

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	037r1
GSM (AA.BB) or 3G (AA.BBB) specification number ↑		↑ CR number as allocated by MCC support team
For submission to: TSG-RAN #7 <i>list expected approval meeting # here</i>	for approval <input checked="" type="checkbox"/> for information <input type="checkbox"/>	Current Version: V3.1.0 strategic <input type="checkbox"/> non-strategic <input type="checkbox"/> <i>(for SMG use only)</i>

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 UTRAN / Radio Core Network
(at least one should be marked with an X)

Source: Nokia, NTT DoCoMo **Date:** Feb 14th, 2000

Subject: Definition and range of physical channel BER

Work item:

Category:	F Correction <input checked="" type="checkbox"/> A Corresponds to a correction in an earlier release <input type="checkbox"/> B Addition of feature <input type="checkbox"/> C Functional modification of feature <input type="checkbox"/> D Editorial modification <input type="checkbox"/>	Release:	Phase 2 <input type="checkbox"/> Release 96 <input type="checkbox"/> Release 97 <input type="checkbox"/> Release 98 <input type="checkbox"/> Release 99 <input checked="" type="checkbox"/> Release 00 <input type="checkbox"/>
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(only one category shall be marked with an X)

Reason for change: TS25.215v310 does not define uniquely at which point the physical channel BER of Type 1 measurement on the DPDCH is measured and how a physical channel BER estimate is supposed to calculate. The CR will clarify the definition of BER for UTRAN by setting the exact point for measurement and, as a consequence of the point, rename Type 1 BER the transport channel BER, denoted by TrCH BER. Also the fact that the transport channel BER is required to measure for TrCH's with channel coding only is pointed out. Furthermore, the definition of Type 2 BER on DPCCH will be clarified. This is put into a separate section 5.2.7.

The number of bits for mapping of the physical channel BER and the transport channel BER is expanded to 8 bits, and the range of them is shortened because mapping described in 25.215 version 3.1.0 is too rough to achieve useful outer loop TPC performance.

Clauses affected: 5.2.6., 5.2.7.

Other specs affected:	Other 3G core specifications <input type="checkbox"/> Other GSM core specifications <input type="checkbox"/> MS test specifications <input type="checkbox"/> BSS test specifications <input type="checkbox"/> O&M specifications <input type="checkbox"/>	→ List of CRs: <input type="text"/> → List of CRs: <input type="text"/> → List of CRs: <input type="text"/> → List of CRs: <input type="text"/> → List of CRs: <input type="text"/>
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Other comments:

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

Range/mapping	<p>Transmitted carrier power is given with a resolution of 0.5 dB with the range [0, ..., 50] dBm Transmitted carrier power shall be reported in the unit UTRAN_TX_POWER where:</p> <p>UTRAN_TX_POWER_016: $0.0 \text{ dBm} \leq \text{Transmitted carrier power} < 0.5 \text{ dBm}$ UTRAN_TX_POWER_017: $0.5 \text{ dBm} \leq \text{Transmitted carrier power} < 1.0 \text{ dBm}$ UTRAN_TX_POWER_018: $1.0 \text{ dBm} \leq \text{Transmitted carrier power} < 1.5 \text{ dBm}$... UTRAN_TX_POWER_114: $49.0 \text{ dBm} \leq \text{Transmitted carrier power} < 49.5 \text{ dBm}$ UTRAN_TX_POWER_115: $49.5 \text{ dBm} \leq \text{Transmitted carrier power} < 50.0 \text{ dBm}$ UTRAN_TX_POWER_116: $50.0 \text{ dBm} \leq \text{Transmitted carrier power} < 50.5 \text{ dBm}$</p>
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5.2.4 Transmitted code power

Definition	<p>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.</p>
Range/mapping	<p>Transmitted code power is given with a resolution of 0.5 dB with the range [-10, ..., 46] dBm. Transmitted code power shall be reported in the unit UTRAN_CODE_POWER where:</p> <p>UTRAN_CODE_POWER_010: $-10.0 \text{ dBm} \leq \text{Transmitted code power} < -9.5 \text{ dBm}$ UTRAN_CODE_POWER_011: $-9.5 \text{ dBm} \leq \text{Transmitted code power} < -9.0 \text{ dBm}$ UTRAN_CODE_POWER_012: $-9.0 \text{ dBm} \leq \text{Transmitted code power} < -8.5 \text{ dBm}$... UTRAN_CODE_POWER_120: $45.0 \text{ dBm} \leq \text{Transmitted code power} < 45.5 \text{ dBm}$ UTRAN_CODE_POWER_121: $45.5 \text{ dBm} \leq \text{Transmitted code power} < 46.0 \text{ dBm}$ UTRAN_CODE_POWER_122: $46.0 \text{ dBm} \leq \text{Transmitted code power} < 46.5 \text{ dBm}$</p>

5.2.5 Transport channel BLER

Definition	<p>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.</p>
Range/mapping	<p>The Transport channel BLER shall be reported for $0 \leq \text{Transport channel BLER} \leq 1$ in the unit BLER_dB where:</p> <p>BLER_dB_00: Transport channel BLER = 0 BLER_dB_01: $-\infty < \text{Log}_{10}(\text{Transport channel BLER}) < -4.03$ BLER_dB_02: $-4.03 \leq \text{Log}_{10}(\text{Transport channel BLER}) < -3.965$ BLER_dB_03: $-3.965 \leq \text{Log}_{10}(\text{Transport channel BLER}) < -3.9$... BLER_dB_61: $-0.195 \leq \text{Log}_{10}(\text{Transport channel BLER}) < -0.13$ BLER_dB_62: $-0.13 \leq \text{Log}_{10}(\text{Transport channel BLER}) < -0.065$ BLER_dB_63: $-0.065 \leq \text{Log}_{10}(\text{Transport channel BLER}) \leq 0$</p>

5.2.6 TransportPhysical channel BER

<p>Definition</p>	<p>Type 1: Measured on the DPDCH: The <u>physical transport channel BER</u> is an estimation of the average bit error rate (BER) of <u>RL-combined DPDCH data</u>. The <u>transport channel (TrCH) BER</u> is measured from the data considering only non-punctured bits before at the input of the channel decoding of the DPDCH data after RL combination 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.</p> <p>Type 2: Measured on the DPCCH: The <u>Physical channel BER</u> is an estimation of the average bit error rate (BER) on the DPCCH after RL combination in Node B.</p> <p>It shall be possible to report a physical channel BER estimate of type 1 or of type 2 or of both types 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.</p>
<p>Range/mapping</p>	<p>The <u>TransportPhysical channel BER</u> shall be reported for $0 \leq \text{TransportPhysical channel BER} \leq 1$ in the unit <u>TrCh_BER_LOGdB</u> where:</p> <p><u>TrCh_BER_LOGdB_00</u>: <u>TransportPhysical channel BER</u> = 0 <u>TrCh_BER_LOGdB_01</u>: $-\infty < \text{Log}_{10}(\text{TransportPhysical channel BER}) < -4.03$ <u>TrCh_BER_LOGdB_02</u>: $-2.063754.03 \leq \text{Log}_{10}(\text{TransportPhysical channel BER}) < -2.0556253.965$ <u>TrCh_BER_LOGdB_03</u>: $-2.0556253.965 \leq \text{Log}_{10}(\text{TransportPhysical channel BER}) < -2.04753.9$... <u>TrCh_BER_LOGdB_25364</u>: $-0.024375495 \leq \text{Log}_{10}(\text{TransportPhysical channel BER}) < -0.0162543$ <u>TrCh_BER_LOGdB_25462</u>: $-0.0162543 \leq \text{Log}_{10}(\text{TransportPhysical channel BER}) < -0.00812565$ <u>TrCh_BER_LOGdB_25563</u>: $-0.00812565 \leq \text{Log}_{10}(\text{TransportPhysical channel BER}) \leq 0$</p>

5.2.7 Physical channel BER

<p>Definition</p>	<p>The <u>Physical channel BER</u> 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.</p>
<p>Range/mapping</p>	<p>The physical channel BER shall be reported for $0 \leq \text{Physical channel BER} \leq 1$ in the unit <u>PhCh_BER_LOG</u> where:</p> <p><u>PhCh_BER_LOG_00</u>: Physical channel BER = 0 <u>PhCh_BER_LOG_01</u>: $-\infty < \text{Log}_{10}(\text{Physical channel BER}) < -2.06375$ <u>PhCh_BER_LOG_02</u>: $-2.06375 \leq \text{Log}_{10}(\text{Physical channel BER}) < -2.055625$ <u>PhCh_BER_LOG_03</u>: $-2.055625 \leq \text{Log}_{10}(\text{Physical channel BER}) < -2.0475$... <u>PhCh_BER_LOG_253</u>: $-0.024375 \leq \text{Log}_{10}(\text{Physical channel BER}) < -0.01625$ <u>PhCh_BER_LOG_254</u>: $-0.01625 \leq \text{Log}_{10}(\text{Physical channel BER}) < -0.008125$ <u>PhCh_BER_LOG_255</u>: $-0.008125 \leq \text{Log}_{10}(\text{Physical channel BER}) \leq 0$</p>

5.2.87 Round trip time

NOTE: The relation between this measurement and the TOA measurement defined by WG2 needs clarification.

Definition	<p>Round trip time (RTT), is defined as $RTT = T_{RX} - T_{TX}$, where T_{TX} = The time of transmission of the beginning of a downlink DPCH frame to a UE. T_{RX} = The time of reception of the beginning (the first significant path) of the corresponding uplink DPCCCH/DPDCH frame from the UE. Note: The definition of "first significant path" needs further elaboration. Measurement shall be possible on DPCH for each RL transmitted from an UTRAN access point and DPDCH/DPCCCH for each RL received in the same UTRAN access point.</p>
Range/mapping	The Round trip time is given with the resolution of 0.25 chip with the range [876, ..., 2923.75] chips.

5.2.98 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 1 μ S. The range is from 0 to 6.04×10^{11} μ S.