**TSG-RAN Meeting #8** ***RP-000270***
**Düsseldorf, Germany, 21-23 June 2000**

**Title:** **Agreed CRs to TS 25.215**

**Source:** **TSG-RAN WG1**

**Agenda item:** **5.1.3**

| No. | Doc # | Spec | CR | Rev | Subject | Cat | Current_v | New_v |
|---|---|---|---|---|---|---|---|---|
| 1 | R1-000577 | 25.215 | 049 | 1 | Propagation delay for PCPCH | B | 3.2.0 | 3.3.0 |
| 2 | R1-000548 | 25.215 | 050 | 1 | Maximum number of simultaneous compressed | C | 3.2.0 | 3.3.0 |
| 3 | R1-000568 | 25.215 | 051 | 1 | Clarification of Physical channel BER | F | 3.2.0 | 3.3.0 |
| 4 | R1-000526 | 25.215 | 052 | - | Clarification of transmitted code power | F | 3.2.0 | 3.3.0 |
| 5 | R1-000527 | 25.215 | 053 | - | Editorial correction in TS 25.215 | F | 3.2.0 | 3.3.0 |
| 6 | R1-000581 | 25.215 | 055 | - | Proposed CR for Measurements of RACH in FDD | B | 3.2.0 | 3.3.0 |
| 7 | R1-000582 | 25.215 | 056 | - | Proposed CR for Measurements of CPCH in FDD | B | 3.2.0 | 3.3.0 |
| 8 | R1-000585 | 25.215 | 057 | - | Transfer of information from TS 25.212 table 9 to | F | 3.2.0 | 3.3.0 |
| 9 | R1-000599 | 25.215 | 058 | - | Correction to CM parameter list | F | 3.2.0 | 3.3.0 |
| 10 | R1-000703 | 25.215 | 062 | - | Clarification of radio link | F | 3.2.0 | 3.3.0 |
| 11 | R1-000704 | 25.215 | 063 | - | Clarification of the Transmitted code power | F | 3.2.0 | 3.3.0 |
| 12 | R1-000767 | 25.215 | 064 | 1 | Removal of Range/mapping | F | 3.2.0 | 3.3.0 |
| 13 | R1-000797 | 25.215 | 066 | - | Removal of UTRAN TrCH BLER measurement | F | 3.2.0 | 3.3.0 |

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**Düsseldorf, Germany, 21-23 June 2000**

***Document*** *R1-00-0577*
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*or for SMG, use the format P-99-xxx*

# CHANGE REQUEST

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| | | | | |
|---|---|---|---|---|
| **25.215** | **CR** | **049r1** | Current Version: | 3.2.0 |

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| | | | | | | |
|---|---|---|---|---|---|---|
| For submission to: | TSG RAN #8 | for approval | X | strategic | | *(for SMG use only)* |
| *list expected approval meeting # here ↑* | | for information | | non-strategic | | |

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**Proposed change affects:** (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [ ]
*(at least one should be marked with an X)*

**Source:** TSG RAN WG1 **Date:** 2000-04-12

**Subject:** Propagation delay for PCPCH

**Work item:** UTRAN

| **Category:** | | | | **Release:** | |
|---|---|---|---|---|---|
| | F | Correction | | Phase 2 | |
| | A | Corresponds to a correction in an earlier release | | Release 96 | |
| *(only one category* | B | Addition of feature | X | Release 97 | |
| *shall be marked* | C | Functional modification of feature | | Release 98 | |
| *with an X)* | D | Editorial modification | | Release 99 | X |
| | | | | Release 00 | |

**Reason for change:** RAN WG3 has included Propagation delay measurement also for PCPCH. The needed modifications are added to WG1 specification.

**Clauses affected:** 5.2.10 Propagation delay

| **Other specs affected:** | | | |
|---|---|---|---|
| | Other 3G core specifications | | → List of CRs: |
| | Other GSM core specifications | | → List of CRs: |
| | MS test specifications | | → List of CRs: |
| | BSS test specifications | | → List of CRs: |
| | O&M specifications | | → List of CRs: |

**Other comments:**

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### 5.2.10 PRACH/PCPCH Propagation delay

| | |
|---|---|
| **Definition** | Propagation delay is defined as one-way propagation delay as measured during either PRACH or PCPCH access:<br><br>PRACH :<br><br>Propagation delay = $(T_{RX} - T_{TX} - 2560)/2$, where<br>$T_{TX}$ = The transmission time of AICH access slot (n-2-AICH transmission timing), where 0≤(n-2-AICH Transmission Timing)≤14 and AICH_Transmission_Timing can have values 0 or 1.<br>$T_{RX}$ = The time of reception of the beginning (the first significant path) of the PRACH message from the UE at PRACH access slot n.<br>Note: The definition of "first significant path" needs further elaboration.<br><br>PCPCH:<br><br>Propagation delay = $(T_{RX} - T_{TX} - (L_{pc\text{-}preamble}+1)*2560 - (k-1)*38400)/2$, where<br>$T_{TX}$ = The transmission time of CD-ICH at access slot $(n-2-T_{cpch})$, where $0 \le (n-2-T_{cpch}) \le 14$ and $T_{cpch}$ can have values 0 or 1.<br>$T_{RX}$ = The time of reception of the first chip (the first significant path) of the kth frame of the PCPCH message from the UE, where $k \in \{1, 2, \ldots, N\_Max\_frames\}$.<br>N_max_frames is a higher layer parameter and defines the maximum length of the PCPCH message. The PCPCH message begins at uplink access slot $(n+L_{pc\text{-}preamble}/2)$, where $0 \le (n + L_{pc\text{-}preamble}/2) \le 14$ and where $L_{pc\text{-}preamble}$ can have values 0 or 8.<br>Note: The definition of "first significant path" needs further elaboration. |
| **Range/mapping** | The Propagation delay is given with the resolution of 3 chips with the range [0, …, 765] chips.<br>The Propagation delay shall be reported in the unit PROP_DELAY where:<br><br>PROP_DELAY_000: 0 chip ≤ Propagation delay < 3 chip<br>PROP_DELAY_001: 3 chip ≤ Propagation delay < 6 chip<br>PROP_DELAY_002: 6 chip ≤ Propagation delay < 9 chip<br>...<br>PROP_DELAY_252: 756 chip ≤ Propagation delay < 759 chip<br>PROP_DELAY_253: 759 chip ≤ Propagation delay < 762 chip<br>PROP_DELAY_254: 762 chip ≤ Propagation delay < 765 chip<br>PROP_DELAY_255: 765 chip ≤ Propagation delay |

# 6 Measurements for UTRA FDD

## 6.1 UE measurements

### 6.1.1 Compressed mode

#### 6.1.1.1 Use of compressed mode/dual receiver for monitoring

A UE shall, on higher layers commands, monitor cells on other frequencies (FDD, TDD, GSM). To allow the UE to perform measurements, higher layers shall command that the UE enters in compressed mode, depending on the UE capabilities.

In case of compressed mode decision, UTRAN shall communicate to the UE the parameters of the compressed mode.

A UE with a single receiver shall support downlink compressed mode.

Every UE shall support uplink compressed mode, when monitoring frequencies which are close to the uplink transmission frequency (i.e. frequencies in the TDD or GSM 1800/1900 bands).

All fixed-duplex UE shall support both downlink and uplink compressed mode to allow inter-frequency handover within FDD and inter-mode handover from FDD to TDD.

Monitoring frequencies outside TDD and GSM 1800/1900 bands without uplink compressed mode is a UE capability.

UE with dual receivers can perform independent measurements, with the use of a "monitoring branch" receiver, that can operate independently from the UTRA FDD receiver branch. Such UE do not need to support downlink compressed mode.

The UE shall support one single measurement purpose within one compressed mode transmission gap. The measurement purpose of the gap is signalled by higher layers.

The following section provides rules to parametrise the compressed mode.

#### 6.1.1.2 Parameterisation of the compressed mode

In response to a request from higher layers, the UTRAN shall signal to the UE the compressed mode parameters.

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**Düsseldorf, Germany, 21-23 June 2000**

***Document*** *R1-00-0548*
*e.g. for 3GPP use the format TP-99xxx*
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# CHANGE REQUEST

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| | | | |
|---|---|---|---|
| **25.215** | **CR** | **050r1** | Current Version: 3.2.0 |

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* | *↑ CR number as allocated by MCC support team*

| | | | | | |
|---|---|---|---|---|---|
| For submission to: TSG RAN #8 | for approval | X | strategic | | *(for SMG use only)* |
| *list expected approval meeting # here ↑* | for information | | non-strategic | | |

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**Proposed change affects:** (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [ ]
*(at least one should be marked with an X)*

**Source:** TSG RAN WG1 **Date:** 05-Apr-00

**Subject:** Maximum number of simultaneous compressed mode pattern sequences

**Work item:**

| **Category:** | | | | **Release:** | |
|---|---|---|---|---|---|
| | F | Correction | | Phase 2 | |
| | A | Corresponds to a correction in an earlier release | | Release 96 | |
| *(only one category* | B | Addition of feature | | Release 97 | |
| *shall be marked* | C | Functional modification of feature | X | Release 98 | |
| *with an X)* | D | Editorial modification | | Release 99 | X |
| | | | | Release 00 | |

**Reason for change:** The maximum value of simultaneous compressed mode pattern sequences is reduced according to the measurement needs.

**Clauses affected:** 6.1.1.2

| **Other specs affected:** | | | |
|---|---|---|---|
| | Other 3G core specifications | | → List of CRs: |
| | Other GSM core specifications | | → List of CRs: |
| | MS test specifications | | → List of CRs: |
| | BSS test specifications | | → List of CRs: |
| | O&M specifications | | → List of CRs: |

**Other comments:**

### 5.2.10 Propagation delay

| | |
|---|---|
| **Definition** | Propagation delay is defined as one-way propagation delay as measured during PRACH access:<br>Propagation delay = ($T_{RX}$ – $T_{TX}$ – 2560)/2, where<br>$T_{TX}$ = The time of AICH access slot (n-2-AICH transmission timing), where 0≤(n-2-AICH Transmission Timing)≤14 and AICH_Transmission_Timing can have values 0 or 1.<br>$T_{RX}$ = The time of reception of the beginning (the first significant path) of the PRACH message from the UE at PRACH access slot n.<br>Note: The definition of "first significant path" needs further elaboration. |
| **Range/mapping** | The Propagation delay is given with the resolution of 3 chips with the range [0, …, 765] chips.<br>The Propagation delay shall be reported in the unit PROP_DELAY where:<br><br>PROP_DELAY_000: 0 chip ≤ Propagation delay < 3 chip<br>PROP_DELAY_001: 3 chip ≤ Propagation delay < 6 chip<br>PROP_DELAY_002: 6 chip ≤ Propagation delay < 9 chip<br>...<br>PROP_DELAY_252: 756 chip ≤ Propagation delay < 759 chip<br>PROP_DELAY_253: 759 chip ≤ Propagation delay < 762 chip<br>PROP_DELAY_254: 762 chip ≤ Propagation delay < 765 chip<br>PROP_DELAY_255: 765 chip ≤ Propagation delay |

# 6 Measurements for UTRA FDD

## 6.1 UE measurements

### 6.1.1 Compressed mode

#### 6.1.1.1 Use of compressed mode/dual receiver for monitoring

A UE shall, on higher layers commands, monitor cells on other frequencies (FDD, TDD, GSM). To allow the UE to perform measurements, higher layers shall command that the UE enters in compressed mode, depending on the UE capabilities.

In case of compressed mode decision, UTRAN shall communicate to the UE the parameters of the compressed mode.

A UE with a single receiver shall support downlink compressed mode.

Every UE shall support uplink compressed mode, when monitoring frequencies which are close to the uplink transmission frequency (i.e. frequencies in the TDD or GSM 1800/1900 bands).

All fixed-duplex UE shall support both downlink and uplink compressed mode to allow inter-frequency handover within FDD and inter-mode handover from FDD to TDD.

Monitoring frequencies outside TDD and GSM 1800/1900 bands without uplink compressed mode is a UE capability.

UE with dual receivers can perform independent measurements, with the use of a "monitoring branch" receiver, that can operate independently from the UTRA FDD receiver branch. Such UE do not need to support downlink compressed mode.

The UE shall support one single measurement purpose within one compressed mode transmission gap. The measurement purpose of the gap is signalled by higher layers.

The following section provides rules to parametrise the compressed mode.

#### 6.1.1.2 Parameterisation of the compressed mode

In response to a request from higher layers, the UTRAN shall signal to the UE the compressed mode parameters.

A transmission gap pattern sequence consists of alternating transmission gap patterns 1 and 2, each of these patterns in turn consists of one or two transmission gaps. See figure 1.

The following parameters characterize a transmission gap pattern:

- TGSN (Transmission Gap Starting Slot Number): A transmission gap pattern begins in a radio frame, henceforward called first radio frame of the transmission gap pattern, containing at least one transmission gap slot. TGSN is the slot number of the first transmission gap slot within the first radio frame of the transmission gap pattern.

- TGL1 (Transmission Gap Length 1): This is the duration of the first transmission gap within the transmission gap pattern, expressed in number of slots.

- TGL2 (Transmission Gap Length 2): This is the duration of the second transmission gap within the transmission gap pattern, expressed in number of slots. If this parameter is not explicitly set by higher layers, then TGL2 = TGL1.

- TGD (Transmission Gap start Distance): This is the duration between the starting slots of two consecutive transmission gaps within a transmission gap pattern, expressed in number of slots. The resulting position of the second transmission gap within its radio frame(s) shall comply with the limitations of [2]. If this parameter is not set by higher layers, then there is only one transmission gap in the transmission gap pattern.

- TGPL1 (Transmission Gap Pattern Length): This is the duration of transmission gap pattern 1.

- TGPL2 (Transmission Gap Pattern Length): This is the duration of transmission gap pattern 2. If this parameter is not explicitly set by higher layers, then TGPL2 = TGPL1.

The following parameters control the transmission gap pattern sequence start and repetition:

- TGPRC (Transmission Gap Pattern Repetition Count): This is the number of transmission gap patterns within the transmission gap pattern sequence.

- TGCFN (Transmission Gap Connection Frame Number): This is the CFN of the first radio frame of the first pattern 1 within the transmission gap pattern sequence.

In addition to the parameters defining the positions of transmission gaps, each transmission gap pattern sequence is characterized by:

- UL/DL compressed mode selection: This parameter specifies whether compressed mode is used in UL only, DL only or both UL and DL.

- UL compressed mode method: The methods for generating the uplink compressed mode gap are spreading factor division by two or higher layer scheduling and are described in [2].

- DL compressed mode method: The methods for generating the downlink compressed mode gap are puncturing, spreading factor division by two or higher layer scheduling and are described in [2].

- Downlink frame type: This parameter defines if frame structure type 'A' or 'B' shall be used in downlink compressed mode. The frame structures are defined in [2].

- Scrambling code change: This parameter indicates whether the alternative scrambling code is used for compressed mode method 'SF/2'. Alternative scrambling codes are described in [3].

- RPP: Recovery Period Power control mode specifies the uplink power control algorithm applied during recovery period after each transmission gap in compressed mode. RPP can take 2 values (0 or 1). The different power control modes are described in [4].

- ITP: Initial Transmit Power mode selects the uplink power control method to calculate the initial transmit power after the gap. ITP can take two values (0 or 1) and is described in [4].

The UE shall support ~~[8]~~ simultaneous compressed mode pattern sequences which can be used for different measurements. The maximum number of simultaneous compressed mode pattern sequences depends on the supported modes and systems and is defined in the table below.

| Supported modes/systems | Maximum number of parallel CM pattern sequences supported by the UE |
|---|---|
| FDD | 2 |
| FDD+TDD | 3 |
| FDD+GSM | 5 |
| FDD+TDD+GSM | 6 |

Higher layers will ensure that the compressed mode gaps do not overlap and are not scheduled to overlap the same frame. The behaviour when an overlap occurs is described in [TS 25.302].

In all cases, higher layers have control of individual UE parameters. Any pattern sequence can be stopped on higher layers' command.

The parameters TGSN, TGL1, TGL2, TGD, TGPL1, TGPL2, TGPRC and TGCFN shall all be integers.

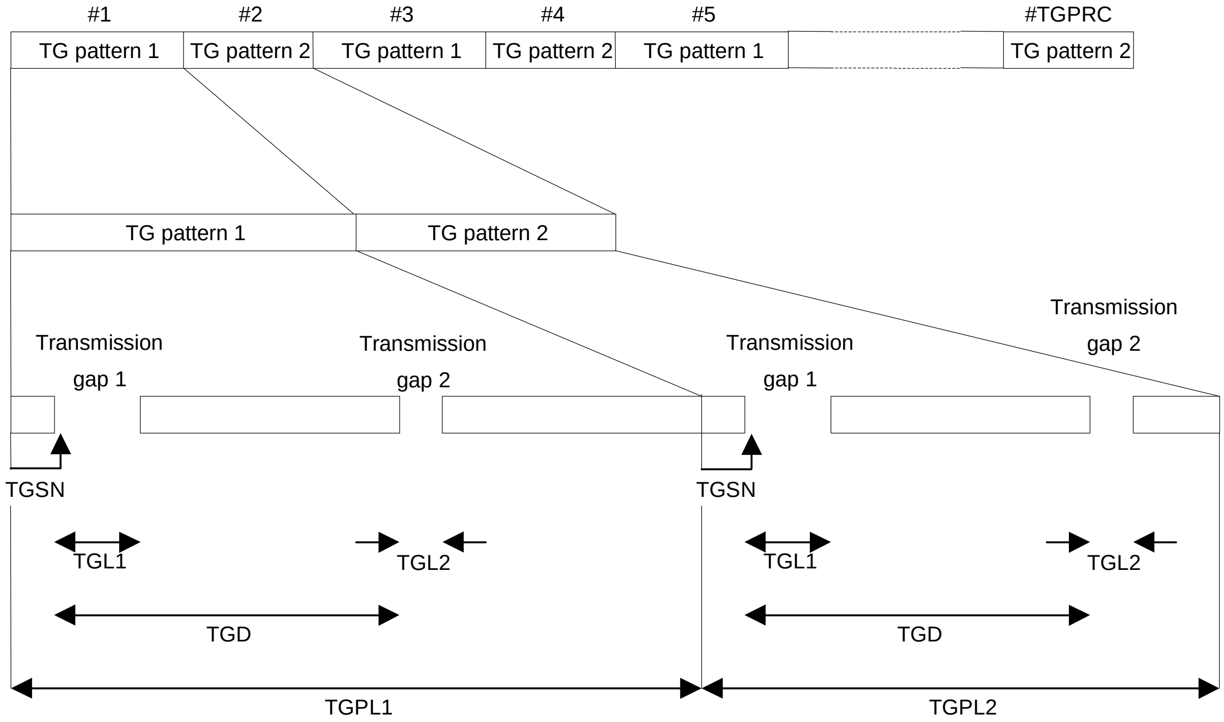


**Figure 1: Illustration of compressed mode pattern parameters**

### 6.1.1.3 Parameterisation limitations

In the table below the supported values for the TGL1 and TGL2 parameters are shown.

| Measurements performed on | Supported TGL1 values, when TGL2 is not set | Supported TGL1 and TGL2 values when both are set (TGL1, TGL2) |
|---|---|---|
| FDD inter-frequency cell | 7, 14 | (10, 5) |
| TDD cell | 4 | - |
| GSM cell | 3, 4, 7, 10, 14 | - |

Multi-mode terminals shall support all TGL1 and TGL2 values for the supported modes.

Further limitations on the transmission gap position within its frame(s) are given in TS 25.212.

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***Document*** *R1-00-0568*

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| **25.215** | **CR** | **051r1** | | Current Version: | 3.2.0 |

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑*　　*↑ CR number as allocated by MCC support team*

| | | | | | | |
|---|---|---|---|---|---|---|
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| *list expected approval meeting # here ↑* | | for information | | non-strategic | | |

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**Proposed change affects:** (U)SIM [ ]　ME [X]　UTRAN / Radio [X]　Core Network [ ]
*(at least one should be marked with an X)*

**Source:** TSG RAN WG1　　**Date:** 2000-04-11

**Subject:** Clarification of Physical channel BER

**Work item:**

**Category:** *(only one category shall be marked with an X)*

| | | | | |
|---|---|---|---|---|
| F | Correction | X | Phase 2 | |
| A | Corresponds to a correction in an earlier release | | Release 96 | |
| B | Addition of feature | | Release 97 | |
| C | Functional modification of feature | | Release 98 | |
| D | Editorial modification | | Release 99 | X |
| | | | Release 00 | |

**Release:** (see table above)

**Reason for change:** Clarification that the Physical channel BER shall be measured (averaged) over an entire TTI.

**Clauses affected:** 5.2.7 Physical channel BER

**Other specs affected:**

| | | |
|---|---|---|
| Other 3G core specifications | | → List of CRs: |
| Other GSM core specifications | | → List of CRs: |
| MS test specifications | | → List of CRs: |
| BSS test specifications | | → List of CRs: |
| O&M specifications | | → List of CRs: |

**Other comments:** It was commented to clarify the meaning of different TTIs in connection with PhCH BER. RNC signals to Node B the TrCH set where the measurement is to be performed on. The TrCH set can only contain TrCHs with same TTI. One quality estimate is reported per TrCH set, i.e. per Physical channel BER measurement. Hence, the situation with different TTIs will not occur. It is proposed to clarify that the TTI refers to the TTI of the respective TrCH.

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### 5.2.7 Physical channel BER

| | |
|---|---|
| **Definition** | The Physical channel BER is an estimation of the average bit error rate (BER) on the DPCCH after RL combination in Node B. An estimate of the Physical channel BER shall be possible to be reported after the end of each TTI of any of the transferred TrCHs. The reported physical channel BER shall be an estimate of the BER averaged over~~during~~ the latest TTI of the respective TrCH. |
| **Range/mapping** | The physical channel BER shall be reported for 0 ≤ Physical channel BER ≤ 1 in the unit PhCh_BER_LOG where:<br><br>PhCh_BER_LOG_000: Physical channel BER = 0<br>PhCh_BER_LOG_001: -∞ < Log10(Physical channel BER) < -2.06375<br>PhCh_BER_LOG_002: -2.06375≤ Log10(Physical channel BER) < -2.055625<br>PhCh_BER_LOG_003: -2.055625 ≤ Log10(Physical channel BER) < -2.0475<br>...<br>PhCh_BER_LOG_253: -0.024375 ≤ Log10(Physical channel BER) < -0.01625<br>PhCh_BER_LOG_254: -0.01625 ≤ Log10(Physical channel BER) < -0.008125<br>PhCh_BER_LOG_255: -0.008125 ≤ Log10(Physical channel BER) ≤ 0 |

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***Document*** *R1-00-0526*
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**25.215 CR 052** Current Version: 3.2.0

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

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| | | | | |
|---|---|---|---|---|
| for approval | X | strategic | | *(for SMG use only)* |
| for information | | non-strategic | | |

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**Proposed change affects:** (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]
*(at least one should be marked with an X)*

**Source:** TSG RAN WG1 **Date:** 2000-04-07

**Subject:** Clarification of transmitted code power

**Work item:**

**Category:** *(only one category shall be marked with an X)*

| | | | |
|---|---|---|---|
| F | Correction | X | |
| A | Corresponds to a correction in an earlier release | | |
| B | Addition of feature | | |
| C | Functional modification of feature | | |
| D | Editorial modification | | |

**Release:**

| | |
|---|---|
| Phase 2 | |
| Release 96 | |
| Release 97 | |
| Release 98 | |
| Release 99 | X |
| Release 00 | |

**Reason for change:** Clarification that the Transmitted code power is measured per radio link on the pilot bits of the DPCCH field.

**Clauses affected:** 5.2.4 Transmitted code power

**Other specs affected:**

| | | |
|---|---|---|
| Other 3G core specifications | | → List of CRs: |
| Other GSM core specifications | | → List of CRs: |
| MS test specifications | | → List of CRs: |
| BSS test specifications | | → List of CRs: |
| O&M specifications | | → List of CRs: |

**Other comments:**

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### 5.2.4 Transmitted code power

| | |
|---|---|
| Definition | Transmitted code power, is the transmitted power on one channelisation code on one given scrambling code on one given carrier. Measurement shall be possible on the DPCCH-field of any dedicated radio link~~any DPCH~~ transmitted from the UTRAN access point and shall reflect the power on the pilot bits of the DPCCH-field~~DPCH~~. The reference point for the transmitted code power measurement shall be the antenna connector. In case of Tx diversity the transmitted code power for each branch shall be measured. |
| **Range/mapping** | Transmitted code power is given with a resolution of 0.5 dB with the range [-10, ..., 46] dBm.<br>Transmitted code power shall be reported in the unit UTRAN_CODE_POWER where:<br><br>UTRAN_CODE_POWER _010: -10.0 dBm ≤ Transmitted code power < -9.5 dBm<br>UTRAN_CODE_POWER _011: -9.5 dBm ≤ Transmitted code power < -9.0 dBm<br>UTRAN_CODE_POWER _012: -9.0 dBm ≤ Transmitted code power < -8.5 dBm<br>...<br>UTRAN_CODE_POWER _120: 45.0 dBm ≤ Transmitted code power < 45.5 dBm<br>UTRAN_CODE_POWER _121: 45.5 dBm ≤ Transmitted code power < 46.0 dBm<br>UTRAN_CODE_POWER _122: 46.0 dBm ≤ Transmitted code power < 46.5 dBm |

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**Düsseldorf, Germany, 21-23 June 2000**

***Document*** *R1-00-0527*

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**25.215 CR 053** Current Version: 3.2.0

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| | | | | | |
|---|---|---|---|---|---|
| For submission to: | TSG-RAN #8 | for approval | X | strategic | *(for SMG use only)* |
| *list expected approval meeting # here ↑* | | for information | | non-strategic | |

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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Proposed change affects:** *(at least one should be marked with an X)* | (U)SIM | | ME | X | UTRAN / Radio | X | Core Network | |

**Source:** TSG RAN WG1 **Date:** 2000-04-07

**Subject:** Editorial correction in TS 25.215

**Work item:**

| **Category:** | | | | **Release:** | |
|---|---|---|---|---|---|
| | F | Correction | X | Phase 2 | |
| *(only one category shall be marked with an X)* | A | Corresponds to a correction in an earlier release | | Release 96 | |
| | B | Addition of feature | | Release 97 | |
| | C | Functional modification of feature | | Release 98 | |
| | D | Editorial modification | | Release 99 | X |
| | | | | Release 00 | |

**Reason for change:** Editorial correction of an erroneous section reference for the definition of $T_o$ in the measurement "SFN-CFN observed time difference".

**Clauses affected:** 5.2.9 SFN-CFN Observed time difference

| **Other specs affected:** | | | |
|---|---|---|---|
| | Other 3G core specifications | | → List of CRs: |
| | Other GSM core specifications | | → List of CRs: |
| | MS test specifications | | → List of CRs: |
| | BSS test specifications | | → List of CRs: |
| | O&M specifications | | → List of CRs: |

**Other comments:**

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### 5.1.9 SFN-CFN observed time difference

| | |
|---|---|
| **Definition** | The SFN-CFN observed time difference to cell is defined as: OFF×38400+ $T_m$, where:<br>$T_m$= ($T_{UETx}$-$T_0$) - $T_{RxSFN}$, given in chip units with the range [0, 1, …, 38399] chips<br>$T_{UETx}$ is the time when the UE transmits an uplink DPCCH/DPDCH frame.<br>$T_0$ is defined in [1]~~TS 25.211 section 7.1.3~~.<br>$T_{RxSFN}$ is the time at the beginning of the neighbouring P-CCPCH frame received most recent in time before the time instant $T_{UETx}$-$T_0$in the UE. If the beginning of the neighbouring P-CCPCH frame is received exactly at $T_{UETx}$-$T_0$ then $T_{RxSFN}$=$T_{UETx}$-$T_0$ (which leads to $T_m$=0).<br>and<br>OFF=(SFN-$CFN_{Tx}$) mod 256, given in number of frames with the range [0, 1, …, 255] frames<br>$CFN_{Tx}$ is the connection frame number for the UE transmission of an uplink DPCCH/DPDCH frame at the time $T_{UETx}$.<br>SFN is the system frame number for the neighbouring P-CCPCH frame received in the UE at the time $T_{RxSFN}$.<br><br>In case the inter-frequency measurement is done with compressed mode, the value for the parameter OFF is always reported to be 0.<br>In case that the SFN measurement indicator indicates that the UE does not need to read cell SFN of the target neighbour cell, the value of the parameter OFF is always be set to 0.<br><br>*Note: In Compressed mode it is not required to read cell SFN of the target neighbour cell.* |
| **Applicable for** | Connected Inter, Connected Intra |
| **Range/mapping** | Time difference is given with the resolution of one chip with the range [0, …, 9830399] chips.<br>Time difference shall be reported in the unit SFN-CFN_TIME where:<br><br>SFN-CFN_TIME_0000000: 0 chip ≤ Time difference < 1 chip<br>SFN-CFN_TIME_0000001: 1 chip ≤ Time difference < 2 chip<br>SFN-CFN_TIME_0000002: 2 chip ≤ Time difference < 3 chip<br>...<br>SFN-CFN_TIME_9830397: 9830397 chip ≤ Time difference < 9830398 chip<br>SFN-CFN_TIME_9830398: 9830398 chip ≤ Time difference < 9830399 chip<br>SFN-CFN_TIME_9830399: 9830399 chip ≤ Time difference < 9830400 chip |

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***Document*** *R1-00-0581*
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# CHANGE REQUEST

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| | | | |
|---|---|---|---|
| **25.215** | **CR** | **055** | Current Version: 3.2.0 |

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| | | | | | | |
|---|---|---|---|---|---|---|
| For submission to: | TSG RAN #8 | for approval | X | strategic | | *(for SMG use only)* |
| *list expected approval meeting # here ↑* | | for information | | non-strategic | | |

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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Proposed change affects:** *(at least one should be marked with an X)* | (U)SIM | | ME | X | UTRAN / Radio | X | Core Network | |

| | | | |
|---|---|---|---|
| **Source:** | TSG RAN WG1 | **Date:** | 10-APR-2000 |
| **Subject:** | Proposed CR for Measurements of RACH in FDD | | |
| **Work item:** | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Category:** | F | Correction | | **Release:** | Phase 2 | |
| | A | Corresponds to a correction in an earlier release | X | | Release 96 | |
| *(only one category* | B | Addition of feature | | | Release 97 | |
| *shall be marked* | C | Functional modification of feature | | | Release 98 | |
| *with an X)* | D | Editorial modification | | | Release 99 | X |
| | | | | | Release 00 | |

| | |
|---|---|
| **Reason for change:** | |
| **Clauses affected:** | 5.2 of TS25.215 |

| | | | | |
|---|---|---|---|---|
| **Other specs Affected:** | Other 3G core specifications | | → List of CRs: | |
| | Other GSM core specifications | | → List of CRs: | |
| | MS test specifications | | → List of CRs: | |
| | BSS test specifications | | → List of CRs: | |
| | O&M specifications | | → List of CRs: | |

| | |
|---|---|
| **Other comments:** | |

<--------- double-click here for help and instructions on how to create a C

## 5.2.10 Propagation delay

| | |
|---|---|
| **Definition** | Propagation delay is defined as one-way propagation delay as measured during PRACH access:<br>Propagation delay = ($T_{RX}$ – $T_{TX}$ – 2560)/2, where:<br>$T_{TX}$ = The time of AICH access slot (n-2-AICH transmission timing), where 0≤(n-2-AICH Transmission Timing)≤14 and AICH_Transmission_Timing can have values 0 or 1.<br>$T_{RX}$ = The time of reception of the beginning (the first significant path) of the PRACH message from the UE at PRACH access slot n.<br>Note: The definition of "first significant path" needs further elaboration. |
| **Range/mapping** | The Propagation delay is given with the resolution of 3 chips with the range [0, …, 765] chips. The Propagation delay shall be reported in the unit PROP_DELAY where:<br><br>PROP_DELAY_000: 0 chip ≤ Propagation delay < 3 chip<br>PROP_DELAY_001: 3 chip ≤ Propagation delay < 6 chip<br>PROP_DELAY_002: 6 chip ≤ Propagation delay < 9 chip<br>...<br>PROP_DELAY_252: 756 chip ≤ Propagation delay < 759 chip<br>PROP_DELAY_253: 759 chip ≤ Propagation delay < 762 chip<br>PROP_DELAY_254: 762 chip ≤ Propagation delay < 765 chip<br>PROP_DELAY_255: 765 chip ≤ Propagation delay |

## 5.2.11 Acknowledged PRACH preambles

| | |
|---|---|
| **Definition** | The Acknowledged PRACH preambles measurement is defined as the total number of acknowledged PRACH preambles per access frame per PRACH. This is equivalent to the number of positive acquisition indicators transmitted per access frame per AICH. |
| **Range/mapping** | |

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***Document*** *R1-00-0582*
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# CHANGE REQUEST

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| | | | | |
|---|---|---|---|---|
| **25.215** | **CR** | **056** | Current Version: | 3.2.0 |

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| | | | | | | |
|---|---|---|---|---|---|---|
| For submission to: | TSG RAN #8 | for approval | X | strategic | | *(for SMG use only)* |
| *list expected approval meeting # here ↑* | | for information | | non-strategic | | |

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**Proposed change affects:** *(at least one should be marked with an X)*

| (U)SIM | | ME | X | UTRAN / Radio | X | Core Network | |
|---|---|---|---|---|---|---|---|

**Source:** TSG RAN WG1 **Date:** 13-APR-2000

**Subject:** Proposed CR for Measurements of CPCH in FDD

**Work item:**

**Category:** *(only one category shall be marked with an X)*

| | | |
|---|---|---|
| F | Correction | |
| A | Corresponds to a correction in an earlier release | X |
| B | Addition of feature | |
| C | Functional modification of feature | |
| D | Editorial modification | |

**Release:**

| | |
|---|---|
| Phase 2 | |
| Release 96 | |
| Release 97 | |
| Release 98 | |
| Release 99 | X |
| Release 00 | |

**Reason for change:**

**Clauses affected:** 5.2 of TS25.215

**Other specs affected:**

| | | |
|---|---|---|
| Other 3G core specifications | | → List of CRs: |
| Other GSM core specifications | | → List of CRs: |
| MS test specifications | | → List of CRs: |
| BSS test specifications | | → List of CRs: |
| O&M specifications | | → List of CRs: |

**Other comments:**

<--------- double-click here for help and instructions on how to create a C

### 5.2.10 Propagation delay

| | |
|---|---|
| **Definition** | Propagation delay is defined as one-way propagation delay as measured during PRACH access:<br>Propagation delay = ($T_{RX}$ – $T_{TX}$ – 2560)/2, where:<br>$T_{TX}$ = The time of AICH access slot (n-2-AICH transmission timing), where 0≤(n-2-AICH Transmission Timing)≤14 and AICH_Transmission_Timing can have values 0 or 1.<br>$T_{RX}$ = The time of reception of the beginning (the first significant path) of the PRACH message from the UE at PRACH access slot n.<br>Note: The definition of "first significant path" needs further elaboration. |
| **Range/mapping** | The Propagation delay is given with the resolution of 3 chips with the range [0, …, 765] chips.<br>The Propagation delay shall be reported in the unit PROP_DELAY where:<br><br>PROP_DELAY_000: 0 chip ≤ Propagation delay < 3 chip<br>PROP_DELAY_001: 3 chip ≤ Propagation delay < 6 chip<br>PROP_DELAY_002: 6 chip ≤ Propagation delay < 9 chip<br>...<br>PROP_DELAY_252: 756 chip ≤ Propagation delay < 759 chip<br>PROP_DELAY_253: 759 chip ≤ Propagation delay < 762 chip<br>PROP_DELAY_254: 762 chip ≤ Propagation delay < 765 chip<br>PROP_DELAY_255: 765 chip ≤ Propagation delay |

### 5.2.11 Detected PCPCH access preambles

| | |
|---|---|
| **Definition** | The detected PCPCH access preambles measurement is defined as the total number of detected access preambles per access frame on the PCPCHs belonging to a CPCH set. |
| **Range/mapping** | |

### 5.2.12 Acknowledged PCPCH access preambles

| | |
|---|---|
| **Definition** | The Acknowledged PCPCH access preambles measurement is defined as the total number of acknowledged PCPCH access preambles per access frame on the PCPCHs belonging to a SF. This is equivalent to the number of positive acquisition indicators transmitted for a SF per access frame per AP-AICH. |
| **Range/mapping** | |

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***Document*** *R1-00-0585*

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# CHANGE REQUEST

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| | | | | |
|---|---|---|---|---|
| **25.215** | **CR** | **057** | Current Version: | 3.2.0 |

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| | | | | | |
|---|---|---|---|---|---|
| For submission to: | TSG RAN #8 | for approval | X | strategic | |
| *list expected approval meeting # here ↑* | | for information | | non-strategic | |

*(for SMG use only)*

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Proposed change affects:** *(at least one should be marked with an X)* | (U)SIM | | ME | | UTRAN / Radio | X | Core Network |

**Source:** TSG RAN WG1 **Date:** 12-Apr-00

**Subject:** Transfer of information from TS 25.212 table 9 to TS 25.215

**Work item:**

**Category:** *(only one category shall be marked with an X)*

| | | | | | |
|---|---|---|---|---|---|
| F | Correction | X | **Release:** | Phase 2 | |
| A | Corresponds to a correction in an earlier release | | | Release 96 | |
| B | Addition of feature | | | Release 97 | |
| C | Functional modification of feature | | | Release 98 | |
| D | Editorial modification | | | Release 99 | X |
| | | | | Release 00 | |

**Reason for change:** The column of TS 25.212 table 9 indicating single/double frame compressed mode combinations is moved to TS 25.215 section 6.1.1.3.

**Clauses affected:** 6.1.1.3

**Other specs affected:**

| | | | |
|---|---|---|---|
| Other 3G core specifications | X | → List of CRs: | 25.212-060rev1 |
| Other GSM core specifications | | → List of CRs: | |
| MS test specifications | | → List of CRs: | |
| BSS test specifications | | → List of CRs: | |
| O&M specifications | | → List of CRs: | |

**Other comments:**

### 6.1.1.3 Parameterisation limitations

In the table below the supported values for the TGL1 and TGL2 parameters are shown.

| Measurements performed on | Supported TGL1 values, when TGL2 is not set | Supported TGL1 and TGL2 values when both are set (TGL1, TGL2) |
|---|---|---|
| FDD inter-frequency cell | 7, 14 | (10, 5) |
| TDD cell | 4 | - |
| GSM cell | 3, 4, 7, 10, 14 | - |

Multi-mode terminals shall support all TGL1 and TGL2 values for the supported modes.

Depending on the starting slot and length of the gap, it can be placed within one single frame (single-frame method) or it can overlap two frames (double-frame method). The following table shows the combinations that are supported:

| TGL | Idle frame combining |
|---|---|
| 3 | (S)<br>(D) = (1,2) or (2,1) |
| 4 | (S)<br>(D) = (1,3), (2,2) or (3,1) |
| 5 | (S)<br>(D) = (1,4), (2,3), (3, 2) or (4,1) |
| 7 | (S)<br>(D) = (1,6), (2,5), (3,4), (4,3), (5,2) or (6,1) |
| 10 | (D) = (3,7), (4,6), (5,5), (6,4) or (7,3) |
| 14 | (D) = (7,7) |

The notation used within the table is:

(S): Single-frame method as specified in TS 25.212

(D): Double-frame method as specified in TS 25.212: (x,y) indicates x: the number of idle slots in the first frame, y: the number of idle slots in the second frame.

Further limitations on the transmission gap position within its frame(s) are given in TS 25.212.

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***Document*** *R1-00-0599*

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# CHANGE REQUEST

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| | | | | |
|---|---|---|---|---|
| **25.215** | **CR** | **058** | Current Version: | 3.2.0 |

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| | | | | | | |
|---|---|---|---|---|---|---|
| For submission to: | TSG RAN #8 | for approval | X | strategic | | *(for SMG use only)* |
| *list expected approval meeting # here ↑* | | for information | | non-strategic | | |

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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Proposed change affects:** *(at least one should be marked with an X)* | (U)SIM | | ME | | UTRAN / Radio | X | Core Network | |

| | | | |
|---|---|---|---|
| **Source:** | TSG RAN WG1 | **Date:** | 12-Apr-00 |
| **Subject:** | Correction to CM parameter list | | |
| **Work item:** | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Category:** | F | Correction | X | **Release:** | Phase 2 | |
| | A | Corresponds to a correction in an earlier release | | | Release 96 | |
| *(only one category* | B | Addition of feature | | | Release 97 | |
| *shall be marked* | C | Functional modification of feature | | | Release 98 | |
| *with an X)* | D | Editorial modification | | | Release 99 | X |
| | | | | | Release 00 | |

| | |
|---|---|
| **Reason for change:** | The information that TGPL1 and TGPL2 are given in frames was missing. |
| **Clauses affected:** | 6.1.1.2 |

| | | | | |
|---|---|---|---|---|
| **Other specs affected:** | Other 3G core specifications | | → List of CRs: | |
| | Other GSM core specifications | | → List of CRs: | |
| | MS test specifications | | → List of CRs: | |
| | BSS test specifications | | → List of CRs: | |
| | O&M specifications | | → List of CRs: | |

| | |
|---|---|
| **Other comments:** | |

### 5.2.10 Propagation delay

| | |
|---|---|
| **Definition** | Propagation delay is defined as one-way propagation delay as measured during PRACH access:<br>Propagation delay = ($T_{RX}$ – $T_{TX}$ – 2560)/2, where:<br>$T_{TX}$ = The time of AICH access slot (n-2-AICH transmission timing), where 0≤(n-2-AICH Transmission Timing)≤14 and AICH_Transmission_Timing can have values 0 or 1.<br>$T_{RX}$ = The time of reception of the beginning (the first significant path) of the PRACH message from the UE at PRACH access slot n.<br>Note: The definition of "first significant path" needs further elaboration. |
| **Range/mapping** | The Propagation delay is given with the resolution of 3 chips with the range [0, …, 765] chips.<br>The Propagation delay shall be reported in the unit PROP_DELAY where:<br><br>PROP_DELAY_000: 0 chip ≤ Propagation delay < 3 chip<br>PROP_DELAY_001: 3 chip ≤ Propagation delay < 6 chip<br>PROP_DELAY_002: 6 chip ≤ Propagation delay < 9 chip<br>...<br>PROP_DELAY_252: 756 chip ≤ Propagation delay < 759 chip<br>PROP_DELAY_253: 759 chip ≤ Propagation delay < 762 chip<br>PROP_DELAY_254: 762 chip ≤ Propagation delay < 765 chip<br>PROP_DELAY_255: 765 chip ≤ Propagation delay |

# 6 Measurements for UTRA FDD

## 6.1 UE measurements

### 6.1.1 Compressed mode

#### 6.1.1.1 Use of compressed mode/dual receiver for monitoring

A UE shall, on higher layers commands, monitor cells on other frequencies (FDD, TDD, GSM). To allow the UE to perform measurements, higher layers shall command that the UE enters in compressed mode, depending on the UE capabilities.

In case of compressed mode decision, UTRAN shall communicate to the UE the parameters of the compressed mode.

A UE with a single receiver shall support downlink compressed mode.

Every UE shall support uplink compressed mode, when monitoring frequencies which are close to the uplink transmission frequency (i.e. frequencies in the TDD or GSM 1800/1900 bands).

All fixed-duplex UE shall support both downlink and uplink compressed mode to allow inter-frequency handover within FDD and inter-mode handover from FDD to TDD.

Monitoring frequencies outside TDD and GSM 1800/1900 bands without uplink compressed mode is a UE capability.

UE with dual receivers can perform independent measurements, with the use of a "monitoring branch" receiver, that can operate independently from the UTRA FDD receiver branch. Such UE do not need to support downlink compressed mode.

The UE shall support one single measurement purpose within one compressed mode transmission gap. The measurement purpose of the gap is signalled by higher layers.

The following subclause provides rules to parametrise the compressed mode.

#### 6.1.1.2 Parameterisation of the compressed mode

In response to a request from higher layers, the UTRAN shall signal to the UE the compressed mode parameters.

A transmission gap pattern sequence consists of alternating transmission gap patterns 1 and 2, each of these patterns in turn consists of one or two transmission gaps. See figure 1.

The following parameters characterize a transmission gap pattern:

- TGSN (Transmission Gap Starting Slot Number): A transmission gap pattern begins in a radio frame, henceforward called first radio frame of the transmission gap pattern, containing at least one transmission gap slot. TGSN is the slot number of the first transmission gap slot within the first radio frame of the transmission gap pattern;
- TGL1 (Transmission Gap Length 1): This is the duration of the first transmission gap within the transmission gap pattern, expressed in number of slots;
- TGL2 (Transmission Gap Length 2): This is the duration of the second transmission gap within the transmission gap pattern, expressed in number of slots. If this parameter is not explicitly set by higher layers, then TGL2 = TGL1;
- TGD (Transmission Gap start Distance): This is the duration between the starting slots of two consecutive transmission gaps within a transmission gap pattern, expressed in number of slots. The resulting position of the second transmission gap within its radio frame(s) shall comply with the limitations of [2]. If this parameter is not set by higher layers, then there is only one transmission gap in the transmission gap pattern;
- TGPL1 (Transmission Gap Pattern Length): This is the duration of transmission gap pattern 1, expressed in number of frames;
- TGPL2 (Transmission Gap Pattern Length): This is the duration of transmission gap pattern 2, expressed in number of frames. If this parameter is not explicitly set by higher layers, then TGPL2 = TGPL1.

The following parameters control the transmission gap pattern sequence start and repetition:

- TGPRC (Transmission Gap Pattern Repetition Count): This is the number of transmission gap patterns within the transmission gap pattern sequence;
- TGCFN (Transmission Gap Connection Frame Number): This is the CFN of the first radio frame of the first pattern 1 within the transmission gap pattern sequence.

In addition to the parameters defining the positions of transmission gaps, each transmission gap pattern sequence is characterized by:

- UL/DL compressed mode selection: This parameter specifies whether compressed mode is used in UL only, DL only or both UL and DL;
- UL compressed mode method: The methods for generating the uplink compressed mode gap are spreading factor division by two or higher layer scheduling and are described in [2];
- DL compressed mode method: The methods for generating the downlink compressed mode gap are puncturing, spreading factor division by two or higher layer scheduling and are described in [2];
- downlink frame type: This parameter defines if frame structure type 'A' or 'B' shall be used in downlink compressed mode. The frame structures are defined in [2];
- scrambling code change: This parameter indicates whether the alternative scrambling code is used for compressed mode method 'SF/2'. Alternative scrambling codes are described in [3];
- RPP: Recovery Period Power control mode specifies the uplink power control algorithm applied during recovery period after each transmission gap in compressed mode. RPP can take 2 values (0 or 1). The different power control modes are described in [4];
- ITP: Initial Transmit Power mode selects the uplink power control method to calculate the initial transmit power after the gap. ITP can take two values (0 or 1) and is described in [4].

The UE shall support [8] simultaneous compressed mode pattern sequences which can be used for different measurements.

Higher layers will ensure that the compressed mode gaps do not overlap and are not scheduled to overlap the same frame. The behaviour when an overlap occurs is described in TS 25.302.

In all cases, higher layers have control of individual UE parameters. Any pattern sequence can be stopped on higher layers' command.

The parameters TGSN, TGL1, TGL2, TGD, TGPL1, TGPL2, TGPRC and TGCFN shall all be integers.

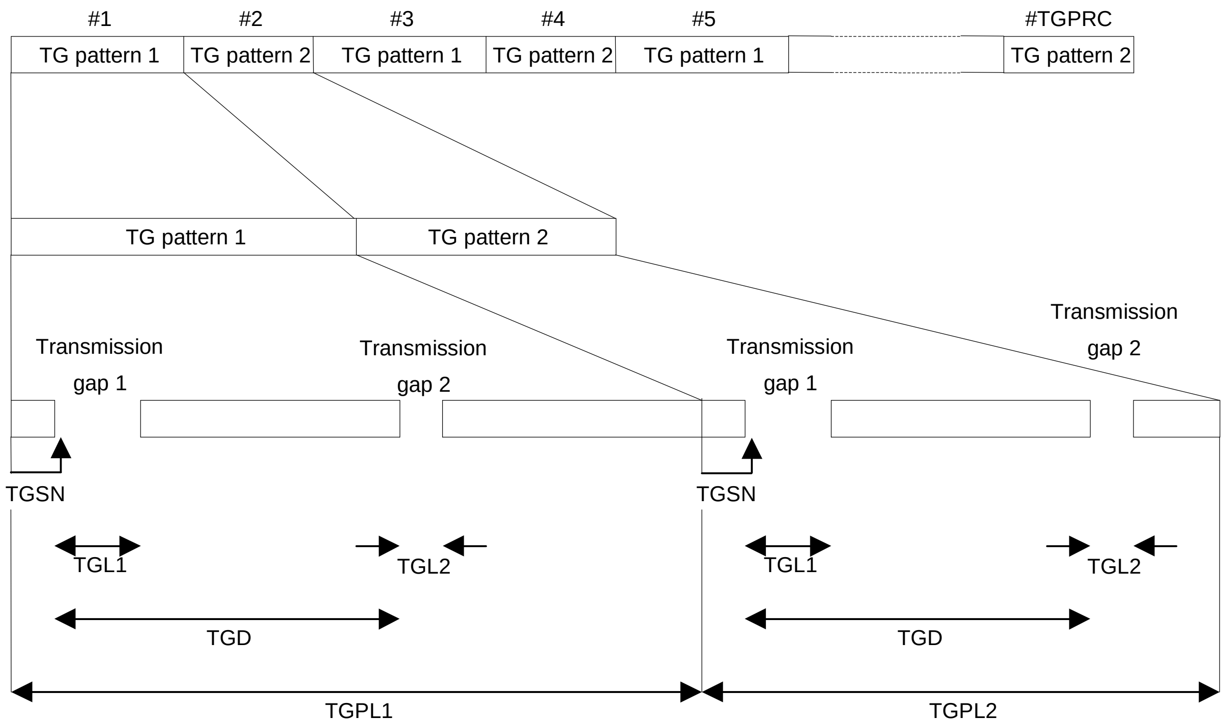


**Figure 1: Illustration of compressed mode pattern parameters**

### 6.1.1.3 Parameterisation limitations

In the table below the supported values for the TGL1 and TGL2 parameters are shown.

| Measurements performed on | Supported TGL1 values, when TGL2 is not set | Supported TGL1 and TGL2 values when both are set (TGL1, TGL2) |
|---|---|---|
| FDD inter-frequency cell | 7, 14 | (10, 5) |
| TDD cell | 4 | - |
| GSM cell | 3, 4, 7, 10, 14 | - |

Multi-mode terminals shall support all TGL1 and TGL2 values for the supported modes.

Further limitations on the transmission gap position within its frame(s) are given in TS 25.212.

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***Document*** *R1-00-0703*

*e.g. for 3GPP use the format TP-99xxx*
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# CHANGE REQUEST

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**25.215 CR 062** Current Version: 3.2.0

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| | | | | | |
|---|---|---|---|---|---|
| For submission to: | TSG-RAN #8 | for approval | X | strategic | |
| *list expected approval meeting # here ↑* | | for information | | non-strategic | |

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**Proposed change affects:** (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]
*(at least one should be marked with an X)*

**Source:** TSG RAN WG1 **Date:** 2000-05-03

**Subject:** Clarification of radio link measurements in compressed mode

**Work item:**

**Category:**
*(only one category shall be marked with an X)*

| | | | |
|---|---|---|---|
| F | Correction | X |
| A | Corresponds to a correction in an earlier release | |
| B | Addition of feature | |
| C | Functional modification of feature | |
| D | Editorial modification | |

**Release:**

| | |
|---|---|
| Phase 2 | |
| Release 96 | |
| Release 97 | |
| Release 98 | |
| Release 99 | X |
| Release 00 | |

**Reason for change:** Currently information on how radio link measurement on dedicated channels shall be performed in compressed mode is missing in TS 25.215. There are two measurements that are performed on dedicated resources in 25.215, the UTRAN SIR and UTRAN Transmitted code power. This CR clarifies how the measurements shall be performed in compressed mode.

**Clauses affected:** 5.2.2, 5.2.4

**Other specs affected:**

| | | |
|---|---|---|
| Other 3G core specifications | | → List of CRs: |
| Other GSM core specifications | | → List of CRs: |
| MS test specifications | | → List of CRs: |
| BSS test specifications | | → List of CRs: |
| O&M specifications | | → List of CRs: |

**Other comments:**

help.doc

<--------- double-click here for help and instructions on how to create a CR.

### 5.2.2 SIR

| | |
|---|---|
| **Definition** | Signal to Interference Ratio, is defined as: (RSCP/ISCP)×SF. Measurement shall be performed on the DPCCH after RL combination in Node B. In compressed mode the SIR shall not be measured in the transmission gap. The reference point for the SIR measurements shall be the antenna connector.<br><br>where:<br><br>RSCP = Received Signal Code Power, the received power on one code.<br><br>ISCP = Interference Signal Code Power, the interference on the received signal. Only the non-orthogonal part of the interference is included in the measurement.<br><br>SF=The spreading factor used on the DPCCH. |
| **Range/mapping** | SIR is given with a resolution of 0.5 dB with the range [-11, ..., 20] dB. SIR shall be reported in the unit UTRAN_SIR where:<br><br>UTRAN_SIR_00: SIR < –11.0 dB<br>UTRAN_SIR_01: -11.0 dB ≤ SIR < –10.5 dB<br>UTRAN_SIR_02: -10.5 dB ≤ SIR < –10.0 dB<br>...<br>UTRAN_SIR_61: 19.0 dB ≤ SIR < 19.5 dB<br>UTRAN_SIR_62: 19.5 dB ≤ SIR < 20.0 dB<br>UTRAN_SIR_63: 20.0 dB ≤ SIR |

### 5.2.3 Transmitted carrier power

| | |
|---|---|
| **Definition** | Transmitted carrier power, is the ratio between the total transmitted power and the maximum transmission power. Total transmission power is the mean power [W] on one carrier from one UTRAN access point. Maximum transmission power is the mean power [W] on one carrier from one UTRAN access point when transmitting at the configured maximum power for the cell. Measurement shall be possible on any carrier transmitted from the UTRAN access point. The reference point for the transmitted carrier power measurement shall be the antenna connector. In case of Tx diversity the transmitted carrier power for each branch shall be measured. |
| **Range/mapping** | Transmitted carrier power is given with a resolution of 1 %-unit with the range [0, ..., 100] %<br>Transmitted carrier power shall be reported in the unit UTRAN_TX_POWER where:<br><br>UTRAN_TX_POWER _000: Transmitted carrier power = 0 %<br>UTRAN_TX_POWER _001: 0 % < Transmitted carrier power ≤ 1 %<br>UTRAN_TX_POWER _002: 1 % < Transmitted carrier power ≤ 2 %<br>UTRAN_TX_POWER _003: 2 % < Transmitted carrier power ≤ 3 %<br>...<br>UTRAN_TX_POWER _098: 97 % < Transmitted carrier power ≤ 98 %<br>UTRAN_TX_POWER _099: 98 % < Transmitted carrier power ≤ 99 %<br>UTRAN_TX_POWER _100: 99 % < Transmitted carrier power ≤ 100 % |

## 5.2.4 Transmitted code power

| | |
|---|---|
| **Definition** | Transmitted code power, is the transmitted power on one channelisation code on one given scrambling code on one given carrier. Measurement shall be possible on any DPCH transmitted from the UTRAN access point and shall reflect the power on the pilot bits of the DPCH. When measuring the transmitted code power in compressed mode all slots shall be included in the measurement, e.g. also the slots in the transmission gap shall be included in the measurement.<br>The reference point for the transmitted code power measurement shall be the antenna connector. In case of Tx diversity the transmitted code power for each branch shall be measured. |
| **Range/mapping** | Transmitted code power is given with a resolution of 0.5 dB with the range [-10, ..., 46] dBm.<br>Transmitted code power shall be reported in the unit UTRAN_CODE_POWER where:<br><br>UTRAN_CODE_POWER _010: -10.0 dBm ≤ Transmitted code power < -9.5 dBm<br>UTRAN_CODE_POWER _011: -9.5 dBm ≤ Transmitted code power < -9.0 dBm<br>UTRAN_CODE_POWER _012: -9.0 dBm ≤ Transmitted code power < -8.5 dBm<br>...<br>UTRAN_CODE_POWER _120: 45.0 dBm ≤ Transmitted code power < 45.5 dBm<br>UTRAN_CODE_POWER _121: 45.5 dBm ≤ Transmitted code power < 46.0 dBm<br>UTRAN_CODE_POWER _122: 46.0 dBm ≤ Transmitted code power < 46.5 dBm |

**3GPP TSG RAN Meeting #8**
**Düsseldorf, Germany, 21-23 June 2000**

***Document*** *R1-00-0704*
*e.g. for 3GPP use the format TP-99xxx*
*or for SMG, use the format P-99-xxx*

# CHANGE REQUEST

*Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*

| | | | | |
|---|---|---|---|---|
| **25.215** | **CR** | **063** | Current Version: | 3.2.0 |

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑*  *↑ CR number as allocated by MCC support team*

| | | | | | | |
|---|---|---|---|---|---|---|
| For submission to: | TSG-RAN #8 | for approval | X | strategic | | *(for SMG use only)* |
| *list expected approval meeting # here ↑* | | for information | | non-strategic | | |

*Form: CR cover sheet, version 2 for 3GPP and SMG    The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

**Proposed change affects:** (U)SIM [ ]  ME [X]  UTRAN / Radio [X]  Core Network [ ]
*(at least one should be marked with an X)*

**Source:** TSG RAN WG1  **Date:** 2000-05-04

**Subject:** Clarification of the Transmitted code power measurement in Tx diversity

**Work item:**

**Category:** *(only one category shall be marked with an X)*

| | | | |
|---|---|---|---|
| F | Correction | X | |
| A | Corresponds to a correction in an earlier release | | |
| B | Addition of feature | | |
| C | Functional modification of feature | | |
| D | Editorial modification | | |

**Release:**

| | |
|---|---|
| Phase 2 | |
| Release 96 | |
| Release 97 | |
| Release 98 | |
| Release 99 | X |
| Release 00 | |

**Reason for change:** In Tx diversity the Transmitted code power is measured per branch. However only one measurement value per cell shall be reported to the RNC over NBAP. This CR clarifies that the measured values per branch shall be added together before reported to the RNC.

**Clauses affected:** 5.2.4 Transmitted code power

**Other specs affected:**

| | | |
|---|---|---|
| Other 3G core specifications | | → List of CRs: |
| Other GSM core specifications | | → List of CRs: |
| MS test specifications | | → List of CRs: |
| BSS test specifications | | → List of CRs: |
| O&M specifications | | → List of CRs: |

**Other comments:**

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<--------- double-click here for help and instructions on how to create a CR.

### 5.2.4 Transmitted code power

| | |
|---|---|
| **Definition** | Transmitted code power, is the transmitted power on one channelisation code on one given scrambling code on one given carrier. Measurement shall be possible on any DPCH transmitted from the UTRAN access point and shall reflect the power on the pilot bits of the DPCH. The reference point for the transmitted code power measurement shall be the antenna connector. In case of Tx diversity the transmitted code power for each branch shall be measured and summed together in [W]. |
| **Range/mapping** | Transmitted code power is given with a resolution of 0.5 dB with the range [-10, ..., 46] dBm.<br>Transmitted code power shall be reported in the unit UTRAN_CODE_POWER where:<br><br>UTRAN_CODE_POWER _010: -10.0 dBm ≤ Transmitted code power < -9.5 dBm<br>UTRAN_CODE_POWER _011: -9.5 dBm ≤ Transmitted code power < -9.0 dBm<br>UTRAN_CODE_POWER _012: -9.0 dBm ≤ Transmitted code power < -8.5 dBm<br>...<br>UTRAN_CODE_POWER _120: 45.0 dBm ≤ Transmitted code power < 45.5 dBm<br>UTRAN_CODE_POWER _121: 45.5 dBm ≤ Transmitted code power < 46.0 dBm<br>UTRAN_CODE_POWER _122: 46.0 dBm ≤ Transmitted code power < 46.5 dBm |

**3GPP TSG RAN Meeting #8**
**Düsseldorf, Germany, 21-23 June 2000**

***Document*** *R1-00-0767*
*e.g. for 3GPP use the format TP-99xxx*
*or for SMG, use the format P-99-xxx*

# CHANGE REQUEST

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| | | | | |
|---|---|---|---|---|
| **25.215** | **CR** | **064r1** | Current Version: | 3.2.0 |

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| | | | | | | |
|---|---|---|---|---|---|---|
| For submission to: | TSG RAN #8 | for approval | X | strategic | | *(for SMG use only)* |
| *list expected approval meeting # here ↑* | | for information | | non-strategic | | |

*Form: CR cover sheet, version 2 for 3GPP and SMG     The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Proposed change affects:** *(at least one should be marked with an X)* | (U)SIM | | ME | X | UTRAN / Radio | X | Core Network | |

**Source:** TSG RAN WG1     **Date:** 24.05.2000

**Subject:** Removal of Range/mapping

**Work item:**

| **Category:** | | | | **Release:** | |
|---|---|---|---|---|---|
| | F | Correction | X | Phase 2 | |
| | A | Corresponds to a correction in an earlier release | | Release 96 | |
| *(only one category* | B | Addition of feature | | Release 97 | |
| *shall be marked* | C | Functional modification of feature | | Release 98 | |
| *with an X)* | D | Editorial modification | | Release 99 | X |
| | | | | Release 00 | |

**Reason for change:**

- In last RAN#7 meeting it was agreed to remove range/mapping from 25.215 and 25.225 and to add WG4's document. This CR is proposing to remove range/mapping from 25.215.

**Clauses affected:** 5.1, 5.2

| **Other specs affected:** | | |
|---|---|---|
| Other 3G core specifications | | → List of CRs: |
| Other GSM core specifications | | → List of CRs: |
| MS test specifications | | → List of CRs: |
| BSS test specifications | | → List of CRs: |
| O&M specifications | | → List of CRs: |

**Other comments:** In revision1, range/mapping in defining the structure of the table of 5.2 UTRAN measurement was removed

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<--------- double-click here for help and instructions on how to create a CR.

# 5 Measurement abilities for UTRA FDD

In this chapter the physical layer measurements reported to higher layers (this may also include UE internal measurements not reported over the air-interface) are defined. The GSM measurements are required only from the GSM capable terminals. The TDD measurements are required only from the terminals that are capable to operate in TDD mode.

## 5.1 UE measurement abilities

The structure of the table defining a UE measurement quantity is shown below.

| Column field | Comment |
|---|---|
| **Definition** | Contains the definition of the measurement. |
| **Applicable for** | States if a measurement shall be possible to perform in Idle mode and/or Connected mode. For connected mode also information of the possibility to perform the measurement on intra-frequency and/or inter-frequency are given.<br>The following terms are used in the tables:<br>Idle = Shall be possible to perform in idle mode;<br>Connected Intra = Shall be possible to perform in connected mode on an intra-frequency;<br>Connected Inter = Shall be possible to perform in connected mode on an inter-frequency. |
| ~~**Range/mapping**~~ | ~~Gives the range and mapping to bits for the measurements quantity.~~ |

### 5.1.1 CPICH RSCP

| | |
|---|---|
| **Definition** | Received Signal Code Power, the received power on one code measured on the Primary CPICH. The reference point for the RSCP is the antenna connector at the UE. If Tx diversity is applied on the Primary CPICH the received code power from each antenna shall be separately measured and summed together in [W] to a total received code power on the Primary CPICH. |
| **Applicable for** | Idle, Connected Intra, Connected Inter |
| ~~**Range/mapping**~~ | ~~CPICH RSCP is given with a resolution of 1 dB with the range [-115, ..., -25] dBm. CPICH RSCP shall be reported in the unit CPICH_RSCP_LEV where:~~<br><br>~~CPICH_RSCP_LEV _00: CPICH RSCP < -115 dBm~~<br>~~CPICH_RSCP_LEV _01: -115 dBm ≤ CPICH RSCP < -114 dBm~~<br>~~CPICH_RSCP_LEV _02: -114 dBm ≤ CPICH RSCP < -113 dBm~~<br>~~...~~<br>~~CPICH_RSCP_LEV _89: -27 dBm ≤ CPICH RSCP < -26 dBm~~<br>~~CPICH_RSCP_LEV _90: -26 dBm ≤ CPICH RSCP < -25 dBm~~<br>~~CPICH_RSCP_LEV _91: -25 dBm ≤ CPICH RSCP~~ |

## 5.1.2 PCCPCH RSCP

| | |
|---|---|
| **Definition** | Received Signal Code Power, the received power on one code measured on the PCCPCH from a TDD cell. The reference point for the RSCP is the antenna connector at the UE.<br><br>Note:<br>The RSCP can either be measured on the data part or the midamble of a burst, since there is no power difference between these two parts. However, in order to have a common reference, measurement on the midamble is assumed. |
| **Applicable for** | Idle, Connected Inter |
| ~~**Range/mapping**~~ | ~~PCCPCH RSCP is given with a resolution of 1 dB with the range [-115, ..., -25] dBm. PCCPCH RSCP shall be reported in the unit PCCPCH _RSCP_LEV where:~~<br><br>~~PCCPCH _RSCP_LEV _00: PCCPCH RSCP < –115 dBm~~<br>~~PCCPCH _RSCP_LEV _01: -115 dBm ≤ PCCPCH RSCP < –114 dBm~~<br>~~PCCPCH _RSCP_LEV _02: -114 dBm ≤ PCCPCH RSCP < –113 dBm~~<br>~~...~~<br>~~PCCPCH _RSCP_LEV _89: -27 dBm ≤ PCCPCH RSCP < -26 dBm~~<br>~~PCCPCH _RSCP_LEV _90: -26 dBm ≤ PCCPCH RSCP < -25 dBm~~<br>~~PCCPCH _RSCP_LEV _91: -25 dBm ≤ PCCPCH RSCP~~ |

### 5.1.3 SIR

| | |
|---|---|
| **Definition** | Signal to Interference Ratio, defined as: (RSCP/ISCP)×(SF/2). The SIR shall be measured on DPCCH after RL combination. The reference point for the SIR is the antenna connector of the UE.<br>where:<br>RSCP = Received Signal Code Power, the received power on one code measured on the pilot bits.<br>ISCP = Interference Signal Code Power, the interference on the received signal measured on the pilot bits. Only the non-orthogonal part of the interference is included in the measurement.<br>SF=The spreading factor used. |
| **Applicable for** | Connected Intra |
| **Range/mapping** | SIR is given with a resolution of 0.5 dB with the range [-11, ..., 20] dB. SIR shall be reported in the unit UE_SIR where:<br><br>UE_SIR_00: SIR < -11.0 dB<br>UE_SIR_01: -11.0 dB ≤ SIR < -10.5 dB<br>UE_SIR_02: -10.5 dB ≤ SIR < -10.0 dB<br>...<br>UE_SIR_61: 19.0 dB ≤ SIR < 19.5 dB<br>UE_SIR_62: 19.5 dB ≤ SIR < 20.0 dB<br>UE_SIR_63: 20.0 dB ≤ SIR |

### 5.1.4 UTRA carrier RSSI

| | |
|---|---|
| **Definition** | Received Signal Strength Indicator, the wide-band received power within the relevant channel bandwidth. Measurement shall be performed on a UTRAN downlink carrier. The reference point for the RSSI is the antenna connector at the UE. |
| **Applicable for** | Idle, Connected Intra, Connected Inter |
| **Range/mapping** | UTRA carrier RSSI is given with a resolution of 1 dB with the range [-94, ..., -32] dBm. UTRA carrier RSSI shall be reported in the unit UTRA_carrier_RSSI_LEV where:<br><br>UTRA_carrier_RSSI_LEV _00: UTRA carrier RSSI < -94 dBm<br>UTRA_carrier_RSSI_LEV _01: -94 dBm ≤ UTRA carrier RSSI < -93 dBm<br>UTRA_carrier_RSSI_LEV _02: -93 dBm ≤ UTRA carrier RSSI < -92 dBm<br>...<br>UTRA_carrier_RSSI_LEV _61: -34 dBm ≤ UTRA carrier RSSI < -33 dBm<br>UTRA_carrier_RSSI_LEV _62: -33 dBm ≤ UTRA carrier RSSI < -32 dBm<br>UTRA_carrier_RSSI_LEV _63: -32 dBm ≤ UTRA carrier RSSI |

### 5.1.5 GSM carrier RSSI

| | |
|---|---|
| **Definition** | Received Signal Strength Indicator, the wide-band received power within the relevant channel bandwidth. Measurement shall be performed on a GSM BCCH carrier. The reference point for the RSSI is the antenna connector at the UE. |
| **Applicable for** | Idle, Connected Inter |
| **Range/mapping** | According to the definition of RXLEV in GSM 05.08. |

## 5.1.6 CPICH Ec/No

| | |
|---|---|
| **Definition** | The received energy per chip divided by the power density in the band. The Ec/No is identical to RSCP/RSSI. Measurement shall be performed on the Primary CPICH. The reference point for Ec/No is the antenna connector at the UE. If Tx diversity is applied on the Primary CPICH the received energy per chip (Ec) from each antenna shall be separately measured and summed together in [Ws] to a total received chip energy per chip on the Primary CPICH, before calculating the Ec/No. |
| **Applicable for** | Idle, Connected Intra, Connected Inter |
| ~~**Range/mapping**~~ | ~~CPICH Ec/No is given with a resolution of 1 dB with the range [-24, ..., 0] dB. CPICH Ec/No shall be reported in the unit CPICH_Ec/No where:~~<br><br>~~CPICH_Ec/No _00: CPICH Ec/No < –24 dB~~<br>~~CPICH_Ec/No _01: -24 dB ≤ CPICH Ec/No < –23 dB~~<br>~~CPICH_Ec/No _02: -23 dB ≤ CPICH Ec/No < –22 dB~~<br>~~...~~<br>~~CPICH_Ec/No _23: -2 dB ≤ CPICH Ec/No < -1 dB~~<br>~~CPICH_Ec/No _24: -1 dB ≤ CPICH Ec/No < 0 dB~~<br>~~CPICH_Ec/No _25: 0 dB ≤ CPICH Ec/No~~ |

## 5.1.7 Transport channel BLER

| | |
|---|---|
| **Definition** | Estimation of the transport channel block error rate (BLER). The BLER estimation shall be based on evaluating the CRC on each transport block after RL combination. BLER estimation is only required for transport channels containing CRC. In connected mode the BLER shall be possible to measure on any transport channel. If requested in idle mode it shall be possible to measure the BLER on transport channel PCH. |
| **Applicable for** | Idle, Connected Intra |
| ~~**Range/mapping**~~ | ~~The Transport channel BLER shall be reported for 0 ≤ Transport channel BLER ≤ 1 in the unit BLER_LOG where:~~<br><br>~~BLER_LOG_00: Transport channel BLER = 0~~<br>~~BLER_LOG_01: -∞ < Log10(Transport channel BLER) < -4.03~~<br>~~BLER_LOG_02: -4.03 ≤ Log10(Transport channel BLER) < -3.965~~<br>~~BLER_LOG_03: -3.965 ≤ Log10(Transport channel BLER) < -3.9~~<br>~~...~~<br>~~BLER_LOG_61: -0.195 ≤ Log10(Transport channel BLER) < -0.13~~<br>~~BLER_LOG_62: -0.13 ≤ Log10(Transport channel BLER) < -0.065~~<br>~~BLER_LOG_63: -0.065 ≤ Log10(Transport channel BLER) ≤ 0~~ |

## 5.1.8 UE transmitted power

| | |
|---|---|
| **Definition** | The total UE transmitted power on one carrier. The reference point for the UE transmitted power shall be the UE antenna connector. |
| **Applicable for** | Connected Intra |
| ~~**Range/mapping**~~ | ~~UE transmitted power is given with a resolution of 1 dB with the range [-50, ..., 33] dBm. UE transmitted power shall be reported in the unit UE_TX_POWER where:~~<br><br>~~UE_TX_POWER _021: -50 dBm ≤ UE transmitted power < –49 dBm~~<br>~~UE_TX_POWER _022: -49 dBm ≤ UE transmitted power < –48 dBm~~<br>~~UE_TX_POWER _023: -48 dBm ≤ UE transmitted power < –47 dBm~~<br>~~...~~<br>~~UE_TX_POWER _102 31 dBm ≤ UE transmitted power < 32 dBm~~<br>~~UE_TX_POWER _103: 32 dBm ≤ UE transmitted power < 33 dBm~~<br>~~UE_TX_POWER _104: 33 dBm ≤ UE transmitted power < 34 dBm~~ |

## 5.1.9 SFN-CFN observed time difference

| | |
|---|---|
| **Definition** | The SFN-CFN observed time difference to cell is defined as: OFF×38400+ $T_m$, where:<br>$T_m$= ($T_{UETx}$-$T_0$) - $T_{RxSFN}$, given in chip units with the range [0, 1, …, 38399] chips<br>$T_{UETx}$ is the time when the UE transmits an uplink DPCCH/DPDCH frame.<br>$T_0$ is defined in TS 25.211 subclause 7.1.3.<br>$T_{RxSFN}$ is the time at the beginning of the neighbouring P-CCPCH frame received most recent in time before the time instant $T_{UETx}$-$T_0$in the UE. If the beginning of the neighbouring P-CCPCH frame is received exactly at $T_{UETx}$-$T_0$ then $T_{RxSFN}$=$T_{UETx}$-$T_0$ (which leads to $T_m$=0).<br>and<br>OFF=(SFN-$CFN_{Tx}$) mod 256, given in number of frames with the range [0, 1, …, 255] frames<br>$CFN_{Tx}$ is the connection frame number for the UE transmission of an uplink DPCCH/DPDCH frame at the time $T_{UETx}$.<br>SFN is the system frame number for the neighbouring P-CCPCH frame received in the UE at the time $T_{RxSFN}$.<br><br>In case the inter-frequency measurement is done with compressed mode, the value for the parameter OFF is always reported to be 0.<br>In case that the SFN measurement indicator indicates that the UE does not need to read cell SFN of the target neighbour cell, the value of the parameter OFF is always be set to 0. |
| NOTE: In Compressed mode it is not required to read cell SFN of the target neighbour cell. | |
| **Applicable for** | Connected Inter, Connected Intra |
| ~~**Range/mapping**~~ | ~~Time difference is given with the resolution of one chip with the range [0, …, 9830399] chips.~~<br>~~Time difference shall be reported in the unit SFN-CFN_TIME where:~~<br><br>~~SFN-CFN_TIME_0000000: 0 chip ≤ Time difference < 1 chip~~<br>~~SFN-CFN_TIME_0000001: 1 chip ≤ Time difference < 2 chip~~<br>~~SFN-CFN_TIME_0000002: 2 chip ≤ Time difference < 3 chip~~<br>~~…~~<br>~~SFN-CFN_TIME_9830397: 9830397 chip ≤ Time difference < 9830398 chip~~<br>~~SFN-CFN_TIME_9830398: 9830398 chip ≤ Time difference < 9830399 chip~~<br>~~SFN-CFN_TIME_9830399: 9830399 chip ≤ Time difference < 9830400 chip~~ |

### 5.1.10 SFN-SFN observed time difference

| | |
|---|---|
| **Definition** | **Type 1:**<br>The SFN-SFN observed time difference to cell is defined as: OFF×38400+ $T_m$, where:<br>$T_m$= $T_{RxSFNj}$ - $T_{RxSFNi}$, given in chip units with the range [0, 1, …, 38399] chips<br>$T_{RxSFNj}$ is the time at the beginning of a received neighbouring P-CCPCH frame from cell j.<br>$T_{RxSFNi}$ is time at the beginning of the neighbouring P-CCPCH frame from cell i received most recent in time before the time instant $T_{RxSFNj}$ in the UE. If the next neighbouring P-CCPCH frame is received exactly at $T_{RxSFNj}$ then $T_{RxSFNj}$= $T_{RxSFNi}$ (which leads to $T_m$=0).<br>and<br>OFF=($SFN_i$- $SFN_j$) mod 256, given in number of frames with the range [0, 1, …, 255] frames<br>$SFN_j$ is the system frame number for downlink P-CCPCH frame from cell j in the UE at the time $T_{RxSFNj}$.<br>$SFN_i$ is the system frame number for the P-CCPCH frame from cell i received in the UE at the time $T_{RxSFNi}$.<br>**Type 2:**<br>The relative timing difference between cell j and cell i, defined as $T_{CPICHRxj}$ - $T_{CPICHRxi}$, where:<br>$T_{CPICHRxj}$ is the time when the UE receives one Primary CPICH slot from cell j<br>$T_{CPICHRxi}$ is the time when the UE receives the Primary CPICH slot from cell i that is closest in time to the Primary CPICH slot received from cell j |
| **Applicable for** | **Type 1:** Idle, Connected Intra<br>**Type 2:** Idle, Connected Intra, Connected Inter |
| ~~**Range/mapping**~~ | ~~**Type 1:** Time difference is given with a resolution of one chip with the range [0, …, 9830399] chips. Time difference shall be reported in the unit T1_SFN-SFN_TIME where:~~<br><br>~~T1_SFN-SFN_TIME_0000000: 0 chip ≤ Time difference < 1 chip~~<br>~~T1_SFN-SFN_TIME_0000001: 1 chip ≤ Time difference < 2 chip~~<br>~~T1_SFN-SFN_TIME_0000002: 2 chip ≤ Time difference < 3 chip~~<br>~~…~~<br>~~T1_SFN-SFN_TIME_9830397: 9830397 chip ≤ Time difference < 9830398 chip~~<br>~~T1_SFN-SFN_TIME_9830398: 9830398 chip ≤ Time difference < 9830399 chip~~<br>~~T1_SFN-SFN_TIME_9830399: 9830399 chip ≤ Time difference < 9830400 chip~~<br><br>~~**Type 2:** Time difference is given with a resolution of 0.25 chip with the range [-1279.75, …, 1280] chips. Time difference shall be reported in the unit T2_SFN-SFN_TIME where:~~<br><br>~~T2_SFN-SFN_TIME_00000: -1279.75 chip < Time difference ≤ -1279.50 chip~~<br>~~T2_SFN-SFN_TIME_00001: -1279.50 chip < Time difference ≤ -1279.25 chip~~<br>~~T2_SFN-SFN_TIME_00002: -1279.25 chip < Time difference ≤ -1279.00 chip~~<br>~~…~~<br>~~T2_SFN-SFN_TIME_10236: 1279.25 chip < Time difference ≤ 1279.50 chip~~<br>~~T2_SFN-SFN_TIME_10237: 1279.50 chip < Time difference ≤ 1279.75 chip~~<br>~~T2_SFN-SFN_TIME_10238: 1279.75 chip < Time difference ≤ 1280.00 chip~~ |

### 5.1.11 UE Rx-Tx time difference

| | |
|---|---|
| **Definition** | The difference in time between the UE uplink DPCCH/DPDCH frame transmission and the first significant path, of the downlink DPCH frame from the measured radio link. Measurement shall be made for each cell included in the active set.<br>Note: The definition of "first significant path" needs further elaboration. |
| **Applicable for** | Connected Intra |
| ~~**Range/mapping**~~ | ~~The UE Rx-Tx time difference is given with the resolution of 0.25 chip with the range [876, …, 1172] chips. The UE Rx-Tx Time difference shall be reported in the unit RX-TX_TIME where:~~<br><br>~~RX-TX_TIME_0000: UE Rx-Tx Time difference < 876.00 chip~~<br>~~RX-TX_TIME_0001: 876.00 chip ≤ UE Rx-Tx Time difference < 876.25 chip~~<br>~~RX-TX_TIME_0002: 876.25 chip ≤ UE Rx-Tx Time difference < 876.50 chip~~<br>~~RX-TX_TIME_0003: 876.50 chip ≤ UE Rx-Tx Time difference < 876.75 chip~~<br>~~…~~<br>~~RX-TX_TIME_1182: 1171.25 chip ≤ UE Rx-Tx Time difference < 1171.50 chip~~<br>~~RX-TX_TIME_1183: 1171.50 chip ≤ UE Rx-Tx Time difference < 1171.75 chip~~<br>~~RX-TX_TIME_1184: 1171.75 chip ≤ UE Rx-Tx Time difference < 1172.00 chip~~<br>~~RX-TX_TIME_1185: 1172.00 chip ≤ UE Rx-Tx Time difference~~ |

## 5.1.12 Observed time difference to GSM cell

| | |
|---|---|
| **Definition** | The Observed time difference to GSM cell is defined as: $T_{RxGSMj}$ - $T_{RxSFNi}$, where:<br>$T_{RxSFNi}$ is the time at the beginning of the P-CCPCH frame with SFN=0 from cell i.<br>$T_{RxGSMj}$ is the time at the beginning of the GSM BCCH 51-multiframe from GSM frequency j received closest in time after the time $T_{RxSFNi}$. If the next GSM multiframe is received exactly at $T_{RxSFNi}$ then $T_{RxGSMj}$ =$T_{RxSFNi}$ (which leads to $T_{RxGSMj}$ - $T_{RxSFNi}$ = 0). The timing measurement shall reflect the timing situation when the most recent (in time) P-CCPCH with SFN=0 was received in the UE.<br><br>The beginning of the GSM BCCH 51-multiframe is defined as the beginning of the first tail bit of the frequency correction burst in the first TDMA-frame of the GSM BCCH 51-multiframe, i.e. the TDMA-frame following the IDLE-frame. |
| **Applicable for** | Idle, Connected Inter |
| **Range/mapping** | The Observed time difference to GSM cell is given with the resolution of 3060/(4096×13) ms with the range [0, …, 3060/13-3060/(4096×13)] ms. Observed time difference to GSM cell shall be reported in the unit GSM_TIME where:<br><br>GSM_TIME_0000: 0 ms ≤ Observed time difference to GSM cell < 1×3060/(4096×13) ms<br>GSM_TIME_0001: 1×3060/(4096×13) ms ≤ Observed time difference to GSM cell < 2×3060/(4096×13) ms<br>GSM_TIME_0002: 2×3060/(4096×13) ms ≤ Observed time difference to GSM cell < 3×3060/(4096×13) ms<br>…<br>GSM_TIME_4093: 4093×3060/(4096×13) ms ≤ Observed time difference to GSM cell < 4094×3060/(4096×13) ms<br>GSM_TIME_4094: 4094×3060/(4096×13) ms ≤ Observed time difference to GSM cell < 4095×3060/(4096×13) ms<br>GSM_TIME_4095: 4095×3060/(4096×13) ms ≤ Observed time difference to GSM cell < 3060/13 ms |

## 5.1.13 UE GPS Timing of Cell Frames for LCS

| | |
|---|---|
| **Definition** | The timing between cell j and GPS Time Of Week. $T_{UE-GPSj}$ is defined as the time of occurrence of a specified UTRAN event according to GPS time. The specified UTRAN event is the beginning of a particular frame (identified through its SFN) in the first significant multipath of the cell j CPICH, where cell j is a cell within the active set. |
| **Applicable for** | Connected Intra, Connected Inter |
| **Range/mapping** | The resolution of $T_{UE-GPSj}$ is 0.125 chips. The range is from 0 to 2319360000000 chips.<br>$T_{UE-GPSj}$ shall be reported in the unit GPS_TIME where:<br><br>GPS_TIME_00000000000000: 0 chip ≤ $T_{UE-GPSj}$ < 0.125 chip<br>GPS_TIME_00000000000001: 0.125 chip ≤ $T_{UE-GPSj}$ < 0.250 chip<br>GPS_TIME_00000000000002: 0.250 chip ≤ $T_{UE-GPSj}$ < 0.375 chip<br>…<br>GPS_TIME_18554879999997: 2319359999999.625 chip ≤ $T_{UE-GPSj}$ < 2319359999999.750 chip<br>GPS_TIME_18554879999998: 2319359999999.750 chip ≤ $T_{UE-GPSj}$ < 2319359999999.875 chip<br>GPS_TIME_18554879999999: 2319359999999.875 chip ≤ $T_{UE-GPSj}$ < 2319360000000.000 chip |

# 5.2 UTRAN measurement abilities

The structure of the table defining a UTRAN measurement quantity is shown below.

| | |
|---|---|
| **Column field** | Comment |
| **Definition** | Contains the definition of the measurement. |
| **Range/mapping** | Gives the range and mapping to bits for the measurements quantity. |

### 5.2.1 RSSI

| | |
|---|---|
| **Definition** | Received Signal Strength Indicator, the wide-band received power within the UTRAN uplink carrier channel bandwidth in an UTRAN access point. The reference point for the RSSI measurements shall be the antenna connector. |
| ~~**Range/mapping**~~ | ~~RSSI is given with a resolution of 0.1 dB with the range [-112, ..., -50] dBm. RSSI shall be reported in the unit RSSI_LEV where:~~<br><br>~~RSSI_LEV _000: RSSI < -112.0 dBm~~<br>~~RSSI_LEV _001: -112.0 dBm ≤ RSSI < -111.9 dBm~~<br>~~RSSI_LEV _002: -111.9 dBm ≤ RSSI < -111.8 dBm~~<br>~~...~~<br>~~RSSI_LEV _619: -50.2 dBm ≤ RSSI < -50.1 dBm~~<br>~~RSSI_LEV _620: -50.1 dBm ≤ RSSI < -50.0 dBm~~<br>~~RSSI_LEV _621: -50.0 dBm ≤ RSSI~~ |

### 5.2.2 SIR

| | |
|---|---|
| **Definition** | Signal to Interference Ratio, is defined as: (RSCP/ISCP)×SF. Measurement shall be performed on the DPCCH after RL combination in Node B. The reference point for the SIR measurements shall be the antenna connector.<br><br>where:<br><br>RSCP = Received Signal Code Power, the received power on one code.<br><br>ISCP = Interference Signal Code Power, the interference on the received signal. Only the non-orthogonal part of the interference is included in the measurement.<br><br>SF=The spreading factor used on the DPCCH. |
| ~~**Range/mapping**~~ | ~~SIR is given with a resolution of 0.5 dB with the range [-11, ..., 20] dB. SIR shall be reported in the unit UTRAN_SIR where:~~<br><br>~~UTRAN_SIR_00: SIR < –11.0 dB~~<br>~~UTRAN_SIR_01: -11.0 dB ≤ SIR < –10.5 dB~~<br>~~UTRAN_SIR_02: -10.5 dB ≤ SIR < –10.0 dB~~<br>~~...~~<br>~~UTRAN_SIR_61: 19.0 dB ≤ SIR < 19.5 dB~~<br>~~UTRAN_SIR_62: 19.5 dB ≤ SIR < 20.0 dB~~<br>~~UTRAN_SIR_63: 20.0 dB ≤ SIR~~ |

### 5.2.3 Transmitted carrier power

| | |
|---|---|
| **Definition** | Transmitted carrier power, is the ratio between the total transmitted power and the maximum transmission power. Total transmission power is the mean power [W] on one carrier from one UTRAN access point. Maximum transmission power is the mean power [W] on one carrier from one UTRAN access point when transmitting at the configured maximum power for the cell. Measurement shall be possible on any carrier transmitted from the UTRAN access point. The reference point for the transmitted carrier power measurement shall be the antenna connector. In case of Tx diversity the transmitted carrier power for each branch shall be measured. |
| ~~**Range/mapping**~~ | ~~Transmitted carrier power is given with a resolution of 1 %-unit with the range [0, ..., 100] %~~<br>~~Transmitted carrier power shall be reported in the unit UTRAN_TX_POWER where:~~<br><br>~~UTRAN_TX_POWER _000: Transmitted carrier power = 0 %~~<br>~~UTRAN_TX_POWER _001: 0 % < Transmitted carrier power ≤ 1 %~~<br>~~UTRAN_TX_POWER _002: 1 % < Transmitted carrier power ≤ 2 %~~<br>~~UTRAN_TX_POWER _003: 2 % < Transmitted carrier power ≤ 3 %~~<br>~~...~~<br>~~UTRAN_TX_POWER _098: 97 % < Transmitted carrier power ≤ 98 %~~<br>~~UTRAN_TX_POWER _099: 98 % < Transmitted carrier power ≤ 99 %~~<br>~~UTRAN_TX_POWER _100: 99 % < Transmitted carrier power ≤ 100 %~~ |

### 5.2.4 Transmitted code power

| | |
|---|---|
| **Definition** | Transmitted code power, is the transmitted power on one channelisation code on one given scrambling code on one given carrier. Measurement shall be possible on any DPCH transmitted from the UTRAN access point and shall reflect the power on the pilot bits of the DPCH. The reference point for the transmitted code power measurement shall be the antenna connector. In case of Tx diversity the transmitted code power for each branch shall be measured. |
| **Range/mapping** | Transmitted code power is given with a resolution of 0.5 dB with the range [-10, ..., 46] dBm.<br>Transmitted code power shall be reported in the unit UTRAN_CODE_POWER where:<br><br>UTRAN_CODE_POWER _010: -10.0 dBm ≤ Transmitted code power < -9.5 dBm<br>UTRAN_CODE_POWER _011: -9.5 dBm ≤ Transmitted code power < -9.0 dBm<br>UTRAN_CODE_POWER _012: -9.0 dBm ≤ Transmitted code power < -8.5 dBm<br>...<br>UTRAN_CODE_POWER _120: 45.0 dBm ≤ Transmitted code power < 45.5 dBm<br>UTRAN_CODE_POWER _121: 45.5 dBm ≤ Transmitted code power < 46.0 dBm<br>UTRAN_CODE_POWER _122: 46.0 dBm ≤ Transmitted code power < 46.5 dBm |

### 5.2.5 Transport channel BLER

| | |
|---|---|
| **Definition** | Estimation of the transport channel block error rate (BLER). The BLER estimation shall be based on evaluating the CRC on each transport block. Measurement shall be possible to perform on any transport channel after RL combination in Node B. BLER estimation is only required for transport channels containing CRC. |
| **Range/mapping** | The Transport channel BLER shall be reported for 0 ≤ Transport channel BLER ≤ 1 in the unit BLER_LOG where:<br><br>BLER_LOG_00: Transport channel BLER = 0<br>BLER_LOG_01: -∞ < Log10(Transport channel BLER) < -4.03<br>BLER_LOG_02: -4.03 ≤ Log10(Transport channel BLER) < -3.965<br>BLER_LOG_03: -3.965 ≤ Log10(Transport channel BLER) < -3.9<br>...<br>BLER_LOG_61: -0.195 ≤ Log10(Transport channel BLER) < -0.13<br>BLER_LOG_62: -0.13 ≤ Log10(Transport channel BLER) < -0.065<br>BLER_LOG_63: -0.065 ≤ Log10(Transport channel BLER) ≤ 0 |

### 5.2.6 Transport channel BER

| | |
|---|---|
| **Definition** | The transport channel BER is an estimation of the average bit error rate (BER) ) of RL-combined DPDCH data. The transport channel (TrCH) BER is measured from the data considering only non-punctured bits at the input of the channel decoder in Node B. It shall be possible to report an estimate of the transport channel BER for a TrCH after the end of each TTI of the TrCH. The reported TrCH BER shall be an estimate of the BER during the latest TTI for that TrCH. Transport channel BER is only required to be reported for TrCHs that are channel coded. |
| **Range/mapping** | The Transport channel BER shall be reported for 0 ≤ Transport channel BER ≤ 1 in the unit TrCh_BER_LOG where:<br><br>TrCh_BER_LOG_000: Transport channel BER = 0<br>TrCh_BER_LOG_001: -∞ < Log10(Transport channel BER) < -2.06375<br>TrCh_BER_LOG_002: -2.06375 ≤ Log10(Transport channel BER) < -2.055625<br>TrCh_BER_LOG_003: -2.055625 ≤ Log10(Transport channel BER) < -2.0475<br>...<br>TrCh_BER_LOG_253: -0.024375 ≤ Log10(Transport channel BER) < -0.01625<br>TrCh_BER_LOG_254: -0.01625 ≤ Log10(Transport channel BER) < -0.08125<br>TrCh_BER_LOG_255: -0.008125 ≤ Log10(Transport channel BER) ≤ 0 |

### 5.2.7 Physical channel BER

| | |
|---|---|
| **Definition** | The Physical channel BER is an estimation of the average bit error rate (BER) on the DPCCH after RL combination in Node B. An estimate of the Physical channel BER shall be possible to be reported after the end of each TTI of any of the transferred TrCHs. The reported physical channel BER shall be an estimate of the BER during the latest TTI. |
| ~~**Range/mapping**~~ | ~~The physical channel BER shall be reported for 0 ≤ Physical channel BER ≤ 1 in the unit PhCh_BER_LOG where:~~<br><br>~~PhCh_BER_LOG_000: Physical channel BER = 0~~<br>~~PhCh_BER_LOG_001: -∞ < Log10(Physical channel BER) < -2.06375~~<br>~~PhCh_BER_LOG_002: -2.06375≤ Log10(Physical channel BER) < -2.055625~~<br>~~PhCh_BER_LOG_003: -2.055625 ≤ Log10(Physical channel BER) < -2.0475~~<br>~~...~~<br>~~PhCh_BER_LOG_253: -0.024375 ≤ Log10(Physical channel BER) < -0.01625~~<br>~~PhCh_BER_LOG_254: -0.01625 ≤ Log10(Physical channel BER) < -0.008125~~<br>~~PhCh_BER_LOG_255: -0.008125 ≤ Log10(Physical channel BER) ≤ 0~~ |

### 5.2.8 Round trip time

| | |
|---|---|
| **Definition** | Round trip time (RTT), is defined as<br>RTT = $T_{RX}$ – $T_{TX}$, where<br>$T_{TX}$ = The time of transmission of the beginning of a downlink DPCH frame to a UE.<br>$T_{RX}$ = The time of reception of the beginning (the first significant path) of the corresponding uplink DPCCH/DPDCH frame from the UE.<br>Note: The definition of "first significant path" needs further elaboration.<br>Measurement shall be possible on DPCH for each RL transmitted from an UTRAN access point and DPDCH/DPCCH for each RL received in the same UTRAN access point. |
| ~~**Range/mapping**~~ | ~~The Round trip time is given with the resolution of 0.25 chip with the range [876, ..., 2923.50] chips. The Round trip time shall be reported in the unit RT_TIME where:~~<br><br>~~RT_TIME_0000: Round trip time < 876.00 chip~~<br>~~RT_TIME_0001: 876.00 chip ≤ Round trip time < 876.25 chip~~<br>~~RT_TIME_0002: 876.25 chip ≤ Round trip time < 876.50 chip~~<br>~~RT_TIME_0003: 876.50 chip ≤ Round trip time < 876.75 chip~~<br>~~...~~<br>~~RT_TIME_8188: 2922.75 chip ≤ Round trip time < 2923.00 chip~~<br>~~RT_TIME_8189: 2923.00 chip ≤ Round trip time < 2923.25 chip~~<br>~~RT_TIME_8190: 2923.25 chip ≤ Round trip time < 2923.50 chip~~<br>~~RT_TIME_8191: 2923.50 chip ≤ Round trip time~~ |

### 5.2.9 UTRAN GPS Timing of Cell Frames for LCS

| | |
|---|---|
| **Definition** | The timing between cell j and GPS Time Of Week. $T_{UTRAN-GPSj}$ is defined as the time of occurrence of a specified UTRAN event according to GPS time. The specified UTRAN event is the beginning of a particular frame (identified through its SFN) in the first significant multipath of the cell j CPICH, where cell j is a cell within the active set. |
| **Applicable for** | Connected Intra, Connected Inter |
| ~~**Range/mapping**~~ | ~~The resolution of $T_{UTRAN-GPSj}$ is 0.125 chips. The range is from 0 to 2319360000000 chips. $T_{UTRAN-GPSj}$ shall be reported in the unit GPS_TIME where:~~<br><br>~~GPS_TIME_00000000000000: 0 chip ≤ $T_{UTRAN-GPSj}$ < 0.125 chip~~<br>~~GPS_TIME_00000000000001: 0.125 chip ≤ $T_{UTRAN-GPSj}$ < 0.250 chip~~<br>~~GPS_TIME_00000000000002: 0.250 chip ≤ $T_{UTRAN-GPSj}$ < 0.375 chip~~<br>~~...~~<br>~~GPS_TIME_18554879999997: 2319359999999.625 chip ≤ $T_{UTRAN-GPSj}$ < 2319359999999.750 chip~~<br>~~GPS_TIME_18554879999998: 2319359999999.750 chip ≤ $T_{UTRAN-GPSj}$ < 2319359999999.875 chip~~<br>~~GPS_TIME_18554879999999: 2319359999999.875 chip ≤ $T_{UTRAN-GPSj}$ < 2319360000000.000 chip~~ |

## 5.2.10 Propagation delay

| | |
|---|---|
| **Definition** | Propagation delay is defined as one-way propagation delay as measured during PRACH access:<br>Propagation delay = ($T_{RX}$ – $T_{TX}$ – 2560)/2, where:<br>$T_{TX}$ = The time of AICH access slot (n-2-AICH transmission timing), where 0≤(n-2-AICH Transmission Timing)≤14 and AICH_Transmission_Timing can have values 0 or 1.<br>$T_{RX}$ = The time of reception of the beginning (the first significant path) of the PRACH message from the UE at PRACH access slot n.<br>Note: The definition of "first significant path" needs further elaboration. |
| ~~**Range/mapping**~~ | ~~The Propagation delay is given with the resolution of 3 chips with the range [0, …, 765] chips.~~<br>~~The Propagation delay shall be reported in the unit PROP_DELAY where:~~<br><br>~~PROP_DELAY_000: 0 chip ≤ Propagation delay < 3 chip~~<br>~~PROP_DELAY_001: 3 chip ≤ Propagation delay < 6 chip~~<br>~~PROP_DELAY_002: 6 chip ≤ Propagation delay < 9 chip~~<br>~~…~~<br>~~PROP_DELAY_252: 756 chip ≤ Propagation delay < 759 chip~~<br>~~PROP_DELAY_253: 759 chip ≤ Propagation delay < 762 chip~~<br>~~PROP_DELAY_254: 762 chip ≤ Propagation delay < 765 chip~~<br>~~PROP_DELAY_255: 765 chip ≤ Propagation delay~~ |

**3GPP TSG RAN Meeting #8**
**Düsseldorf, Germany, 21-23 June 2000**

***Document*** *R1-00-0797*
*e.g. for 3GPP use the format TP-99xxx*
*or for SMG, use the format P-99-xxx*

# CHANGE REQUEST

*Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*

| | | | |
|---|---|---|---|
| **25.215** | **CR** | **066** | Current Version: 3.2.0 |

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| | | | | | | |
|---|---|---|---|---|---|---|
| For submission to: | TSG-RAN #8 | for approval | X | strategic | | (for SMG use only) |
| *list expected approval meeting # here ↑* | | for information | | non-strategic | | |

*Form: CR cover sheet, version 2 for 3GPP and SMG The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Proposed change affects:** *(at least one should be marked with an X)* | (U)SIM | | ME | | UTRAN / Radio | X | Core Network | |

| | | | |
|---|---|---|---|
| **Source:** | TSG RAN WG1 | **Date:** | 2000-05-24 |
| **Subject:** | Removal of UTRAN TrCH BLER measurement | | |
| **Work item:** | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Category:** | F | Correction | X | **Release:** | Phase 2 | |
| | A | Corresponds to a correction in an earlier release | | | Release 96 | |
| *(only one category* | B | Addition of feature | | | Release 97 | |
| *shall be marked* | C | Functional modification of feature | | | Release 98 | |
| *with an X)* | D | Editorial modification | | | Release 99 | X |
| | | | | | Release 00 | |

| | |
|---|---|
| **Reason for change:** | RAN2 has concluded to remove TrCH BLER in UTRAN in Release 99. This is reflected in the CR. |
| **Clauses affected:** | 5.2.5 Transport channel BLER |

| | | | | |
|---|---|---|---|---|
| **Other specs affected:** | Other 3G core specifications | | → List of CRs: | |
| | Other GSM core specifications | | → List of CRs: | |
| | MS test specifications | | → List of CRs: | |
| | BSS test specifications | | → List of CRs: | |
| | O&M specifications | | → List of CRs: | |

| | |
|---|---|
| **Other comments:** | |

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<---------- double-click here for help and instructions on how to create a CR.

### 5.2.5 Transport channel BLER

| | |
|---|---|
| **Definition** | Estimation of the transport channel block error rate (BLER). The BLER estimation shall be based on evaluating the CRC on each transport block. Measurement shall be possible to perform on any transport channel after RL combination in Node B. BLER estimation is only required for transport channels containing CRC. |
| **Range/mapping** | The Transport channel BLER shall be reported for 0 ≤ Transport channel BLER ≤ 1 in the unit BLER_dB where:<br><br>BLER_dB_00: Transport channel BLER = 0<br>BLER_dB_01: -∞ < Log10(Transport channel BLER) < -4.03<br>BLER_dB_02: -4.03 ≤ Log10(Transport channel BLER) < -3.965<br>BLER_dB_03: -3.965 ≤ Log10(Transport channel BLER) < -3.9<br>...<br>BLER_dB_61: -0.195 ≤ Log10(Transport channel BLER) < -0.13<br>BLER_dB_62: -0.13 ≤ Log10(Transport channel BLER) < -0.065<br>BLER_dB_63: -0.065 ≤ Log10(Transport channel BLER) ≤ 0 |