3GPP TSG RAN WG1 Meeting #11
San Diego, USA, FEB. 29 - MARCH 03, 2000

Document R1-00-0227
e.g. for 3GPP use the format TP-99xxx
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CHANGE REQUEST

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25.225	CR	005rev2	Current Version:	3.1.1

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

For submission to:	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 [X] Core Network [ ]

Source: Siemens AG **Date:** Feb. 23, 2000

Subject: Editorial modifications to 25.225 Measurements for TDD (CR005 rev2)

Work item:

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

F	Correction		**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	X		Release 99	X
				Release 00	

Reason for change:
The following modifications are included in this CR:
- Names of the mapped measurement levels are aligned with FDD 25.215
- Resolution values for power measurements were changed from dBm to dB as already proposed in CR 003 rev1 (R1-99L43).

Clauses affected: Chapter 5

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: CR history: CR005 rev1: R1-00-0181, CR005: R1-00-143

help.doc

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

4.4 Measurements for DCA

DCA is used to optimise the resource allocation by means of a channel quality criteria or traffic parameters. The DCA measurements are configured by the UTRAN. The UE reports the measurements to the UTRAN.

For DCA no measurements are performed in idle mode in the serving TDD cell.

When connecting with the initial access the UE immediately starts measuring the ISCP of time slots which are communicated on the BCH. The measurements and the preprocessing are done while the UTRAN assigns an UL channel for the UE for signalling and measurement reporting.

In connected mode the UE performs measurements according to a measurement control message from the UTRAN.

4.5 Measurements for timing advance

To update timing advance of a moving UE the UTRAN measures 'Received Timing Deviation', i.e. the time difference of the received UL transmission (PRACH, DPCH, PUSCH) in relation to its timeslot structure that means in relation to the ideal case where an UL transmission would have zero propagation delay. The measurements are reported to higher layers, where timing advance values are calculated and signalled to the UE.

5 Measurement abilities for UTRA TDD

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.

5.1 UE measurement abilities

NOTE 1: Measurements for TDD which are specified on the Primary CCPCH (P-CCPCH) are carried out on the P-CCPCH or other physical channels with beacon function, see [6].

NOTE 2: For those channels providing beacon function [6], the received power measurements are based on the sum of the received powers for midambles $m^{(1)}$ and $m^{(2)}$.

NOTE 3: The UTRAN has to take into account the UE capabilities when specifying the timeslots to be measured in the measurement control message.

NOTE 4: The RSCP can either be measured on the data part or the midamble of a burst, since there is no power offset between both. However, in order to have a common reference, the measurement on the midamble is assumed.

NOTE 5: The line 'applicable for' indicates whether the measurement is applicable for inter-frequency and/or intra-frequency and furthermore for idle and/or connected mode.

5.1.1 P-CCPCH RSCP

Definition	Received Signal Code Power, the received power on P-CCPCH of own or neighbour cell after despreading. The reference point for the RSCP is the antenna connector at the UE.
Applicable for	idle mode, connected mode (intra-frequency & inter-frequency)
Range/mapping	P-CCPCH RSCP is given with a resolution of 1 dB~~m~~ with the range [-115, ..., -25] dBm. P-CCPCH RSCP shall be reported in the unit P-CCPCH_RSCP_LEV where: P-CCPCH_RSCP_LEV_00: P-CCPCH_RSCP < -115dBm P-CCPCH_RSCP_LEV_01: -115dBm ≤ P-CCPCH_RSCP < –114dBm P-CCPCH_RSCP_LEV_02: -114dBm ≤ P-CCPCH_RSCP < –113dBm ... P-CCPCH_RSCP_LEV_89: -27dBm ≤ P-CCPCH_RSCP < –26dBm P-CCPCH_RSCP_LEV_90: -26dBm ≤ P-CCPCH_RSCP < –25dBm P-CCPCH_RSCP_LEV_91: -25dBm ≤ P-CCPCH_RSCP

5.1.2 CPICH RSCP

Definition	Received Signal Code Power, the received power on the CPICH code after despreading. The reference point for the RSCP is the antenna connector at the UE.
Applicable for	idle mode, connected mode (inter-frequency)
Range/mapping	CPICH RSCP is given with a resolution of 1 dB~~m~~ with the range [-115, ..., -25] dBm. CPICH RSCP shall be reported in the unit CPICH_RSCP_LEV where: CPICH_RSCP_LEV_00: CPICH_RSCP < -115dBm CPICH_RSCP_LEV_01: -115dBm ≤ CPICH_RSCP < –114dBm CPICH_RSCP_LEV_02: -114dBm ≤ CPICH_RSCP < –113dBm ... CPICH_RSCP_LEV_89: -27dBm ≤ CPICH_RSCP < –26dBm CPICH_RSCP_LEV_90: -26dBm ≤ CPICH_RSCP < –25dBm CPICH_RSCP_LEV_91: -25dBm ≤ CPICH_RSCP

5.1.3 RSCP

Definition	Received Signal Code Power, the received power on the code of a specified DPCH or PDSCH after despreading. The reference point for the RSCP is the antenna connector at the UE.
Applicable for	connected mode (intra-frequency)
Range/mapping	RSCP is given with a resolution of 1 dBm with the range [-115, ..., -25] dBm. RSCP shall be reported in the unit UE_RSCP_LEV where: UE_RSCP_LEV00: RSCP < -115dBm UE_RSCP_LEV01: -115dBm ≤ RSCP < –114dBm UE_RSCP_LEV02: -114dBm ≤ RSCP < –113dBm ... UE_RSCP_LEV89: -27dBm ≤ RSCP < –26dBm UE_RSCP_LEV90: -26dBm ≤ RSCP < –25dBm UE_RSCP_LEV91: -25dBm ≤ RSCP

5.1.4 Timeslot ISCP

Definition	Interference Signal Code Power, the interference on the received signal in a specified timeslot after despreading. Only the non-orthogonal part of the interference is included in the measurement. The reference point for the ISCP is the antenna connector at the UE.
Applicable for	connected mode (intra-frequency)
Range/mapping	Timeslot ISCP is given with a resolution of 1 dB~~m~~ with the range [-115, ..., -25] dBm. Timeslot ISCP shall be reported in the unit UE_TS_ISCP_LEV where: UE_TS_ISCP_LEV_00: Timeslot_ISCP < -115dBm UE_TS_ISCP_LEV_01: -115dBm ≤ Timeslot_ISCP < –114dBm UE_TS_ISCP_LEV_02: -114dBm ≤ Timeslot_ISCP < –113dBm ... UE_TS_ISCP_LEV_89: -27dBm ≤ Timeslot_ISCP < –26dBm UE_TS_ISCP_LEV_90: -26dBm ≤ Timeslot_ISCP < –25dBm UE_TS_ISCP_LEV_91: -25dBm ≤ Timeslot_ISCP

5.1.5 UTRA carrier RSSI

Definition	Received Signal Strength Indicator, the wide-band received power within the relevant channel bandwidth in a specified timeslot. Measurement shall be performed on a UTRAN DL carrier. The reference point for the RSSI is the antenna connector at the UE.
Applicable for	idle mode, connected mode (intra- & inter-frequency)
Range/mapping	UTRA carrier RSSI is given with a resolution of 1 dB~~m~~ with the range [-94, ..., -32] dBm. UTRA carrier RSSI shall be reported in the unit UTRA_carrier_RSSI_LEV where: UTRA_carrier_RSSI_LEV_00: UTRA_carrier_RSSI < -94dBm UTRA_carrier_RSSI_LEV_01: -94dBm ≤ UTRA_carrier_RSSI < –93dBm UTRA_carrier_RSSI_LEV_02: -93dBm ≤ UTRA_carrier_RSSI < –92dBm ... UTRA_carrier_RSSI_LEV_61: -34dBm ≤ UTRA_carrier_RSSI < –33dBm UTRA_carrier_RSSI_LEV_62: -33dBm ≤ UTRA_carrier_RSSI < –32dBm UTRA_carrier_RSSI_LEV_63: -32dBm ≤ UTRA_carrier_RSSI

5.1.6 GSM carrier RSSI

Definition	Received Signal Strength Indicator, the wide-band received power within the relevant channel bandwidth in a specified timeslot. 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 mode, connected mode (inter-frequency)
Range/mapping	According to the definition of RXLEV in GSM 05.08.

5.1.7 SIR

Definition	Signal to Interference Ratio, defined as the RSCP of a DPCH or PDSCH divided by ISCP of the same timeslot. The reference point for the SIR is the antenna connector of the UE.
Applicable for	connected mode (intra-frequency)
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: UE_SIR_00: SIR < -11.0dB UE_SIR_01: -11.0dB ≤ SIR < -10.5dB UE_SIR_02: -10.5dB ≤ SIR < -10.0dB .... UE_SIR_61: 19.0dB ≤ SIR < 19.5dB UE_SIR_62: 19.5dB ≤ SIR < 20.0dB UE_SIR_63: 20.0dB ≤ SIR

5.1.8 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. The reference point for Ec/No is the antenna connector at the UE.
Applicable for	idle mode, connected mode (inter-frequency)
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: CPICH_Ec/No_00: CPICH_Ec/No < -24dB CPICH_Ec/No_01: -24dB ≤ CPICH_Ec/No < -23dB CPICH_Ec/No_02: -23dB ≤ CPICH_Ec/No < -22dB ... CPICH_Ec/No_23: -2dB ≤ CPICH_Ec/No < -1dB CPICH_Ec/No_24: -1dB ≤ CPICH_Ec/No < 0dB CPICH_Ec/No_25: 0dB ≤ CPICH_ Ec/No

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 data.
Applicable for	connected mode (intra-frequency)
Range/mapping	Physical channel BER is given with a logarithmic resolution of 0.065 with the range [10^-4.03 ... 1] including a separate case Physical channel BER=0. Physical channel BER shall be reported in the unit ~~PhCH_~~BER_LOG~~dB~~, where: ~~PhCH_~~BER_LOG~~dB~~_00: BER = 0 ~~PhCH_~~BER_LOG~~dB~~_01: -∞ < Log10(Physical channel BER) < -4.030 ~~PhCH_~~BER_LOG~~dB~~_02: -4.030 ≤ Log10(Physical channel BER) < -3.965 ~~PhCH_~~BER_LOG~~dB~~_03: -3.965 ≤ Log10(Physical channel BER) < -3.900 ... ~~PhCH_~~BER_LOG~~dB~~_61: -0.195 ≤ Log10(Physical channel BER) < -0.130 ~~PhCH_~~BER_LOG~~dB~~_62: -0.130 ≤ Log10(Physical channel BER) < -0.065 ~~PhCH_~~BER_LOG~~dB~~_63: -0.065 ≤ Log10(Physical channel BER) ≤ 0.000

5.1.10 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.
Applicable for	connected mode (intra-frequency)
Range/mapping	Transport channel BLER is given with a logarithmic resolution of 0.065 with the range [10^-4.03 ... 1] including a separate case Transport channel BLER=0. Transport channel BLER shall be reported in the unit ~~TCH_~~BLER_LOG~~dB~~, where: ~~TCH_~~BLER_LOG~~dB~~_00: BLER = 0 ~~TCH_~~BLER_LOG~~dB~~_01: -∞ < Log10(Transport channel BLER) < -4.030 ~~TCH_~~BLER_LOG~~dB~~_02: -4.030 ≤ Log10(Transport channel BLER) < -3.965 ~~TCH_~~BLER_LOG~~dB~~_03: -3.965 ≤ Log10(Transport channel BLER) < -3.900 ... ~~TCH_~~BLER_LOG~~dB~~_61: -0.195 ≤ Log10(Transport channel BLER) < -0.130 ~~TCH_~~BLER_LOG~~dB~~_62: -0.130 ≤ Log10(Transport channel BLER) < -0.065 ~~TCH_~~BLER_LOG~~dB~~_63: -0.065 ≤ Log10(Transport channel BLER) ≤ 0.000

5.1.11 UE transmitted power

Definition	The total UE transmitted power on one carrier measured in a timeslot. The reference point for the UE transmitted power shall be the UE antenna connector.
Applicable for	connected mode (intra-frequency).
Range/mapping	UE transmitted power is given with a resolution of 1dB~~m~~ with the range [-50, ..., 33] dBm. UE transmitted power shall be reported in the unit UE_TX_POWER, where: UE_TX_POWER_000 to UE_TX_POWER_020: reserved UE_TX_POWER_021: -50dBm ≤ UE_transmitted_power < -49dBm UE_TX_POWER_022: -49dBm ≤ UE_transmitted_power < -48dBm UE_TX_POWER_023: -48dBm ≤ UE_transmitted_power < -47dBm ... UE_TX_POWER_102: 31dBm ≤ UE_transmitted_power < 32dBm UE_TX_POWER_103: 32dBm ≤ UE_transmitted_power < 33dBm UE_TX_POWER_104: 33dBm ≤ UE_transmitted_power < 34dBm

5.1.12 SFN-SFN observed time difference

Definition	SFN-SFN observed time difference is the time difference of the reception times of frames from two cells (serving and target) measured in the UE and expressed in chips. It is distinguished in two types: Type 2 applies if the serving and the target cell have the same frame timing and SFN numbering. Type 1 applies in all other cases. **Type 1:** SFN-SFN observed time difference = OFF×38400+ T_m in chips, where: T_m= T_{RxSFNk} - T_{RxSFNi}, given in chip units with the range [0, 1, …, 38399] chips T_{RxSFNi} : time of start of the received frame SFN_i of the serving TDD cell i. T_{RxSFNk} : time of start of the received frame SFN_k of the target UTRA cell k after the time instant T_{RxSFNi} in the UE. If the next frame of the target UTRA cell is received exactly at T_{RxSFNi} then T_{RxSFNk}= T_{RxSFNi} (which leads to T_m=0). OFF=(SFN_k- SFN_i) mod 256, given in number of frames with the range [0, 1, …, 255] frames SFNi : system frame number for downlink frame from serving TDD cell i in the UE at the time T_{RxSFNi}. SFNk : system frame number for downlink frame from target UTRA cell k received in the UE at the time T_{RxSFNk}.(for FDD: the P-CCPCH frame) **Type 2:** SFN-SFN observed time difference = T_{RxTSk} - T_{RxTSi}, in chips, where T_{RxTSi} : time of start of a timeslot received of the serving TDD cell i. T_{RxTSk} : time of start of a timeslot received from the target UTRA cell k that is closest in time to the start of the timeslot of the serving TDD cell i.
Applicable for	idle mode, connected mode (intra-frequency)
Range/mapping	Type 1: SFN-SFN observed time difference is given with a resolution of 1 chip with the range [0; 9830400) chips (24 bits). SFN-SFN observed time difference shall be reported in the unit T1_SFN-SFN_TIME, where T1_SFN-SFN_TIME_N: N* 1 chip ≤ SFN-SFN observed time difference < (N+1)* 1 chip With N= 0, 1, 2, ..., 9830399 Type 2: SFN-SFN observed time difference is given with a resolution of 0.25 chip with the range (-1280; 1280] chips (14 bits). SFN-SFN observed time difference shall be reported in the unit T2_SFN-SFN_TIME, where T2_SFN-SFN_TIME_N: N* 0.25 chip –1280 chips < SFN-SFN observed time difference ≤ (N+1)* 0.25 chip –1280 chips With N= 0, 1, 2, ..., 10239

5.1.13 Observed time difference to GSM cell

Definition	Observed time difference to GSM cell is the time difference T_m in ms, where T_m= T_{RxGSMk} - $T_{RxSFN0i}$ $T_{RxSFN0i}$: time of start of the received frame SFN=0 of the serving TDD cell i T_{RxGSMk}.: time of start of the received 51-GSM-multiframe of the considered target GSM beacon frequency k which is following next after the start of frame SFN=0 of the serving TDD cell.
Applicable for	Idle mode, connected mode (inter-frequency)
Range/mapping	Observed time difference to GSM cell is given with a resolution of 3060ms/(13*4096) (12 bit) with the range [0, 3060) ms. Observed time difference to GSM cell shall be reported in the unit GSM_TIME, where GSM_TIME_N: N* 3060ms/(13*4096) ≤ Observed time difference to GSM cell < (N+1)* 3060ms/(13*4096) With N= 0, 1, 2, ..., 4095

5.2 UTRAN measurement abilities

NOTE 1: If the UTRAN supports multiple frequency bands then the measurements apply for each frequency band individually.

NOTE 2: The RSCP can either be measured on the data part or the midamble of a burst, since there is no power offset between both. However, in order to have a common reference, the measurement on the midamble is assumed.

5.2.1 RSCP

Definition	Received Signal Code Power, the received power on one DPCH, PRACH or PUSCH code after despreading. The reference point for the RSCP shall be the antenna connector.
Range/mapping	RSCP is given with a resolution of 0.5 dB~~m~~ with the range [-120, ..., -80] dBm. RSCP shall be reported in the unit ~~UTRAN_~~RSCP_LEV where: ~~UTRAN_~~RSCP_LEV_00: RSCP < -120.0dBm ~~UTRAN_~~RSCP_LEV_01: -120.0dBm ≤ RSCP < –119.5dBm ~~UTRAN_~~RSCP_LEV_02: -119.5dBm ≤ RSCP < –119.0dBm ... ~~UTRAN_~~RSCP_LEV_79: -81.0dBm ≤ RSCP < –80.5dBm ~~UTRAN_~~RSCP_LEV_80: -80.5dBm ≤ RSCP < –80.0dBm ~~UTRAN_~~RSCP_LEV_81: -80.0dBm ≤ RSCP

5.2.2 Timeslot ISCP

Definition	Interference Signal Code Power, the interference on the received signal in a specified timeslot after despreading. Only the non-orthogonal part of the interference is included in the measurement. The reference point for the ISCP shall be the antenna connector.
Range/mapping	Timeslot ISCP is given with a resolution of 0.5 dB~~m~~ with the range [-120, ..., -80] dBm. Timeslot ISCP shall be reported in the unit UTRAN_TS_ISCP_LEV where: UTRAN_TS_ISCP_LEV_00: Timeslot_ISCP < -120.0dBm UTRAN_TS_ISCP_LEV_01: -120.0dBm ≤ Timeslot_ISCP < –119.5dBm UTRAN_TS_ISCP_LEV_02: -119.5dBm ≤ Timeslot_ISCP < –119.0dBm ... UTRAN_TS_ISCP_LEV_79: -81.0dBm ≤ Timeslot_ISCP < –80.5dBm UTRAN_TS_ISCP_LEV_80: -80.5dBm ≤ Timeslot_ISCP < –80.0dBm UTRAN_TS_ISCP_LEV_81: -80.0dBm ≤ Timeslot_ISCP

5.2.3 RSSI

Definition	Received Signal Strength Indicator, the wide-band received power within the UTRAN UL carrier channel bandwidth in a specified timeslot. The reference point for the RSSI shall be the antenna connector.
Range/mapping	RSSI is given with a resolution of 0.5dB~~m~~ with the range [-105, ..., -74] dBm. RSSI shall be reported in the unit RSSI_LEV, where: RSSI_LEV_00: RSSI < -105.0dBm RSSI_LEV_01: -105.0dBm ≤ RSSI < –104.5dBm RSSI_LEV_02: -104.5dBm ≤ RSSI < –104.0dBm ... RSSI_LEV_61: -75.0dBm ≤ RSSI < –74.5dBm RSSI_LEV_62: -74.5dBm ≤ RSSI < –74.0dBm RSSI_LEV_63: -74.0dBm ≤ RSSI

5.2.4 SIR

Definition	Signal to Interference Ratio, defined as the RSCP of the DPCH or PUSCH divided by ISCP of the same timeslot. The reference point for the SIR shall be the antenna connector.
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: UTRAN_SIR_00: SIR < -11.0dB UTRAN_SIR_01: -11.0dB ≤ SIR < -10.5dB UTRAN_SIR_02: -10.5dB ≤ SIR < -10.0dB .... UTRAN_SIR_61: 19.0dB ≤ SIR < 19.5dB UTRAN_SIR_62: 19.5dB ≤ SIR < 20.0dB UTRAN_SIR_63: 20.0dB ≤ SIR

5.2.5 Physical channel BER

Definition	The physical channel BER is an estimation of the average bit error rate (BER) of a DPCH or PUSCH before channel decoding of the data.
Range/mapping	Physical channel BER is given with a logarithmic resolution of 0.065 with the range [10^-4.03 ... 1] including a separate case Physical channel BER=0. Physical channel BER shall be reported in the unit ~~PhCH_~~BER_LOG~~dB~~, where: ~~PhCH_~~BER_LOG~~dB~~_00: BER = 0 ~~PhCH_~~BER_LOG~~dB~~_01: -∞ < Log10(Physical channel BER) < -4.030 ~~PhCH_~~BER_LOG~~dB~~_02: -4.030 ≤ Log10(Physical channel BER) < -3.965 ~~PhCH_~~BER_LOG~~dB~~_03: -3.965 ≤ Log10(Physical channel BER) < -3.900 ... ~~PhCH_~~BER_LOG~~dB~~_61: -0.195 ≤ Log10(Physical channel BER) < -0.130 ~~PhCH_~~BER_LOG~~dB~~_62: -0.130 ≤ Log10(Physical channel BER) < -0.065 ~~PhCH_~~BER_LOG~~dB~~_63: -0.065 ≤ Log10(Physical channel BER) ≤ 0.000

5.2.6 Transport channel BLER

Definition	Estimation of the transport channel block error rate (BLER) of a DCH or USCH. The BLER estimation shall be based on evaluating the CRC on each transport block.
Range/mapping	Transport channel BLER is given with a logarithmic resolution of 0.065 with the range [10^-4.03 ... 1] including a separate case Transport channel BLER=0. Transport channel BLER shall be reported in the unit ~~TCH_~~BLER_LOG~~dB~~, where: ~~TCH_~~BLER_LOG~~dB~~_00: BLER = 0 ~~TCH_~~BLER_LOG~~dB~~_01: -∞ < Log10(Transport channel BLER) < -4.030 ~~TCH_~~BLER_LOG~~dB~~_02: -4.030 ≤ Log10(Transport channel BLER) < -3.965 ~~TCH_~~BLER_LOG~~dB~~_03: -3.965 ≤ Log10(Transport channel BLER) < -3.900 ... ~~TCH_~~BLER_LOG~~dB~~_61: -0.195 ≤ Log10(Transport channel BLER) < -0.130 ~~TCH_~~BLER_LOG~~dB~~_62: -0.130 ≤ Log10(Transport channel BLER) < -0.065 ~~TCH_~~BLER_LOG~~dB~~_63: -0.065 ≤ Log10(Transport channel BLER) ≤ 0.000

5.2.7 Transmitted carrier power

Definition	Transmitted carrier power, is the total transmitted power on one DL carrier from one UTRAN access point measured in a timeslot. The reference point for the UTRAN total transmitted power measurement shall be the antenna connector.
Range/mapping	Transmitted carrier power is given with a resolution of 0.5dB~~m~~ with the range [0, ..., 50] dBm. Transmitted carrier power shall be reported in the unit UTRAN_TX_POWER, where: UTRAN_TX_POWER_000 to UTRAN_TX_POWER_015: reserved UTRAN_TX_POWER_016: 0.0dBm ≤ Transmitted carrier power < 0.5dBm UTRAN_TX_POWER_017: 0.5dBm ≤ Transmitted carrier power < 1.0dBm UTRAN_TX_POWER_018: 1.0dBm ≤ Transmitted carrier power < 1.5dBm ... UTRAN_TX_POWER_114: 49.0dBm ≤ Transmitted carrier power < 49.5dBm UTRAN_TX_POWER_115: 49.5dBm ≤ Transmitted carrier power < 50.0dBm UTRAN_TX_POWER_116: 50.0dBm ≤ Transmitted carrier power < 50.5dBm

5.2.8 Transmitted code power

Definition	Transmitted Code Power, is the transmitted power on one carrier and one channelisation code in one timeslot. The reference point for the transmitted code power measurement shall be the antenna connector at the UTRAN access point cabinet.
Range/mapping	Transmitted code power is given with a resolution of 0.5dB~~m~~ with the range [-10, ..., 46] dBm. Transmitted code power shall be reported in the unit UTRAN_TX_CODE_POWER, where: UTRAN_TX_CODE_POWER_000 to UTRAN_TX_POWER_009: reserved UTRAN_TX_ CODE_POWER_010: -10.0dBm ≤ CODE_POWER < -9.5dBm UTRAN_TX_ CODE_POWER_011: -9.5dBm ≤ CODE_POWER < -8.5dBm UTRAN_TX_ CODE_POWER_012: -8.5dBm ≤ CODE_POWER < -7.5dBm ... UTRAN_TX_ CODE_POWER_120: 45.0dBm ≤ CODE_POWER < 45.5dBm UTRAN_TX_ CODE_POWER_121: 45.5dBm ≤ CODE_POWER < 46.0dBm UTRAN_TX_ CODE_POWER_122: 46.0dBm ≤ CODE_POWER < 46.5dBm

5.2.9 RX Timing Deviation

Definition	'RX Timing Deviation' is the time difference $T_{RXdev} = T_{TS} - T_{RXpath}$ in chips, with T_{RXpath} : time of the reception in the Node B of the first significant uplink path to be used in the detection process T_{TS} : time of the beginning of the respective slot according to the Node B internal timing
Range/mapping	RX Timing Deviation is given with a resolution of 0.25 chip with the range [0; 1024) chips (12 bit). RX Timing Deviation cell shall be reported in the unit RX_TIME_DEV, where RX_TIME_DEV: N* 0.25 chips ≤ RX Timing Deviation < (N+1)* 0.25 chips With N= 0, 1, 2, ..., 4095

NOTE: This measurement can be used for timing advance calculation or location services.