TSG-RAN Working Group 1 meeting #11

***TSGR1#10(00)0217***

San Diego, USA
February 29 – March 3, 2000

**Agenda item:**

**Source:** Nokia

**Title:** CR 25215-038: Removal of physical channel BER measurement in downlink

**Document for:** Decision

---

In RRM Adhoc [1] that took place on February 9th-11th it was agreed that physical channel BER measured in the UE is not a good measure for outer loop PC purposes. In RAN WG2 specification physical channel BER is defined only as a quality target for outer loop PC. In addition to this quality measure no other uses for UE measured BER are stated in WG2. Thus, it can be removed from WG1 specification as a useless measurement.

In this CR it is proposed that physical channel BER measurement in UE is removed from TS 25.215.

**References:**

[1] RRM AdHoc meeting minutes (9th–11th February), RPA000064

**3GPP TSG RAN WG1 Meeting #11**
**San Diego, USA, Feb 29 – Mar 03, 2000**

***Document R1-00-0217***
*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 | 038 | Current Version: | 3.1.0 |
|---|---|---|---|---|

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

| For submission to: | TSG-RAN #7 | 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 | | Core Network | |
|---|---|---|---|---|---|---|---|---|

**Source:** Nokia **Date:** 2000-02-17

**Subject:** Removal of Physical channel BER measurement in UE

**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:** It has been shown that Physical channel BER, measured from DPDCH, does not ensure the required performance for outer loop power control. Thus this measurement is removed from the specifications.

**Clauses affected:** 5.1.9 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:**

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

| | |
|---|---|
| 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. |

### 5.1.7 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. |
| **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 |

### 5.1.8 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_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 |

### ~~5.1.9 Physical channel BER~~

| | |
|---|---|
| ~~Definition~~ | ~~The physical channel BER is an estimation of the average bit error rate (BER) before channel decoding of the DPDCH data after RL combination. At most it shall be possible to report a physical channel BER estimate at the end of each TTI for the transferred TrCh's, e.g. for TrCh's with a TTI of x ms a x ms averaged physical channel BER shall be possible to report every x ms.~~ |
| ~~**Applicable for**~~ | ~~Connected Intra~~ |

| | |
|---|---|
| ~~**Range/mapping**~~ | ~~The Physical channel BER shall be reported for 0 ≤ Physical channel BER ≤ 1 in the unit BER_dB where:~~<br><br>~~BER_dB_00: Physical channel BER = 0~~<br>~~BER_dB_01: -∞ < Log10(Physical channel BER) < -4.03~~<br>~~BER_dB_02: -4.03 ≤ Log10(Physical channel BER) < -3.965~~<br>~~BER_dB_03: -3.965 ≤ Log10(Physical channel BER) < -3.9~~<br>~~...~~<br>~~BER_dB_61: -0.195 ≤ Log10(Physical channel BER) < -0.13~~<br>~~BER_dB_62: -0.13 ≤ Log10(Physical channel BER) < -0.065~~<br>~~BER_dB_63: -0.065 ≤ Log10(Physical channel BER) ≤ 0~~ |

## 5.1.9~~10~~ 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 |

## 5.1.10~~1~~ CFN-SFN observed time difference

| | |
|---|---|
| Definition | The CFN-SFN observed time difference to cell is defined as: OFF×38400+ $T_m$, where:<br>$T_m$= $T_{RxSFN}$ - ($T_{UETx}$-$T_0$), 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 section 7.1.3.<br>$T_{RxSFN}$ is time at the beginning of the next received neighbouring P-CCPCH frame after the time instant $T_{UETx}$-$T_0$in the UE. If the next 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=($CFN_{Tx}$-SFN) 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 = 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. |

## 5.1.112 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>$T_m$= $T_{RxSFNi}$ - $T_{RxSFNj}$, 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 next received neighbouring P-CCPCH frame from cell i after 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=($SFN_j$- $SFN_i$) mod 256, given in number of frames with the range [0, 1, …, 255] frames<br>$SFN_j$ = the system frame number for downlink P-CCPCH frame from cell j in the UE at the time $T_{RxSFNj}$.<br>$SFN_i$ = 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.<br>**Type 2:** Time difference is given with a resolution of 0.25 chip with the range [-1279.75, …, 1280] chips. |

## 5.1.123 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. |

## 5.1.134 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. |
| **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. |

## 5.1.145 UE GPS Timing of Cell Frames for LCS

| | |
|---|---|
| **Definition** | The timing between cell j and GPS Time Of Week. $T_{UE\text{-}GPSj}$ 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 $T_{UE\text{-}GPSj}$ is 1μS. The range is from 0 to $6.04\times10^{11}$ μS. |