | -15 | | | -15 | | |
| DPCH_Ec/Ior | dB | Note1 | | | N/A | N/A | Note1 |
| OCNS | | Note 2 | | | -0.941 | -0.941 | Note 2 |
| $\hat{I}_{or}/I_{oc}$ | dB | 0 ~~0~~ | | | -Infinity~~1.8~~ | -1.8 | -1.8 |
| $I_{oc}$ | dBm/3.84 MHz | -70 | | | | | |
| CPICH_Ec/Io | dB | -13 ~~-13~~ | | | -Infinity~~14~~ | -14 | -14 |
| Propagation Condition | | AWGN | | | | | |
| Note 1: The DPCH level is controlled by the power control loop<br>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.5.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 100 ms from the beginning of time period T3~~2~~.

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

**3GPP TSG RAN WG4 Meeting #21** **R4-020455**

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

*CR-Form-v5*

# CHANGE REQUEST

⌘ **25.133** **CR** **254** ⌘ **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 ☒ Radio Access Network ☐ Core Network ☐

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Inter-frequency hard handover test case |
| ***Source:*** | ⌘ | RAN WG4 |
| ***Work item code:*** | ⌘ | TEI |
| ***Date:*** | ⌘ | 1/2/2002 |
| ***Category:*** | ⌘ | **A** |
| ***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:*** | ⌘ | Depending on initial conditions when performing the inter-frequency hard handover test case, event 2C may not be triggered during time period T1. It is proposed to align the test set-up with the test of intra-frequency hard handover by adding a time period before T1 where the initial conditions are set to gurantee that event 2C will be triggered during the test. |
| ***Summary of change:*** | ⌘ | Addition of a time period before T1 to set the initial conditions.<br><br>Isolated Impact Analysis: Modification of a test case. Change in the test cases does not affect the function or the requirement. |
| ***Consequences if not approved:*** | ⌘ | Depending on initial conditions the test case may not work properly. |

| | | | | |
|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | A.5.2.2. | | |
| ***Other specs affected:*** | ⌘ | ☐ Other core specifications<br>☒ Test specifications<br>☐ O&M Specifications | ⌘ | 34.121 |
| ***Other comments:*** | ⌘ | Corresponding R99 CR is in Tdoc R4-020454 | | |

**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.5.2.2 Handover to inter-frequency cell

### A.5.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter-frequency hard handover delay in CELL_DCH state ~~in the dual carrier case reported~~ as specified in section 5.2.2.1.

The test consists of three~~wo~~ successive time periods, with a time duration T1, T2 and T3~~2~~. The test parameters are given in tables A.5.0B and A.5.0C below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 2C shall be used. The CPICH Ec/I0 of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time at beginning of -T3~~2~~ with one 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~~2~~. The RRC procedure delay is defined [16].

**Table A.5.0B: General test parameters for Handover to inter-frequency cell**

| Parameter | | Unit | Value | Comment |
|---|---|---|---|---|
| DCH parameters | | | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.101 section A.3.1 |
| Power Control | | | On | |
| Target quality value on DTCH | | BLER | 0.01 | |
| Compressed mode | | | A.22 set 1 | As specified in TS 25.101 section A.5. |
| Initial conditions | Active cell | | Cell 1 | |
| | Neighbour cell | | Cell 2 | |
| Final conditions | Active cell | | Cell 2 | |
| Threshold non used frequency | | dB | -18 | Absolute Ec/I0 threshold for event 2C |
| Reporting range | | dB | 4 | Applicable for event 1A |
| Hysteresis | | dB | 0 | |
| W | | | 1 | Applicable for event 1A |
| W non-used frequency | | | 1 | Applicable for event 2C |
| Reporting deactivation threshold | | | 0 | Applicable for event 1A |
| Time to Trigger | | ms | 0 | |
| Filter coefficient | | | 0 | |
| T1 | | s | 5 | |
| T2~~1~~ | | s | 10 | |
| T3~~2~~ | | s | 5 | |

**TableA.5.0C: Cell Specific parameters for Handover to inter-frequency cell**

| Parameter | Unit | Cell 1 | | | Cell 2 | | |
|---|---|---|---|---|---|---|---|
| | | T1 | T2 | T3~~2~~ | T1 | T2 | T3~~2~~ |
| UTRA RF Channel Number | | Channel 1 | | | Channel 2 | | |
| CPICH_Ec/Ior | dB | -10 | | | -10 | | |
| PCCPCH_Ec/Ior | dB | -12 | | | -12 | | |
| SCH_Ec/Ior | dB | -12 | | | -12 | | |
| PICH_Ec/Ior | dB | -15 | | | -15 | | |
| DPCH_Ec/Ior | dB | Note1 | | | N/A | N/A | Note1 |
| OCNS | | Note 2 | | | -0.941 | -0.941 | Note 2 |
| $\hat{I}_{or}/I_{oc}$ | dB | 0 ~~0~~ | | | -Infinity~~1.8~~ | -1.8 | -1.8 |
| $I_{oc}$ | dBm/3.84 MHz | -70 | | | | | |
| CPICH_Ec/Io | dB | -13 ~~-13~~ | | | -Infinity~~14~~ | -14 | -14 |
| Propagation Condition | | AWGN | | | | | |
| Note 1: The DPCH level is controlled by the power control loop<br>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.5.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 100 ms from the beginning of time period T3~~2~~.

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

**3GPP TSG RAN WG4 Meeting #21** **R4-020454**

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

CR-Form-v5

# CHANGE REQUEST

⌘ **25.133** **CR** **253** ⌘ **rev** **1** ⌘ Current version: **3.8.0** ⌘

*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:*** | ⌘ | Inter-frequency hard handover test case |
| ***Source:*** | ⌘ | RAN WG4 |
| ***Work item code:*** | ⌘ | ***Date:*** ⌘ 1/2/2002 |
| ***Category:*** | ⌘ | **F** ***Release:*** ⌘ R99 |

*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:*** | ⌘ | Depending on initial conditions when performing the inter-frequency hard handover test case, event 2C may not be triggered during time period T1. It is proposed to align the test set-up with the test of intra-frequency hard handover by adding a time period before T1 where the initial conditions are set to gurantee that event 2C will be triggered during the test. |
| ***Summary of change:*** | ⌘ | Addition of a time period before T1 to set the initial conditions.<br><br>Isolated Impact Analysis: Modification of a test case. Change in the test cases does not affect the function or the requirement. |
| ***Consequences if not approved:*** | ⌘ | Depending on initial conditions the test case may not work properly. |

| | | | | |
|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | A.5.2.2. | | |
| ***Other specs affected:*** | ⌘ | ☐ Other core specifications<br>☒ Test specifications<br>☐ O&M Specifications | ⌘ | 34.121 |
| ***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.5.2.2 Handover to inter-frequency cell

### A.5.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter-frequency hard handover delay in CELL_DCH state ~~in the dual carrier case reported~~ as specified in section 5.2.2.1.

The test consists of three~~wo~~ successive time periods, with a time duration T1, T2 and T3~~2~~. The test parameters are given in tables A.5.0B and A.5.0C below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 2C shall be used. The CPICH Ec/I0 of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time at beginning of -T3~~2~~ with one 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~~2~~. The RRC procedure delay is defined [16].

**Table A.5.0B: General test parameters for Handover to inter-frequency cell**

| Parameter | | Unit | Value | Comment |
|---|---|---|---|---|
| DCH parameters | | | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.101 section A.3.1 |
| Power Control | | | On | |
| Target quality value on DTCH | | BLER | 0.01 | |
| Compressed mode | | | A.22 set 1 | As specified in TS 25.101 section A.5. |
| Initial conditions | Active cell | | Cell 1 | |
| | Neighbour cell | | Cell 2 | |
| Final conditions | Active cell | | Cell 2 | |
| Threshold non used frequency | | dB | -18 | Absolute Ec/I0 threshold for event 2C |
| Reporting range | | dB | 4 | Applicable for event 1A |
| Hysteresis | | dB | 0 | |
| W | | | 1 | Applicable for event 1A |
| W non-used frequency | | | 1 | Applicable for event 2C |
| Reporting deactivation threshold | | | 0 | Applicable for event 1A |
| Time to Trigger | | ms | 0 | |
| Filter coefficient | | | 0 | |
| T1 | | s | 5 | |
| T2~~1~~ | | s | 10 | |
| T3~~2~~ | | s | 5 | |

**TableA.5.0C: Cell Specific parameters for Handover to inter-frequency cell**

| Parameter | Unit | Cell 1 | | | Cell 2 | | |
|---|---|---|---|---|---|---|---|
| | | T1 | T2 | T32 | T1 | T2 | T32 |
| UTRA RF Channel Number | | Channel 1 | | | Channel 2 | | |
| CPICH_Ec/Ior | dB | -10 | | | -10 | | |
| PCCPCH_Ec/Ior | dB | -12 | | | -12 | | |
| SCH_Ec/Ior | dB | -12 | | | -12 | | |
| PICH_Ec/Ior | dB | -15 | | | -15 | | |
| DPCH_Ec/Ior | dB | Note1 | | | N/A | N/A | Note1 |
| OCNS | | Note 2 | | | -0.941 | -0.941 | Note 2 |
| $\hat{I}_{or}/I_{oc}$ | dB | 0 ~~0~~ | | | - Infinity~~1.8~~ | -1.8 | -1.8 |
| $I_{oc}$ | dBm/3.84 MHz | -70 | | | | | |
| CPICH_Ec/Io | dB | -13 ~~-13~~ | | | - Infinity~~14~~ | -14 | -14 |
| Propagation Condition | | AWGN | | | | | |
| Note 1: The DPCH level is controlled by the power control loop<br>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.5.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 100 ms from the beginning of time period T32~~2~~.

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

**3GPP TSG RAN WG4 Meeting #21** **R4-020453**

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

*CR-Form-v5*

# CHANGE REQUEST

⌘ **25.133** **CR** **252** ⌘ **rev** **1** ⌘ Current version: **5.1.0** ⌘

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

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

| | | |
|---|---|---|
| ***Title:*** | ⌘ | FDD/FDD Soft Handover delay test case |
| ***Source:*** | ⌘ | RAN WG4 |
| ***Work item code:*** | ⌘ | TEI |
| ***Date:*** | ⌘ | 1/2/2002 |
| ***Category:*** | ⌘ | **A** |
| ***Release:*** | ⌘ | Rel-5 |

*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:*** | ⌘ | Currently there is no test setup defined for the FDD/FDD Soft handover delay requirement in annex A of 25.133. It is belived important that the requirement is also tested and as TSG T WG1 shall follow the annex in 25.133 when defining the tests in 34.121 the test set-up needs to be defined in the annex A of 25.133. |
| ***Summary of change:*** | ⌘ | A test set-up and procedure is defined for the FDD/FDD Soft handover delay requirement.<br><br>Isolated Impact Analysis: Addition of a test case. Change in the test cases does not affect the function or the requirement. |
| ***Consequences if not approved:*** | ⌘ | The requirements on the FDD/FDD Soft handover delay requirement will not be tested. |

| | | | | |
|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | A.5.1 | | |
| ***Other specs affected:*** | ⌘ | ☐ Other core specifications<br>☒ Test specifications<br>☐ O&M Specifications | ⌘ | 34.121 |
| ***Other comments:*** | ⌘ | Corresponding R99 CR in Tdoc R4-020451 | | |

**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.5.1 FDD/FDD Soft Handover

~~NOTE: This section is included for consistency with numbering with section 5; currently no test covering requirements in sections 5.1.2.1 and 5.1.2.2 exists.~~

## A.5.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the soft handover delay in CELL_DCH state specified in section 5.1.2.

The test parameters are given in Table A.x and A.y below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A shall be used, and that CPICH Ec/Io and SFN-CFN observed time difference shall be reported together with Event 1A. The test consists of five successive time periods, with a time duration of T1, T2, T3, T4 and T5 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

**Table A.x: General test parameters for Soft handover**

| Parameter | | Unit | Value | Comment |
|---|---|---|---|---|
| DCH parameters | | | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.101 section A.3.1 |
| Power Control | | | On | |
| Target quality value on DTCH | | BLER | 0.01 | |
| Initial conditions | Active cell | | Cell 1 | |
| | Neighbouring cell | | Cell 2 | |
| Final condition | Active cell | | Cell 2 | |
| Reporting range | | dB | 3 | Applicable for event 1A and 1B |
| Hysteresis | | dB | 0 | |
| W | | | 1 | Applicable for event 1A and 1B |
| Reporting deactivation threshold | | | 0 | Applicable for event 1A |
| Time to Trigger | | ms | 0 | |
| Filter coefficient | | | 0 | |
| T1 | | s | 5 | |
| T2 | | s | 3 | |
| T3 | | s | 0.5 | |
| T4 | | ms | 60 | This is the requirement on active set update delay, see section 5.1.2.2, where KC=1 and OC=0. |
| T5 | | s | 2 | |

**Table A.y: Cell specific test parameters for Soft handover**

| Parameter | Unit | Cell 1 | | | | | Cell 2 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | T1 | T2 | T3 | T4 | T5 | T1 | T2 | T3 | T4 | T5 |
| CPICH_Ec/Ior | dB | -10 | | | | | -10 | | | | |
| PCCPCH_Ec/Ior | dB | -12 | | | | | -12 | | | | |
| SCH_Ec/Ior | dB | -12 | | | | | -12 | | | | |
| PICH_Ec/Ior | dB | -15 | | | | | -15 | | | | |
| DPCH_Ec/Ior | dB | Note1 | Note1 | Note1 | | N/A | N/A | N/A | Note3 | Note1 | |
| OCNS | | Note2 | Note2 | Note2 | | -0.941 | -0.941 | -0.941 | Note2 | Note2 | |
| $\hat{I}_{or}/I_{oc}$ | dB | 0 | 2.91 | 2.91 | | 2.91 | -Inf | 2.91 | 2.91 | 2.91 | |
| $I_{oc}$ | dBm/ 3.84 MHz | -70 | | | | | | | | | |
| CPICH_Ec/Io | dB | -13 | -14 | -14 | | -14 | -Inf | -14 | -14 | -14 | |
| Propagation Condition | | AWGN | | | | | | | | | |

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

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

Note 3: The DPCH level is controlled by the power control loop. The initial power shall be set equal to the DPCH_Ec/Ior of Cell 1 at the end of T2.

**Test procedure**

1) The test is started at the beginining of T1.

2) During time period T2 an Event 1A triggered measurement report shall be sent by the UE containing the CFN-SFN observed time difference between cell 1 and cell 2.

3) At the beginning of T3 the downlink DPCH of cell 2 shall be activated.

4) UTRAN shall send a Active Set Update command with activation time now adding cell 2 to the active set. The Active Set Update message shall be sent to the UE so that the whole message is available at the UE at the beginning of T4.

5) At the beginning of T5 the DPCH from cell 1 shall be switched off.

## A.5.1.2 Test Requirements

The UE downlink BLER shall not exceed the downlink BLER target, i.e. 1%, during time period T5.

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

**3GPP TSG RAN WG4 Meeting #21** **R4-020452**

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

*CR-Form-v5*

# CHANGE REQUEST

⌘ **25.133** **CR** **251** ⌘ **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 [ ] Core Network [ ]

| | | |
|---|---|---|
| ***Title:*** | ⌘ | FDD/FDD Soft Handover delay test case |
| ***Source:*** | ⌘ | RAN WG4 |
| ***Work item code:*** | ⌘ | TEI |
| ***Date:*** | ⌘ | 1/2/2002 |
| ***Category:*** | ⌘ | **A** |
| ***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:*** | ⌘ | Currently there is no test setup defined for the FDD/FDD Soft handover delay requirement in annex A of 25.133. It is belived important that the requirement is also tested and as TSG T WG1 shall follow the annex in 25.133 when defining the tests in 34.121 the test set-up needs to be defined in the annex A of 25.133. |
| ***Summary of change:*** | ⌘ | A test set-up and procedure is defined for the FDD/FDD Soft handover delay requirement.<br><br>Isolated Impact Analysis: Addition of a test case. Change in the test cases does not affect the function or the requirement. |
| ***Consequences if not approved:*** | ⌘ | The requirements on the FDD/FDD Soft handover delay requirement will not be tested. |

| | | | | |
|---|---|---|---|---|
| ***Clauses affected:*** | ⌘ | A.5.1 | | |
| ***Other specs affected:*** | ⌘ | [ ] Other core specifications<br>[X] Test specifications<br>[ ] O&M Specifications | ⌘ | 34.121 |
| ***Other comments:*** | ⌘ | Corresponding R99 CR in Tdoc R4-020451 | | |

**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.5.1 FDD/FDD Soft Handover

~~NOTE: This section is included for consistency with numbering with section 5; currently no test covering requirements in sections 5.1.2.1 and 5.1.2.2 exists.~~

## A.5.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the soft handover delay in CELL_DCH state specified in section 5.1.2.

The test parameters are given in Table A.x and A.y below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A shall be used, and that CPICH Ec/Io and SFN-CFN observed time difference shall be reported together with Event 1A. The test consists of five successive time periods, with a time duration of T1, T2, T3, T4 and T5 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

**Table A.x: General test parameters for Soft handover**

| Parameter | | Unit | Value | Comment |
|---|---|---|---|---|
| DCH parameters | | | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.101 section A.3.1 |
| Power Control | | | On | |
| Target quality value on DTCH | | BLER | 0.01 | |
| Initial conditions | Active cell | | Cell 1 | |
| | Neighbouring cell | | Cell 2 | |
| Final condition | Active cell | | Cell 2 | |
| Reporting range | | dB | 3 | Applicable for event 1A and 1B |
| Hysteresis | | dB | 0 | |
| W | | | 1 | Applicable for event 1A and 1B |
| Reporting deactivation threshold | | | 0 | Applicable for event 1A |
| Time to Trigger | | ms | 0 | |
| Filter coefficient | | | 0 | |
| T1 | | s | 5 | |
| T2 | | s | 3 | |
| T3 | | s | 0.5 | |
| T4 | | ms | 60 | This is the requirement on active set update delay, see section 5.1.2.2, where KC=1 and OC=0. |
| T5 | | s | 2 | |

**Table A.y: Cell specific test parameters for Soft handover**

| Parameter | Unit | Cell 1 | | | | | Cell 2 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | T1 | T2 | T3 | T4 | T5 | T1 | T2 | T3 | T4 | T5 |
| CPICH_Ec/Ior | dB | -10 | | | | | -10 | | | | |
| PCCPCH_Ec/Ior | dB | -12 | | | | | -12 | | | | |
| SCH_Ec/Ior | dB | -12 | | | | | -12 | | | | |
| PICH_Ec/Ior | dB | -15 | | | | | -15 | | | | |
| DPCH_Ec/Ior | dB | Note1 | Note1 | Note1 | | N/A | N/A | N/A | Note3 | Note1 | |
| OCNS | | Note2 | Note2 | Note2 | | -0.941 | -0.941 | -0.941 | Note2 | Note2 | |
| $\hat{I}_{or}/I_{oc}$ | dB | 0 | 2.91 | 2.91 | | 2.91 | -Inf | 2.91 | 2.91 | 2.91 | |
| $I_{oc}$ | dBm/ 3.84 MHz | -70 | | | | | | | | | |
| CPICH_Ec/Io | dB | -13 | -14 | -14 | | -14 | -Inf | -14 | -14 | -14 | |
| Propagation Condition | | AWGN | | | | | | | | | |

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

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

Note 3: The DPCH level is controlled by the power control loop. The initial power shall be set equal to the DPCH_Ec/Ior of Cell 1 at the end of T2.

**Test procedure**

1) The test is started at the beginining of T1.

2) During time period T2 an Event 1A triggered measurement report shall be sent by the UE containing the CFN-SFN observed time difference between cell 1 and cell 2.

3) At the beginning of T3 the downlink DPCH of cell 2 shall be activated.

4) UTRAN shall send a Active Set Update command with activation time now adding cell 2 to the active set. The Active Set Update message shall be sent to the UE so that the whole message is available at the UE at the beginning of T4.

5) At the beginning of T5 the DPCH from cell 1 shall be switched off.

## A.5.1.2 Test Requirements

The UE downlink BLER shall not exceed the downlink BLER target, i.e. 1%, during time period T5.

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